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JIRSEA (JOURNAL OF INSTITUTIONAL RESEARCH SOUTH EAST ASIA)

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Editorial

The September/October 2025 JIRSEA Issue has consistently resulted in 75% of papers being declined or withdrawn due to relevance to JIRSEA's focus on Higher Education issues or Institutional Research and those that do not meet the sound scientifically grounded research requirements of JIRSEA. Of the 55 papers that went through the Preliminary Reviews with revisions and re-submitted, 19 papers were rejected with 12 non-follow-ups. Of the remaining 24 papers that underwent the Double-Blind Review, only 19 papers (with an acceptance rate of 35.5%) were accepted for this issue publication after the rigorous and stringent vetting process. The papers continued to come from diverse geographic areas covering Malaysia, Thailand, Indonesia, Philippines, Korea, China, Japan, Taiwan, Saudi Arabia, South Africa, Kyrgyz Republic, Ukraine, Kyrgyz Republic, and Uzbekistan

As part of its initiative to recognize the Best and Outstanding papers, the Best Paper from Taiwan demonstrated the rapidly expanding research on ChatGPT in higher education through a diffusion-of-innovation lens. The Outstanding Paper from Japan tried to propose a model curriculum for institutional research (IR) human resource development in Japan, the other Outstanding Paper from Philippines assessed organizational diagnosis and commitment at a Philippine maritime college.

The number of scholars seeking to publish in JIRSEA has increased significantly in recent years, and the range of scholars from various regions has broadened significantly. This issue also features a wide range of research from Africa, Eastern Europe, to Asia, with a majority still representing South East Asia. This positive response has contributed to further expanding JIRSEA's research scope and making it a valuable resource for scholars in various fields related to higher education and institutional research. JIRSEA continues to evolve, focusing on South East Asia as a base, increasing accessibility for scholars from across Asia and neighboring countries, and striving for qualitative advancement.

The key synopses of these 21 papers are as follows:

- **Article 1: Nguyen Trang Dung** of *Ho Chi Minh City University of Technology, Vietnam*, examined how non-English majors perceive the relevance of general English courses to TOEIC goals and future workplace communication. A descriptive survey was administered to 286 students using Likert-scale items and open-ended responses, supplemented by descriptive statistics, thematic coding, and informal classroom observations. Students reported a significant misalignment between their goals and instructional support, particularly in speaking and writing; concerns also surfaced regarding engagement and skill development when using AI writing tools. The conclusion emphasizes the need for more balanced, needs-aligned instruction to support both test success and workplace readiness, informing the development of TOEIC-oriented curriculum for non-majors.
- **Article 2: Susana Eka Dewi, Punaji Setyosari, Yusuf Hanafi, and Supriyono** of *the State University of Malang, Indonesia*, aimed to assess the overall impact of inquiry-based learning (IBL) on students' critical thinking and test the robustness of findings via sensitivity analyses and publication bias evaluation. A meta-analysis of 23 effect measures from studies published between 2016 and 2025 (totaling approximately 2,500 participants) indicated that IBL produced a strong, meaningful positive effect on critical thinking. Sensitivity tests confirmed the stability of these results, and despite evidence of publication bias, the bias-adjusted effects remained significant. The study concluded that IBL

effectively enhances analysis, inference, and evaluation processes, warranting its broader adoption in 21st-century curricula.

- **Article 3: Anne Therese C. Balolong** of *Siquijor State College, Philippines*, **Ariel D. Ronato** of *Teamskills Technological Institute, Philippines* and **Mary Ann M. Temprosa** of *Siquijor State College, Philippines*, utilized a mixed-methods design, combining descriptive-correlational analysis with qualitative inquiry, to assess workforce stability and employee morale at Siquijor State College during its transition to a state university. The results indicated significant relationships among employee needs, workforce stability, and morale. Qualitative data highlighted existing strengths such as safety awareness, social interaction, and perceived work value, while also identifying areas needing improvement, specifically psychological safety, leadership avenues, recognition mechanisms, and equitable growth opportunities. The research suggests that enhancing psychological safety, improving recognition mechanisms, providing leadership opportunities, and ensuring fair professional development are key factors for sustaining morale and stability as the institution undergoes this transition.
- **Article 4: Gu Yuhan and Siti Sabihah Ghazali** of *Universiti Putra Malaysia, Malaysia*, examined the relationship between deans' transformational leadership and lecturers' teaching innovation in universities in Hebei, China, using a questionnaire survey of full-time lecturers selected via simple random sampling. SPSS analysis of 353 valid responses, including Pearson correlation, revealed that deans were perceived to display high transformational leadership and that this leadership style was significantly and positively correlated with lecturers' teaching innovation. The study concluded that strengthening transformational leadership practices can foster continuous teaching innovation and improve classroom efficiency.
- **Article 5: Juan Ma** of *Jusup Balasagyn Kyrgyz National University, Kyrgyz Republic*, integrates theory with a survey of 80 undergraduates to assess understanding, emotion regulation, responses to criticism, and interpersonal trust. Results indicate that tolerance supports intercultural integration and is fostered by intercultural competence, critical thinking, and emotional regulation, yet many students regard tolerance as an external rule rather than an internalized value, with notable difficulties in emotional self-control. The authors recommend embedding multicultural competence, emotion regulation, and practical interpersonal skills in curriculum and educator training. They conclude that sustained, integrated learning activities can cultivate a genuinely tolerant mindset in educational settings.
- **Article 6: Makhliyokhon Mirzakarimova** of *Andijan State Institute of Foreign Languages, Republic of Uzbekistan*, introduced entrepreneurial pedagogy into general scientific subjects through a mixed-method design comparing control and experimental groups. An intervention featuring projects, interactive tasks, and entrepreneur guest lectures led the experimental group to show greater entrepreneurship awareness, more initiative in generating business ideas, and better learning outcomes, with interest in applying subject knowledge to entrepreneurship rising from 65% to 80%. These findings suggest that entrepreneurial, interactive approaches in core disciplines enhance readiness and engagement. The authors conclude that institutions should scale such methods to support youth participation in business.
- **Article 7: Sakkaphat T. Ngamake and Jirapattara Raveepatarakul** of *Chulalongkorn University, Thailand*, **Manika Wisessathorn** and **Sawian Kaewwongsa** of *Ramkhamhaeng University, Thailand*, sought to pinpoint specific academic self-efficacy beliefs most strongly related to achievement and perceived stress, aiming to provide actionable targets for interventions. A quantitative analysis was conducted on 439 students using triangulated methods including psychological networks, network trees, and Bayesian networks. Efficacy in managing study time and using associative learning techniques emerged as the most influential nodes, predicting both academic achievement and stress and reinforcing efficacy

in other domains. The study concluded that future efforts should focus on developing scales that explicitly capture learning techniques and designing interventions focused on a small set of high-leverage behavioral domains.

- **Article 8: Bulelwa Makena** of *Walter Sisulu University, South Africa* utilized a qualitative participatory action research design involving semi-structured interviews with five purposively selected mentor teachers to examine the implications of mentorship in teacher education, focusing on trainee efficacy and professional identity, all while adhering to ethical protocols for collaborative inquiry. The results indicated that mentorship substantially advanced practical teaching skills and fostered the professional identity of the teacher-trainees, and the extended interviews enabled a deeper understanding of the problems. The conclusion posits that optimizing mentorship programs can elevate teacher education outcomes and contribute to the design of a future-ready curriculum.
- **Article 9: Edward Devere Bacon** and **Gary Ambito Torremucha** of *Rangsit University, Thailand*, investigated how Peer-Assisted Learning (PAL) supports intercultural competence (IC) among Burmese ICT undergraduates taking an English-medium course in Thailand. The methods involved a PAR design integrating culturally oriented PAL, multilingual interaction, and scaffolded reflection across three cycles, followed by a post-program 30-item survey, semi-structured interviews, and regression analysis. Results showed that PAL significantly predicted self-reported IC outcomes, with participants reporting gains in intercultural attitudes, cultural knowledge, communicative adaptability, leadership, confidence, and psychosocial support. The study concluded that intentionally structured PAL—embedding mentor preparation, reflective cycles, and explicit IC goals—can cultivate global competence for underrepresented STEM learners, despite limitations associated with self-report and non-causal findings.
- **Article 10: I Dewa Gde Satrya** of *Universitas Ciputra, Indonesia*, **Ni Wayan Purnami Rusadi** of *Politeknik Nasional, Indonesia*, **Denis Fidita Karya** of *Universitas Nahdlatul Ulama Surabaya, Indonesia*, and **Chuan Huat Ong** of *Taylor's University, Malaysia*, examined how altruistic, personal growth, and cultural exploration motivations shape the overall image, attitudes, and intentions to join voluntourism-based service-learning in higher education. A quantitative survey was administered to students at University X (participants in or interested in service learning) and analyzed using SEM-PLS to model the relationships. The results indicated that altruistic motivation positively influenced attitudes but not the overall image, while personal growth and cultural exploration motivations significantly improved the overall image. Furthermore, the overall image predicted attitudes, and attitudes strongly predicted the intention to participate. The conclusion suggests that program design should address diverse student motivations and cultivate a credible, enriching image, and future research should probe interactions among motivations, demographic/contextual moderators, and the alignment of expectations and experience.
- **Article 11: Teay Shawyun** of *King Saud University, Saudi Arabia* and *Siam University, Thailand*, **Mubarak Al-Khatnai** of *King Saud University, Saudi Arabia*, and **Somkiat Wattanasap** of *Mahachulalongkorn University, Thailand*, evaluated King Saud University's shift from compliance-based to data-driven internal quality assurance using the KSU-PIQ Troika Framework and the 20|20 KSU Learning Outcomes Management System (KSU-LOMS). Mixed methods involving longitudinal institutional data, surveys of 400 stakeholders, and semi-structured interviews were used, employing advanced statistics (repeated-measures ANOVA, effect sizes, power analysis) and benchmarking. Significant improvements were observed in graduate employability, student satisfaction, and audit documentation time, although qualitative data revealed "quality fatigue" among 65% of faculty. The study concluded that KSU presents a replicable blueprint for aligning strategic planning, digital governance, and outcomes-based education, and that mitigating quality

fatigue and sustaining agile, evidence-informed practices can further enhance student success, industry relevance, and research impact.

- **Article 12: I Gede Mudana** of *State Polytechnic of Bali, Indonesia*, **I Nyoman Cahyadi Wijaya** and **I Made Suidarma** of *Universitas Pendidikan Nasional, Indonesia*, **Ni Wayan Ardini** of *Institut Seni Indonesia Bali, Indonesia*, evaluated the effectiveness of an applied master's program in tourism business planning (Matrappar-PNB) by analyzing the interaction of industry demand, policy, and program management in vocational higher education. It utilized mixed methods, surveying 79 alumni and 79 employers, supplemented by in-depth interviews with key stakeholders. The results highlighted strong curriculum-industry alignment and high alumni competency in problem-solving and leadership; while government policy enabled industry-based learning, it faced implementation challenges. Success factors included organizational culture, strategic partnerships, and focused communication. The study concludes that an integrated framework linking industry needs, policy supports, and institutional readiness can enhance applied tourism education, recommending stronger entrepreneurship education, deeper industry immersion, and robust assessment of applied outcomes.
- **Article 13: Khusnul Khotimah, Ery Tri Djatmika Rudijanto Wahyu Wardhana, Sugeng Utaya, and Adi Atmoko** of *Universitas Negeri Malang, Indonesia*, aimed to assess the role of self-resilience in academic and non-academic achievement through a systematic literature review. Following PRISMA guidelines, researchers analyzed 1,404 Scopus-indexed articles from 2015 to 2025, ultimately selecting 44 studies for detailed analysis. The results showed that self-resilience protected against academic stress, improved emotion regulation, and boosted adaptability, while also supporting non-academic skills like leadership, social competence, and self-management. Social support, school climate, and socio-economic conditions moderated the links between resilience and achievement. The conclusion calls for schools to embed resilience-building strategies in policy and practice, noting that limitations of secondary data and correlational dominance necessitate future longitudinal and experimental research to strengthen causal inference.
- **Article 14: Hyunjin Cha** of *Soonchunhyang University, Republic of Korea*, and **Mija Oh** of *Konkuk University, Republic of Korea*, evaluated students' learning experiences with, and the effectiveness of, a Chatbot tutor for introductory AI education. Two experiments were performed: Study 1 tested Chatbot-supported learning of core AI concepts, and Study 2 (n=118 across four classes) compared LMS video lectures versus Chatbot tutoring. Both modalities improved academic achievement, though the Chatbot group achieved slightly higher gains than the LMS video group, and Study 1 confirmed the feasibility and supportiveness of Chatbot-based learning. The study concluded that Chatbot tutors are a viable, effective complement to LMS-based instruction for AI education, with practical implications for course design and implementation.
- **Article 15: Randel D. Estacio** of *Quezon City University, Philippines*, investigated how AI tools are integrated into academic research writing at Quezon City University, focusing on usage, effectiveness, and ethical perceptions among 80 students and 40 faculty members through a quantitative survey conducted in April 2025. The results indicated extensive AI use for grammar correction, paraphrasing, citation formatting, and literature summarization, with significant differences observed between students and faculty regarding frequency and ethical views. These findings led to the development of the Adaptive Human-AI Writing Continuum (AHAWC) model, which defines five collaboration patterns. The study concludes that the AHAWC framework supports responsible, context-sensitive AI integration in research writing, recommending that institutions provide clear policies, training, and human-in-the-loop practices to balance effectiveness with ethics.
- **Article 16: Nurul Afif Baginda Bakhtiar Affendy and Noorlila Ahmad** of *International Islamic University Malaysia, Malaysia*, systematically reviewed how grit contributes to happiness among university students and the mechanisms linking grit to academic and

psychological outcomes. Following PRISMA guidelines, the researchers included 21 English-language studies from SCOPUS and Google Scholar published between 2019 and August 2024. The results revealed two main themes: student enhancement and improved well-being, indicating that grit operates through mechanisms like resilience, self-esteem, growth mindset, and academic adaptation to support academic success and psychological well-being (e.g., hope, life satisfaction). The study concludes that educators and support services should cultivate grit to promote both achievement and holistic well-being, extending grit's relevance beyond strictly academic contexts.

- **Article 17: Yuliya Kondratenko**, and **Vasyl Kryzhko** of *Berdyansk State Pedagogical University, Ukraine*, tried to revitalize the national philosophical idea of guidance in education, and combined conceptual analysis with empirical inquiry among master's students and practicing school leaders to delineate the traits and mechanisms that make guidance effective. It positions guidance as a fertile perspective for pedagogical and management research, identifying attribution as a key process through which leaders' guiding traits become institutionalized. The study presents a model that maps transversal connections among guiding traits and their multiplier effects. It concludes that this framework can inform the cultivation of future educational leaders' professional qualities and guide research and training in educational management.
- **Article 18: Venera Zhamalova** of *International University of Innovation Technologies, Kyrgyz Republic*, **Gulay Kenenbaeva** of *Jusup Balasagyn Kyrgyz National University, Kyrgyz Republic*, and **Cholpon Askarova** of *Kyrgyz State Medical Academy, Kyrgyz Republic*, compares traditional and digital teacher-evaluation methods to determine how best to achieve objective faculty assessment, using qualitative, comparative analysis of approaches and competence-based criteria. It finds that both traditional tools (such as publication review, observation, and student surveys) and digital tools (such as analytics platforms and class recordings) carry distinct strengths and limitations, so a blended quantitative–qualitative approach offers the most accurate picture. Regular feedback from faculty and students helps refine and update the system. The authors conclude that faculty evaluation should be comprehensive, regular, and systematic, with clear principles and phased implementation so institutions can adapt to changing standards and student needs.
- **Article 19: 25th SEAAIR Conference "Best Paper"** of **Ya-Mei Chiu** from *University of Taipei, Taiwan, R.O.C.*, used bibliometric and visualization techniques on 11,072 Scopus-indexed education papers (2022–2025). This study maps the rapidly expanding research on ChatGPT in higher education through a diffusion-of-innovation lens. It shows exponential publication growth after 2023 and a shift from technical applications toward pedagogy and governance, with the U.S. and U.K. leading output and Asian contributions accelerating despite limited cross-national collaboration. Thematic clusters span technology, professional/medical education, assessment, ethics, security, and policy, and adoption appears driven by perceived advantage, low complexity, and trialability amid ongoing debates over value compatibility and outcome visibility. The authors recommend tighter theory–evidence linkages, timely ethical and regulatory frameworks, and stronger AI/digital literacies to guide research, practice, and policy.
- **Article 20: 25th SEAAIR Conference "Outstanding Paper"** of **Shuntaro Iseri** from *Kanda University of International Studies, Japan*, **Tetsuya Oishi** from *Kyushu Institute of Technology, Japan*, **Nobuhiko Kondo** from *Tokyo Metropolitan University, Japan*, and **Kunihiko Takamatsu** and **Sayaka Matsumoto** from *Institute of Science Tokyo, Japan*, tried to propose a model curriculum for institutional research (IR) human resource development in Japan. This study integrates a meta-review of desired IR competencies, an analysis of U.S. IR certificate curricula, and qualitative insights from Japanese practitioners, grounding the design in Terenzini's Three Tiers, the Information Support Circle, and andragogy. The model specifies three core courses—Introduction to IR/IE, Data and Research Ethics, and Research/Survey Methods—plus electives such as Fundamentals of

Higher Education and Data Utilization, with general skills developed through real-world problem solving and interactive learning aligned with Tier 1 technical/analytical competencies. Emphasizing communication and data use between Broker and Custodian roles, the curriculum offers a structured pathway tailored to the Japanese context.

- **Article 21: 25th SEAAIR Conference "Outstanding Paper"** of **Ellisther Niña O. Salabas**, and **Dennis V. Madrigal** from *University of Negros Occidental-Recoletos, Philippines*, assessed organizational diagnosis and commitment at a Philippine maritime college. This study surveys 109 teaching and non-teaching staff using established instruments to evaluate functioning and commitment domains. Findings indicate optimal organizational functioning alongside very high employee commitment, with a significant negative correlation observed between perceived diagnosis and commitment that the authors interpret within the context of strong overall performance. The study underscores that maintaining high-functioning systems supports sustained commitment and that ongoing diagnosis can guide positive institutional change and improved performance.

Prof. Dr. Jang Wan Ko
JIRSEA Editor

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Beyond TOEIC: Vietnamese Students' Perceptions of English Course Relevance for Workplace and Test Goals

ABSTRACT

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At Vietnamese universities, general English courses are expected to prepare non-English-major students for both TOEIC requirements and real-world communication. This study examined how students perceive the relevance of these courses to their test goals and future workplace needs. A study was conducted to explore how students view the relevance of these courses for tests and future work. A descriptive survey design was employed to gather data via a questionnaire featuring Likert-scale items (Cronbach's alpha = .969) and open-ended questions from 286 non-English majors across various faculties. Descriptive statistics and thematic coding were used to analyse the data collected from respondents, supplemented with informal classroom observations. Survey responses show a misalignment between students' goals and the support they expect, especially in speaking and writing. There are also concerns about skill development and engagement related to AI tools for writing practice. According to the findings, more balanced instruction is necessary to help students succeed in exams and prepare for their future careers. Educators and curriculum developers can benefit from this study in developing English programs focused on TOEIC for non-majors.

Keywords: English course relevance, TOEIC preparation, students' expectations, Vietnamese EFL context

1. Introduction

The importance of English proficiency has grown in Asian countries, particularly Vietnam, where graduates are expected to meet academic and professional criteria. For this demand, the Ministry of Education and Training (MOET) launched the National Foreign Languages Project (NFLP). Although the project was scheduled to be completed by 2020, it has continued to undergo reform, including the introduction of the Vietnam Foreign Language Framework (VFLF). Under these changes, universities are encouraged to develop courses in line with English benchmarks and the Common European Framework of Reference (CEFR) to meet graduation requirements.

At many universities, including the research site, students are required to achieve Level 3 proficiency on a six-level national scale. It is common for most students to submit their scores from international exams, of which the TOEIC is the most accessible and widely used. TOEIC is preferred due to its practicality, cost-effectiveness, and credibility as a gateway to employment. In this sense, general English courses now serve a number of functions, including the development of fundamental language skills, the preparation for testing, and the support of professional communication. Even if curriculum changes match English education with international norms, little research has examined how students experience these courses. Instead, syllabus design, policy implementation, or teachers' viewpoints take front stage above students' experiences. When this misalignment takes place in institutions where only general English is the official language of instruction, it becomes more worrying.

At the research site, a Vietnamese university of technology, students follow an integrated-skills coursebook aligned with the CEFR. Although this methodology may provide consistent foundations for instruction, it may not always align with the students' anticipated learning outcomes. These challenges raise questions about how students evaluate their English learning. As a result, this study examines how non-English majors view the importance of general English courses, especially for TOEIC preparation and workplace communication, to evaluate whether the course supports their goals and how it may be improved.

Taking a closer look from the students' point of view, this study examines how relevant they find their English courses and what implications this has on a broader scale. By focusing on what students really think and need, the study provides practical suggestions for teachers, course designers, and university leaders to improve learning and connect it to real-life experiences. These insights go beyond the classroom, offering ways for universities to rethink how English is taught and tested to better align with students' goals and national education plans.

Although these reforms aim to standardise proficiency outcomes, their impact varies across institutions, especially where TOEIC acts as both an exit requirement and a measure of institutional accountability. In practice, this creates tensions between curriculum intentions, assessment policies, and students' actual classroom experiences. It is therefore important to understand how students perceive these courses not only from a pedagogical perspective, but also from an institutional perspective, to provide insight into how national benchmarks are incorporated into daily classroom pedagogy.

2. Literature Review

English Course Relevance, Curriculum Alignment, and Students' Expectations

In language education, relevance involves how materials, teaching methods, and learning outcomes meet students' real-world needs. While Hutchinson and Waters (1987) argue that students are more motivated when instruction matches their goals, Graves (2000) and Richards (2001) underline the need of designing language courses around the learners' context.

In Vietnam, general English classes are often the only structured language education that non-majors receive. These courses are expected to serve multiple purposes, including assisting students in meeting graduation requirements as well as preparing them for workplace communication (Nguyen & Hamid, 2015; Nguyen & Gu, 2020). However, accommodating this wide range of expectations in a single curriculum is far from simple. When learners are not meaningfully involved in curriculum design, their priorities can remain unaddressed (Eslami, 2010; Kaur, 2007).

The textbooks used by Vietnamese universities tend to be globally marketed and may not fully reflect local or institutional demands. As Tomlinson (2023) and Robinson (1991) point out, materials that overlook learners' particular contexts run the risk of reducing engagement and efficacy. Moiiinvaziri (2014) observed a similar mismatch in Iran, where general English courses lacked explicit emphasis on speaking and test preparation, which caused discontent among students. In addition, other researchers, such as Mallik and Alam (2018), advocate more responsive curriculum development, especially when learners' voices are included. For any reform to be practical, institutional constraints and learners' diversity must also be considered (Nation & Macalister, 2010).

To understand students' expectations more fully, the current study draws on Hutchinson and Waters' (1987) Target Needs Framework, which defines learners' needs across three dimensions: necessities (e.g., test requirements), lacks (e.g., weak speaking skills), and wants (e.g., increased confidence or fluency). Figure 1 illustrates how this framework has been adapted for the Vietnamese university context.



Figure 1. Adapted version of Hutchinson and Waters' (1987) Target Needs Framework, contextualised for Vietnamese EFL students

By connecting learners' goals with curriculum expectations, this study builds on prior research while integrating classroom observation to offer a more grounded understanding of students' experience.

TOEIC Washback and the Impact of Test-Driven Goals

TOEIC has had a significant impact on Vietnamese higher education, particularly for students who do not major in English. Since it is a graduation requirement and a job requirement, it influences the measurement and instruction of English proficiency. This test impact, often referred to as washback (Bailey, 1996; Cheng & Curtis, 2012), can shift students' attention toward what is easily assessed rather than what supports long-term language growth. In test-driven environments, students tend to give priority to measurable results rather than instructions. In spite of offering the structure and motivation, it may result in the development of surface-level learning strategies and the decrease of language use as a means of communication (Pan, 2005; Ryan & Weinstein, 2009; Shohamy, 2014). In addition, students may focus more on memorising or practising test-taking techniques rather than practical language skills.

A misalignment exists between institutions' goals and students' expectations. According to Pham and Bui (2019), many students believe their English lessons fail to prepare them for professional life. In addition, Nhan (2013) contends that test-based exit policies can lead to a delay in graduation or a decrease in student self-esteem. In addition to Vietnam, other Asian countries also face similar concerns when English exit tests determine curriculum priorities (Pan, 2015; Su, 2005; Tsai and Tsou, 2009), suggesting that Vietnam's tensions reflect broader regional patterns rather than isolated institutional problems.

Barriers to Proficiency and Structural Challenges

Many Vietnamese students enter university with limited confidence in listening and speaking, even with years of English instruction. This is the consequence of grammar-heavy instruction in secondary schools, where communicative competence is sometimes overlooked (Tran, 2013; Pham & Bui, 2019). At the university level, large class sizes, limited contact hours, and mixed-ability groups present further challenges for differentiated instruction.

Due to assessment pressures, classroom practices often place a high priority on receptive skills, particularly grammar, reading, and vocabulary, despite the fact that many programs follow the CEFR and support integrated skills. Consequently, students tend to focus more on performance on exams than on deeper engagement, according to Ngoc and Iwashita (2012) and Tran (2013). TOEIC provides clear standards for communication, but these standards may not always reflect the communication demands of employers or the reality of everyday life. As a result of focusing on test scores, students may achieve strong results, but lack the confidence to use English effectively in everyday situations. Therefore, teaching should be closely aligned with the academic goals of students, and daily communication should be a priority so that they can receive the best possible education.

Across higher education systems in Asia, similar tensions have been observed when test-based policies interact with local curriculum demands. Studies conducted in Taiwan (Pan, 2015; Tsai & Tsou, 2009) and Iran (Moiinvaziri, 2014) indicate that standardised proficiency requirements often influence classroom practices more than curriculum objectives. A similar pattern can be observed in the Vietnamese context, where exit benchmarks based on TOEIC can influence both teaching priorities and the expectations of the institution regarding the quality of the

program. Therefore, it is important to place the student voice within this broader regional context in order to clarify how policy-level decisions affect learning.

Building on the literature above, this study focuses on how learners perceive the alignment between their English courses and personal goals in a TOEIC-oriented context. In addition, it considers the challenges students encounter and how they experience instructional support across different language levels.

In this study, the following questions will be addressed:

1. What are university students' primary goals for learning English?
2. How relevant do students believe their English courses are to these objectives?
3. Which English skills do students feel are adequately or insufficiently supported?
4. What suggestions would students make for improving their English learning experience?

The following figure summarises how the study's research questions are derived from key theoretical constructs and aligned with data collection and analysis strategies.

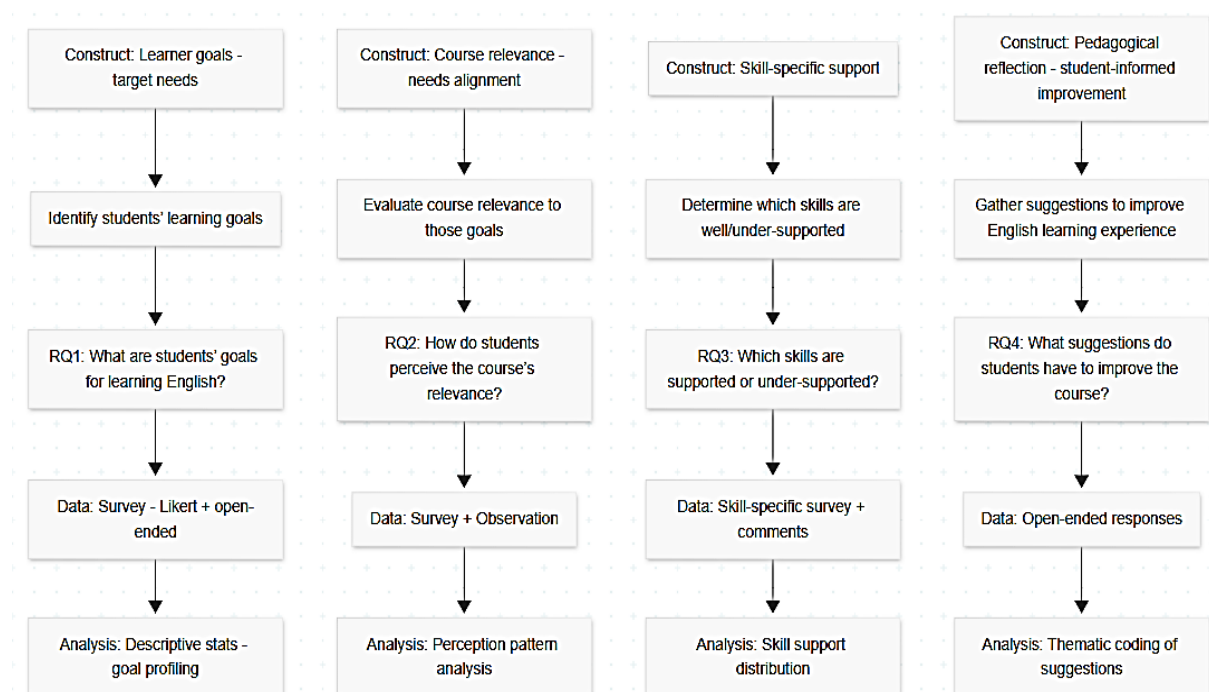


Figure 2. Mapping of Constructs, Objectives, Research Questions, Data Collection Methods, and Analysis Approaches

3. Methodology

Research Design

This study implemented a descriptive, survey-based design to explore how students perceive the relevance of their general English courses with regard to TOEIC preparation and workplace communication. Instead of testing a hypothesis, it recorded students' priorities, perceived instructional gaps, and ideas for improvement. The survey included both Likert-scale items and open-ended questions, and informal classroom observations by the teacher-researcher were used to provide contextual insight into participation patterns and instructional emphasis.

Context and Participants

The research was conducted at a public university of technology in southern Vietnam, where general English is compulsory for all undergraduates. The program follows a CEFR-aligned, integrated-skills syllabus. A total of 286 students participated, drawn from a range of faculties and academic years. Most were non-English majors actively preparing for TOEIC, which serves as a graduation requirement at the institution.

Instruction during the study period was based on *Voices*, a CEFR-oriented coursebook. According to university policy, students can submit TOEIC certificates (Listening and Reading) in early semesters to bypass general English classes, even though graduation still requires the four-skill TOEIC. As a result, this policy influences how and when students engage with different skills throughout their degree program.

Instruments and Data Collection

The questionnaire was developed using frameworks for needs analysis developed by Hutchinson and Waters (1987), Moivaziri (2014), and Mallik and Alam (2018). It has three parts.

The first part collected basic background information and asked students to choose their main reasons for learning English. They could select more than one motivation, including meeting TOEIC requirements, improving workplace communication, preparing for academic study, or learning out of personal interest. The second part contained five Likert-scale items (1 = strongly disagree to 5 = strongly agree) that examined how well students felt the course supported their goals—for example, support for TOEIC preparation, academic and workplace literacy, real-life communication, and overall relevance to their learning needs. The third part focused on instructional support. Students rated how much support they received for listening, reading, speaking, writing, and grammar/vocabulary using a simple three-point scale (not supported enough, moderately supported, most supported).

In two open-ended questions, students were asked to express what they found most useful in the course, as well as what improvements they would like to see. The five Likert-scale items demonstrated strong internal consistency (Cronbach's $\alpha = .969$).

To complement the survey, the teacher-researcher also kept informal observation notes throughout the semester. These notes captured general patterns of participation, chances for interaction, and the balance between receptive and productive skills during lessons. No formal observation tool was used; the notes served as contextual background to help interpret the survey results.

The survey was administered online via Google Forms and stayed open for two weeks. Students were told what the study was about, and consent was included at the start of the form. Participation was voluntary and anonymous. The goal was simply to keep things open and pressure-free, so they'd feel at ease sharing their thoughts in their own way.

Data Analysis

Descriptive statistics were used to analyse the Likert-scale items and identify broad patterns in students' perceptions. To examine whether students with different learning goals perceived course support differently, Pearson correlation coefficients were calculated between their stated

goals (TOEIC, workplace, academic, and personal) and the five course alignment items. Open-ended responses were analysed using inductive thematic coding to identify recurring issues and suggestions. Observation notes were then used to cross-check how students' self-reported perceptions aligned with visible classroom practices.

4. Findings

Before presenting the survey results, internal consistency was checked for the five Likert-scale items related to course alignment. The analysis returned a Cronbach's alpha of .969, suggesting that students responded in a consistent and meaningful way across the items. The findings indicate that participants share a common understanding of course support and relevance.

RQ1: Students' English Learning Goals

The survey first asked students to select their main reasons for learning English, choosing from four common options: meeting TOEIC requirements, improving communication for work, preparing for academic study, and pursuing personal interest. Respondents could select more than one.

As shown in Table 1, the most commonly selected goal was improving communication for future employment (86.4%). This was followed by passing the TOEIC test for graduation (65%), academic purposes (53.1%), and personal motivation (32.9%). These findings reflect a blend of extrinsic and intrinsic motivations. Although institutional requirements remain a major driver, many students find English as a tool for future career success. This highlights a dual orientation: students are planning to meet immediate targets and preparing for longer-term goals.

Table 1. Students' Learning Goals (N = 286)

Learning goals	Frequency (n)	Percentage (%)
Improve communication for future job	247	86.4
Meet TOEIC requirements for graduation	186	65
Prepare for academic study	152	53.1
Support personal interest	94	32.9

RQ2: Students' Perceptions of Course Support

Students were asked to evaluate how well the general English course supported their learning goals. Five statements covered such topics as TOEIC preparation, academic literacy, practical communication, and overall relevance.

Table 2. Perceptions of Course Alignment with Learning Goals

Learning goals	Mean	95% CI
Improves TOEIC-related skills	3.81	[3.68, 3.93]
Prepares for academic/workplace reading and writing	3.81	[3.68, 3.94]
Reflects real-life speaking and listening	3.77	[3.64, 3.90]
Stays relevant to English learning goals	3.74	[3.61, 3.87]
Provides enough TOEIC-style practice	3.64	[3.51, 3.77]

Based on Table 2, the two highest-rated areas were "Improves TOEIC-related skills" and "Prepares for academic/workplace reading and writing," each receiving a mean score of 3.81 out of 5. This rating indicates how useful the course was for improving test preparation and academic language development. However, the lowest-rated item indicates that although students appreciated the general skill emphasis, they found the course lacked direct alignment with the TOEIC. Despite CEFR-aligned syllabuses, students require more exposure to the test's structure and rhythm.

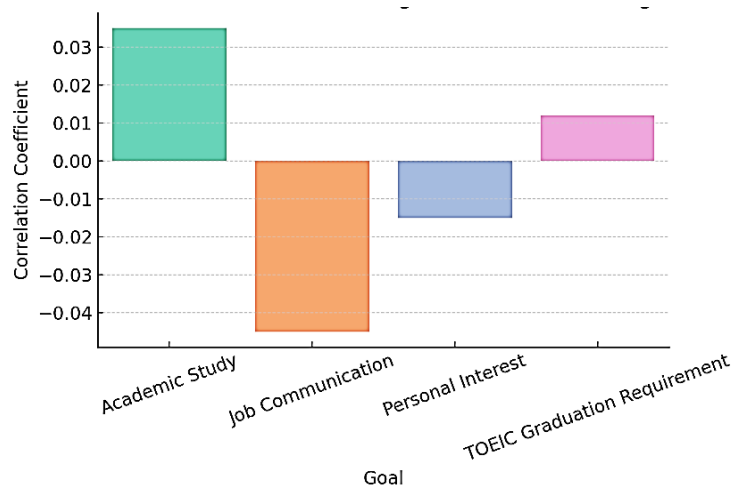


Figure 3. Correlation Between Course Alignment and Learning Goals

To explore whether students with different goals perceived the course differently, correlations were calculated between their stated goals and the five course alignment items. As shown in Figure 3, all correlations were weak, ranging from -0.045 to $+0.035$ (workplace communication: $r = -0.045$; TOEIC preparation: $r = 0.035$; academic study: $r = 0.018$; personal interest: $r = 0.012$).

Overall, these results indicate that students, regardless of their individual motivations, had broadly similar views about course support. Concerns about skill balance, limited practice with productive skills, and the need for more TOEIC-related preparation appeared consistently across groups rather than differing by learning goal.

RQ3: Students' Perceptions of Instructional Emphasis across Language Skills

To examine how students experienced skill instruction in the classroom, they rated five areas—listening, reading, speaking, writing, and grammar/vocabulary—on a three-point scale: not supported enough, moderately supported, or most supported.

As illustrated in Figure 4, Reading and Grammar/Vocabulary were the most positively rated, likely because they were regularly reinforced through textbooks, reviews, and test preparation. With regard to Listening, students reported a roughly equal number of positive and negative experiences. However, over half of the students rated Speaking and Writing as insufficiently supported skills. While these productive skills are included in the integrated-skills syllabus, little structured practice occurs in class.

The results reveal that test-focused environments place a high priority on receptive and form-based skills while ignoring expressive skills. A teaching imbalance is not the only cause of this

imbalance. The problem reflects deeper problems with the design of assessments and the management of classrooms.

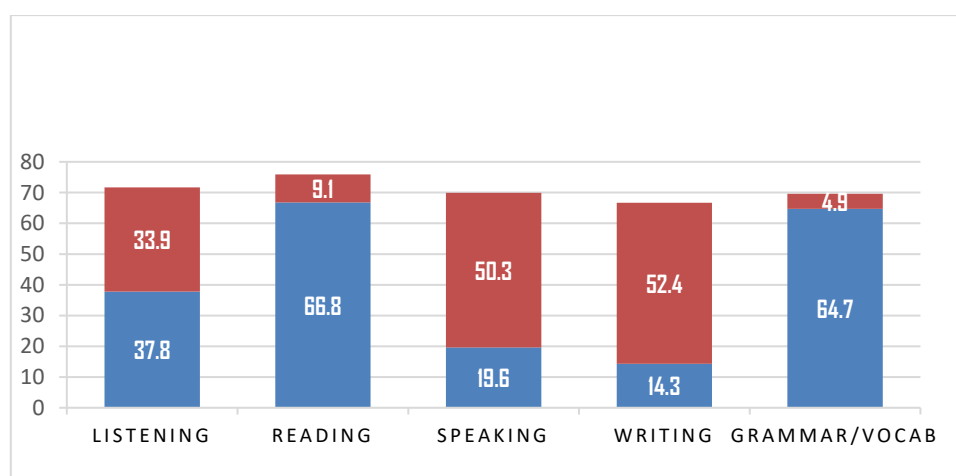


Figure 4. Students' Perceptions of Skill Support

RQ4: Students' Voices on Course Strengths and Suggestions

To better understand how students experienced the course, two open-ended questions invited them to reflect on (1) the most valuable aspects of their English classes and (2) suggestions for improvement. The responses were thematically coded and grouped into eight recurring focus areas, summarised in Table 3.

It has been noted that students often praise the course for the teacher's support, enthusiasm, patience and clarity. One student said, "My teacher's dedication and thorough approach of explaining things motivated me to learn throughout the class."

Others appreciated structured grammar and vocabulary reviews, real-life discussion activities, and collaborative group work—all of which contributed to a more engaging and enjoyable learning environment.

When asked how the course could be improved, many students expressed a desire for more structured practice in speaking and listening. Several mentioned that current lessons focused more on reading and grammar, with limited opportunities to practise real-time communication. Some learners also asked for more TOEIC-format mock tests, clearer test-taking strategies, and additional resources like handouts, videos, and mobile apps.

Structural concerns also emerged. A number of students highlighted time limitations, fast lesson pacing, and large class sizes as barriers to receiving personalised attention or feedback. Importantly, students were not simply asking for more materials or easier lessons. Many of their comments reflected thoughtful engagement with their learning process and a desire for instruction that was both practical and motivating.

Table 3. Summary of Open-Ended Responses

Focus Area	What Students Found Useful	What Students Suggested For Improvement
<i>Teacher Support</i>	Clear explanations, supportive atmosphere	Slower pace, more individual feedback

<i>Grammar Vocabulary</i>	Helpful review sessions	More applications in real-life contexts
<i>Skill Development</i>	Exposure to different skills	More structured tasks for speaking, writing, and listening
<i>Interactive Learning</i>	Group work, pair discussions	More peer interaction time
<i>TOEIC Preparation</i>	Language foundation for the test	More mock exams, strategy training
<i>Learning Materials</i>	Handouts, videos, websites	More TOEIC-targeted and digital resources
<i>Course Structure</i>	Effective reviews, organised lessons	Extended classroom time
<i>Personal Engagement</i>	Opportunities to participate	Smaller class sizes, more speaking turns

Overall, the comments presented here illustrate what students value most about the course and areas where they believe they are not receiving adequate support. In addition to preparing for exams, learners also want to interact with their instructors, receive more precise explanations, and have the opportunity to apply their knowledge and skills. In their feedback, it appears that the course delivery and teaching quality have equal significance with the material.

5. Discussion

This study explored how non-English-major students at a Vietnamese university perceive the relevance of their general English course, particularly in relation to TOEIC preparation and real-world communication. The findings reveal that although students generally held positive views of the course, their priorities and perceived demands show a more complex picture than standardised curricula often account for.

RQ1- Students' Learning Goals and Shifting Motivations

In general, most students are motivated to learn English by both extrinsic and intrinsic factors. While many students emphasised their motivation for meeting TOEIC requirements to complete their graduation requirements, others emphasised their motivation for future employment and academic success. These findings are in line with those of Nguyen and Hamid (2015), who discovered that Vietnamese students tend to approach English pragmatically, seeing it as both a certificate and a tool.

This dual focus reflects a broader tension: students must meet immediate benchmarks while also preparing for future communication needs. For course designers, this raises an important issue: how can we support both goals without one overshadowing the other?

RQ2 & RQ3– Course Relevance, Skill Support and Learners' Engagement

Most students found the course to be helpful for reading-based assignments and academic writing. Correlation analysis showed that these perceptions were consistent across students with different learning goals, with all coefficients close to zero. This suggests that the instructional approach shaped students' experiences more strongly than their individual motivations did.

Such patterns suggest a familiar type of misalignment. Although the CEFR-based curriculum promotes integrated skill development, students experience a reality where test-oriented

instruction still dominates. Importantly, this experience was not limited to test-focused students but was shared broadly across the cohort, indicating that structural factors, such as assessment design and time allocation, shape classroom practices more powerfully than individual student preferences.

Additionally, students had different perceptions regarding the adequacy of listening support. It can be explained by Moivaziri's study (2014), which indicates that students may perceive listening differently due to the method of instruction and the identity of the teacher. When test preparation takes precedence, opportunities for interaction naturally diminish. If the assessment process does not reflect students' need for productive skills, they may not prioritise them, resulting in a surface-level engagement.

RQ 4 – Course Strengths and Suggestions for Improvement

There were concerns raised by students regarding the balance between skills and assessments. In addition, the teacher's approachability, enthusiasm, and ability to explain complex concepts in an understandable way positively influenced their experience. In other words, while the course content may seem limited, the course delivery makes a significant impact. According to Tomlinson (2023), the effectiveness of teaching materials depends on how they are implemented in the classroom. In this way, a teacher's personal touch can help overcome structural challenges.

When asked for suggestions, students were clear and consistent. Many wanted more structured opportunities to practise speaking and listening, especially in formats that resembled TOEIC tasks. Others asked for more mock tests, strategy training, and digital resources to support their self-study. Many responses also pointed to broader constraints—such as large class sizes, fast pacing, and limited feedback—as ongoing challenges to participation.

What stands out in these responses is not a desire to simplify the course but a request to make it more relevant and responsive. Students appeared to understand their learning gaps and offered practical solutions. This reflects what Hutchinson and Waters (1987) describe as learners' "lack"—the space between what students are expected to do and what they feel equipped to do. Addressing these gaps does not require a complete curriculum overhaul but thoughtful adjustments that allow interaction, strategy-building, and more personalised instruction.

These findings suggest that while learners appreciate structured, CEFR-aligned instruction, they also want more room for active language use. If communicative tasks are consistently under-prioritised in assessments, students may disengage from precisely the skills they need most in their future lives.

6. Implications

This study provides practical implications for improving general English instruction in test-oriented university contexts.

Rebalancing Assessment to Reflect Skill Development

At the research site, 60% of the course result is based on midterm and final exams, which focus mainly on reading and grammar. This has resulted in less emphasis on productive skills in the

classroom and in assessments. To address this imbalance, institutions may consider reallocating part of the grade to include performance-based tasks such as presentations, group discussions, or writing assignments. Even assigning 20–30% of the total grade to these areas would send a stronger signal of the importance of these skills as well as encourage more consistent student engagement across the board.

Creating More Flexibility for Teachers

Despite the appreciation for their instructors' efforts, students in the study expressed frustration with the one-size-fits-all curriculum. To align policy with practice, it may be considered to allow teachers more flexibility in designing classroom activities and incorporating TOEIC-style activities into classroom activities. Within the current framework, small adjustments can facilitate more communicative and engaging learning environments, such as providing practice workshops or allocating more time for peer interaction.

Supporting Participation in Large Classes

Students repeatedly mentioned class size and time pressure as obstacles to active participation. It may not be feasible to reduce class size, but there are alternative methods for encouraging more interaction. By incorporating small-group projects, peer feedback exercises, or asynchronous speaking assignments via online platforms, students have a greater opportunity to practice and receive feedback.

Aligning Curriculum with TOEIC Progression

The current program tends to prioritise receptive skills in the early semesters, while productive skills are delayed until later stages or left to self-practice. However, many students now prepare for TOEIC Listening and Reading in their second or third year, and submit their scores well before graduation. It would be beneficial to integrate speaking and writing earlier in the curriculum, through scaffolded, low-stakes tasks, in order to better reflect real-life communication needs and reduce skill gaps. Additionally, learners at different stages could benefit from optional TOEIC preparation modules, writing clinics, or guided speaking workshops.

Rethinking Institutional Policy and Assessment Design

The findings show that some of the challenges students face cannot be solved at the classroom level alone. While individual teachers can adapt their classroom practices, more meaningful change requires institutional support and clearer alignment between curriculum goals and assessment practices.

A key issue is the current role of TOEIC as both a graduation requirement and a measure of programme quality. When one test carries this much weight, it naturally pushes teaching and learning toward test performance rather than communicative ability. Institutions may need to reconsider how proficiency is assessed so that productive skills are valued alongside standardised test scores. Options such as portfolio-based assessments or workplace simulation tasks could offer alternative ways for students to demonstrate readiness for professional communication.

In addition, universities might consider offering structured preparation modules to complement rather than replace TOEIC as an exit benchmark. This approach would give students access to test-taking strategies without reducing opportunities for authentic language use.

Curriculum flexibility is another area for reconsideration. Allowing departments to allocate even 20–30% of course time for context-responsive activities would give teachers more space to address gaps in speaking and writing while still maintaining programme coherence.

Finally, programme success should be evaluated beyond test pass rates. Tracking outcomes, such as students' confidence in workplace communication and employer feedback, would provide a more realistic picture of how well the programme supports learners' long-term goals.

Overall, as a result of the tensions identified in this study, it is necessary to reconsider how proficiency is defined and assessed at the institutional level so that policy decisions can be better aligned with the students' communication needs in real-world situations. This also fits within ongoing national efforts under the NFLP and CEFR-oriented reforms, highlighting the need to revisit test-based exit policies so they support, not limit, students' broader communicative development.

Encouraging Responsible and Reflective AI Use

As students increasingly turn to AI tools for writing support, institutions may need to move beyond restriction and consider guidance. Incorporating short reflection tasks, such as asking students to edit or explain AI-generated output, can promote academic integrity while building critical digital literacy. More in-class writing activities and personalised feedback could also help shift focus back to students' authentic language development.

7. Conclusion

This study explored how non-English-major students at a Vietnamese university view their general English courses, especially in terms of preparing for the TOEIC and future work. Although students appreciated the structured focus on grammar and reading, they felt that speaking and writing were not given enough attention. This reveals a clear gap between what the course provides and what students actually need to succeed.

Even though the program follows CEFR guidelines, some important skills still seem to be left out, especially in how students are assessed. That said, the students weren't passive. They engaged with the course, shared honest feedback, and gave down-to-earth ideas for how things could improve: more speaking, better balance, clearer links to real communication.

Of course, this was just one university, and classroom observations weren't formally coded, so there are limits to how far the results can be applied. But the concerns students raised, like skill imbalance, test pressure, and limited space for real use of English, are likely common in other places too.

Research in the future could expand on these questions by investigating how students at other universities perceive these issues. This could include incorporating teachers' perspectives or observing how learners utilise AI tools in their English learning journeys. Even within systems

heavily influenced by standardised testing, these approaches could foster the development of more flexible, student-centred teaching methods.

References

- Bailey, K. M. (1996). Working for washback: A review of the washback concept in language testing. *Language Testing*, 13(3), 257–279. <https://doi.org/10.1177/026553229601300303>
- Benesch, S. (2001). *Critical English for academic purposes: Theory, politics, and practice*. Lawrence Erlbaum Associates.
- Benesch, S. (2012). *Considering emotions in critical English language teaching: Theories and praxis*. Routledge.
- Brinkworth, R., McCann, B., Matthews, C., & Nordström, K. (2009). First year expectations and experiences: Student and teacher perspectives. *Higher Education*, 58, 157–173. <https://doi.org/10.1007/s10734-008-9188-3>
- Bui, T. T. H., & Nguyen, H. T. M. (2016). Standardising English for education and socio-economic better? A critical analysis of English language policy reforms. In R. Kirkpatrick (Ed.), *English Education Policy in Asia* (pp. 143–164). Springer. Retrieved from <https://www.academia.edu/5976302/>
- Byrne, M., & Flood, B. (2005). A study of accounting students' motives, expectations and preparedness for higher education. *Journal of Further and Higher Education*, 29(2), 111–124. <https://doi.org/10.1080/03098770500103176>
- Cheng, L., & Curtis, A. (2012). Test impact and washback: Implications for teaching and learning. In C. Coombe, P. Davidson, B. O'Sullivan, & S. Stoyneff (Eds.), *The Cambridge guide to second language assessment* (pp. 89–95). Cambridge University Press.
- Darlaston-Jones, D., Cohen, L., Haunold, S., Pike, L., Young, A., & Drew, N. (2003). Are they being served? Student expectations of higher education. *Issues in Educational Research*, 13(1), 31–52.
- Eslami, Z. R. (2010). Teachers' voice vs. students' voice: A needs analysis approach to English for academic purposes (EAP) in Iran. *English Language Teaching*, 3(1), 3–11. <https://doi.org/10.5539/elt.v3n1p3>
- Graves, K. (2000). *Designing language courses: A guide for teachers*. Heinle & Heinle.
- Green, A. (2007). *IELTS washback in context: Preparation for academic writing in higher education*. Cambridge University Press.
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge: Cambridge University Press.
- Kaur, S. (2007). ESP course design: Matching learners' needs to aims. *English for Specific Purposes World*, 3(16), 1–9.
- Khawaja, N. G., & Dempsey, J. (2008). A comparison of international and domestic tertiary students in Australia. *Australian Journal of Guidance and Counselling*, 18(1), 30–46. <https://doi.org/10.1375/ajgc.18.1.30>

Mallik, S., & Alam, M. M. (2018). Needs analysis in language curriculum design and EAP at the tertiary level. *BELTA Journal*, 2, 54–67. <https://doi.org/10.36832/beltaj.2018.0201.05>

Moiinvaziri, M. (2014). Students' Voice: A Needs Analysis of University General English Course in Iran. *GEMA Online Journal of Language Studies*, 14, 57–75. <http://doi.org/10.17576/GEMA-2014-1401-05>

Na, Z. (2007). A study of high school students' English learning anxiety. *The Asian EFL Journal*, 9(3), 22–34.

Nation, I. S. P., & Macalister, J. (2010). *Language curriculum design*. Routledge.

Ngoc, K. M., & Iwashita, N. (2012). A comparison of learners' and teachers' attitudes toward communicative language teaching at two universities in Vietnam. *University of Sydney Papers in TESOL*, 7, 25–49.

Nguyen, H., & Gu, Y. (2020). Impact of TOEIC Listening and Reading as a University Exit Test in Vietnam. *Language Assessment Quarterly*, 1-21. <http://doi.org/10.1080/15434303.2020.1722672>

Nguyen, T. M. H. (2011). Primary English language education policy in Vietnam: Insights from implementation. *Current Issues in Language Planning*, 12(2), 225–249.

Nguyen, V. H., & Hamid, M. O. (2015). Educational policy borrowing in a globalised world: A case study of the Vietnamese policy of foreign language competence. *English Teaching: Practice & Critique*, 14(1), 60–74. <https://doi.org/10.1108/ETPC-02-2015-0014>

Nhan, T. (2013). The TOEIC® test as an exit requirement in universities and colleges in Danang City, Vietnam: Challenges and impacts. *International Journal of Innovative Interdisciplinary Research*, 2(1), 33–50.

Pan, Y.-C., & Newfields, T. (2012). Tertiary EFL proficiency graduation requirements in Taiwan: A study of washback on learning. *Electronic Journal of Foreign Language Teaching*, 9(1), 108–122.

Pan, Y. C. (2015). Test impact: English certification exit requirements in Taiwan. *TEFLIN Journal*, 20(2), 119–139.

Perera, H. N., Watters, J. J., & McCormick, J. (2008). University students' expectations and experience: What matters most? *Journal of Further and Higher Education*, 32(4), 337–351. <https://doi.org/10.1080/03098770802373049>

Pham, T. N., & Bui, L. T. P. (2019). An exploration of students' voices on the English graduation benchmark policy across Northern, Central and Southern Vietnam. *Language Testing in Asia*, 9(1), 1–21. <https://doi.org/10.1186/s40468-019-0091-x>

Prime Minister of SRV. (2008). Teaching and Learning Foreign Languages in the National Education System, Period 2008-2020. Issued under Decision No. 1400/QĐ-TTg. <https://thuvienphapluat.vn/van-ban/Giao-duc/Quy-et-dinh-1400-QD-TTg-phe-duyet-de-an->

day-va-hoc-ngoai-ngu-trong-he-thong-giao-duc-quoc-dan-giai doan-2008-2020-71152.aspx
Accessed 20 February 2025.

Richards, J. C. (2001). *Curriculum development in language teaching*. Cambridge University Press.

Robinson, P. C. (1991). *ESP today: A practitioner's guide*. Prentice Hall.

Ryan, R. M., & Weinstein, N. (2009). Undermining quality teaching and learning: A self-determination theory perspective on high-stakes testing. *School Field*, 7(2), 224–233.

Shohamy, E. (2014). *The power of tests: A critical perspective on the uses of language tests*. Routledge.

Stecher, B. (2010). Performance assessment in an era of standards-based educational accountability. Stanford Centre for Opportunity Policy in Education.
https://edpolicy.stanford.edu/sites/default/files/publications/performance-assessment-era-standards-based-educational-accountability_0.pdf

Su, Y.-C. (2005). EFL students' perceptions of English proficiency graduation requirement in a technological university in Taiwan. *Electronic Journal of Foreign Language Teaching*, 2(2), 210–221.

Tomlinson, B. (2023). *Developing materials for language teaching*. Bloomsbury Publishing.

Tran, T. T. (2013). Factors affecting teaching and learning English in Vietnamese universities. *The Internet Journal Language, Culture and Society*, 38(1), 138–145.

Tran, L. T., & Marginson, S. (2018). *Internationalisation in Vietnamese higher education*. Springer.

Tsai, Y., & Tsou, C. H. (2009). A standardised English language proficiency test as the graduation benchmark: Student perspectives on its application in higher education. *Assessment in Education: Principles, Policy & Practice*, 16(3), 319–330.

Watanabe, Y. (2004). Teacher factors mediating washback. In L. Cheng, Y. Watanabe, & A. Curtis (Eds.), *Washback in language testing: Research contexts and methods* (pp. 129–146). Lawrence Erlbaum Associates.

Effect of Inquiry-based Learning on Students' Critical Thinking: A Meta-analysis

ABSTRACT

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Recognizing that previous studies have yielded mixed results, this meta-analysis seeks to assess the overall impact of inquiry-based learning (IBL) models on learners' critical thinking skills while also examining the consistency of these outcomes through sensitivity analysis and evaluation of publication bias. A total of 23 effect measures were analyzed from 23 empirical studies published between 2016 and 2025, involving approximately 2,500 participants from various educational backgrounds. The results of the study show that the application of inquiry-based learning has a strong and meaningful influence on students' critical thinking skills. In general, the findings of the study showed consistent differences between the studies analyzed, but the results remained stable despite retesting of the extreme data. Despite indications of publication bias, the influence of inquiry-based learning was still significant after adjustments, thus reinforcing the conclusion that this approach is effective in improving students' critical thinking skills. These findings suggest that IBL is effective in improving critical thinking skills by activating key cognitive processes, such as analysis, inference, and evaluation, and is worthy of wider adoption in 21st-century learning curricula.

Keywords: Inquiry-Based Learning; Critical Thinking; Meta-analysis.

1. Introduction

21st-century education requires students to have critical thinking skills as a provision to face the challenges of a complex and dynamic era. According to Antonio and Prudente (2023), critical thinking is the main requirement for students to solve problems independently, make logical decisions, and objectively assess information in various life situations. The need for these skills has increased significantly because the world of education is currently facing the reality of VUCA (Volatility, Uncertainty, Complexity, dan Ambiguity) which is characterized by an unstable, uncertain, complex, and ambiguous condition (Ey et al., 2021; Seevaratnam et al., 2023; Velazquez, 2024). This situation highlights the importance of critical thinking skills as a vital instrument for survival and rational adaptation in an era of uncertainty.

Critical thinking represents a logical and reflective process of reasoning that determines what is worthy of belief or action. Karakuş (2024) and Quinn et al. (2020) categorize critical thinking skills into two main dimensions: the cognitive dimension and the dispositional dimension. The Cognitive dimension encompasses the ability to analyze, evaluate, and make inferences, while the dispositional dimension is characterized by open-minded, systematic thinking and a confident attitude in decision-making. Finn (2011) and Liu and Pásztor (2022) emphasize that critical thinking skills are the foundation of scientific literacy that is indispensable in evidence- and data-driven decision-making. This skill is a crucial foundation for students to understand problems and respond appropriately and thoroughly.

Research on learning conditions in schools indicates that students' critical thinking skills have not developed optimally. Suryono et al. (2023) and Suyitno et al. (2024) found that the use of conventional learning models and the dominance of expository methods are the main inhibiting factors in the development of critical thinking skills in the school environment. Sharma et al (2023) revealed that the limitation of active interaction in the learning process and the lack of investigation-based learning strategies have a direct impact on the low quality of students' critical thinking, especially at the higher education level. These findings confirm that challenges in the development of critical thinking stem not only from students but also from pedagogical practices that have not undergone substantial transformation (Okolie et al., 2021; Simonovic et al., 2023).

The Inquiry-Based Learning (IBL) approach makes a significant contribution to the development of students' critical thinking skills. Abaniel (2021) and Antonio and Prudente (2023) state that the IBL approach encourages learners to be actively involved in formulating questions, exploring phenomena, analyzing evidence, and drawing conclusions independently. This process allows learners to form a deeper conceptual understanding through reflective and dialogical thinking activities. Explained that the application of IBL creates space to develop logical reasoning and evaluative skills, so that students not only understand information on the surface but also can weigh arguments and evidence critically (Liu & Pásztor, 2022; Martino et al., 2025; Rafiq et al., 2023). Alarcón et al. (2023) and Sharma et al. (2023) confirm that IBL contributes to the improvement of the ability to evaluate arguments and construct scientific knowledge.

Findings from various studies indicate that the application of IBL has a positive impact on enhancing the quality of students' critical thinking. Sharma et al (2023) emphasize that the IBL approach strengthens students' ability to think systematically and draw rational conclusions, especially in the context of inquiry-based learning. Suryono et al. (2023) stated that IBL encourages students to be more active in the learning process, thereby creating intensive

cognitive interaction between students and the problem being studied. Thus, IBL can be considered a relevant pedagogical approach to strengthen critical thinking skills in a learning environment that demands active participation and a deep understanding of knowledge. The demands of students who have engaged in IBL learning should align with theoretical policies and practical applications in education, ensuring they are consistent with student-centered learning as outlined in the national education policy, which emphasizes adaptability, contextuality, and a focus on the optimal development of students' potential. In addition, Sharma et al (2023) research and Suryono et al. (2023) adopted a meta-analysis approach. In the results, it is shown that the study explains the effectiveness of a literature study using a meta-analysis approach.

Meta-analysis is a relevant approach for comprehensively synthesizing the results of diverse research studies. Antonio and Prudente (2023) state that meta-analyses can collect and analyze effect measures from various primary studies to obtain a stronger, more objective, and generalizable overview. Liu and Pásztor (2022) emphasize that this approach allows researchers to assess the effectiveness of IBL in aggregate while evaluating factors that moderate its influence on students' critical thinking skills.

The synthesis of research results is needed to provide a comprehensive picture of the effectiveness of inquiry-based learning on students' critical thinking skills. States that meta-analyses can collect and analyze effect measures from various primary studies in a systematic manner. Liu and Pásztor (2022) affirm that meta-analytic approaches yield stronger, more objective, and generalizable estimates across different educational contexts.

This research is motivated by the need for measurable evidence on the effectiveness of inquiry-based learning in improving students' critical thinking skills. Several previous studies have shown positive results; however, there is no comprehensive synthesis that presents a thorough estimate of the effects and can serve as a basis for evidence-based education policies. The novelty of this study lies in a meta-analysis that comprehensively collects and evaluates the effect measure, accompanied by sensitivity tests and the detection of publication bias to ensure the stability and validity of the findings. This study aims to synthesize the effectiveness of inquiry-based learning on students' critical thinking skills in aggregate using a meta-analysis approach. These objectives include the overall estimation of effect sizes, testing the stability of the results through the analysis of sensitivity to extreme studies, and identifying possible publication bias in the analyzed studies. This study also ensures that the effect size produced is robust and not distorted by asymmetrical data distribution.

The research questions formulated in this study focus on two main aspects.

- The first research question: How does inquiry-based learning affect students' critical thinking skills based on the results of an effect measure meta-analysis?
- The second research question: How do the results of inquiry-based learning meta-analysis affect students' critical thinking skills through funnel plot procedures, Egger's test, trim and fill, and sensitivity analysis?

First, the extent to which inquiry-based learning influences students' critical thinking skills is determined by the results of the meta-analysis of the effect measure. Second, the stability and robustness of the meta-analysis results are evaluated, including an assessment of potential outliers and indications of publication bias, which are examined through funnel plot procedures, Egger's test, trim and fill, and sensitivity analysis.

2. Literature

Definition of inquiry-based learning (IBL)

The development of students' critical thinking skills requires a learning model that encourages the process of investigation, exploration, and reasoning. Duran and Dökme (2016) stated that Inquiry-Based Learning (IBL) is a practical approach in improving students' critical thinking skills in science subjects. The IBL approach emphasizes scientific inquiry activities that require students to ask questions, analyze data, and draw conclusions based on systematic observations and evidence. The research shows that inquiry-based learning activities have a positive impact on improving students' analysis, evaluation, inference, interpretation, explanation, and self-organization skills.

Characteristics of IBL

IBL offers students the opportunity to engage in an active and reflective learning process. Hwang and Chen (2016) stated that the integration of IBL in digital game-based learning design can improve students' motivation, problem-solving, and critical thinking tendencies. Their study confirms that the use of technology and contextual scenarios encourages students to engage in field observation, information search, and reflection on real phenomena. These findings suggest that the effectiveness of IBL increases when associated with an authentic learning environment that brings students closer to real-life situations.

Other research shows that combining the IBL approach with the local cultural context can strengthen critical thinking achievements. Verawati et al. (2022) developed an inquiry-creative learning model that integrates ethnoscience to enhance the critical thinking skills of prospective science teachers. The research indicates that incorporating ethnoscience into learning creates a more meaningful learning experience, as it connects scientific knowledge with students' cultural values and the context of their lives. The measurement results showed significant improvements in all critical thinking indicators, including analysis, inference, evaluation, and decision-making.

The IBL model has different characteristics from traditional learning. Duran and Dökme (2016) compared the two approaches and found that inquiry-based learning is superior in encouraging student active participation, developing cognitive structures, and improving learning outcomes. Inquiry learning positions students as problem solvers, whereas traditional learning positions them as passive recipients of information. This difference has a direct impact on the effectiveness of learning in developing higher-level thinking skills.

Relevant research supporting the IBL model

Several studies have identified variations in the implementation of the IBL model, including guided inquiry and free inquiry. Colburn (2000) states that in guided inquiry, the teacher provides initial direction in the process of formulating questions, while students design their procedures and draw conclusions based on data. This model strikes a balance between student autonomy and the instructional guidance necessary for the development of critical thinking. Duran and Dökme (2016) applied the guided inquiry approach and proved its effectiveness in improving student performance on the overall critical thinking indicator.

Research on the integration of IBL approaches with technology-based or culture-based learning elements remains limited and warrants further exploration. Verawati et al. (2022) emphasized that learning practices that are not holistic and ignore local wisdom often hinder the growth of students' critical reasoning. Therefore, the development of an IBL model that is adaptive to the social and cultural context of students is an essential aspect of learning innovation that encourages optimal critical thinking skills.

3. Methods

Research Approach

This study uses a meta-analysis approach as a quantitative synthesis strategy to evaluate the effectiveness of the Inquiry-Based Learning (IBL) learning model on students' critical thinking skills. This approach is used to obtain a comprehensive, accurate, and generalizable estimate of effect size based on various primary studies published between 2016 and 2025, with the selection of articles presented according to the PRISMA ALIR guidelines. PRISMA ALIR is a guide tool or framework used to conduct research on systematic reviews and meta-analysis. PRISMA ALIR stands for Preferential Reporting Items for Systematic Reviews and MetaAnalyses. Flowcharts, which map the number of records identified, included, and excluded, as well as the reasons why they were excluded, are used to illustrate the flow of information through the different phases of the systematic review (Page et al., 2021). The meta-analysis was chosen because it allows the collection and review of dispersed empirical results, as well as allows researchers to conduct systematic moderator analysis and test publication bias as seen in Figure 1.

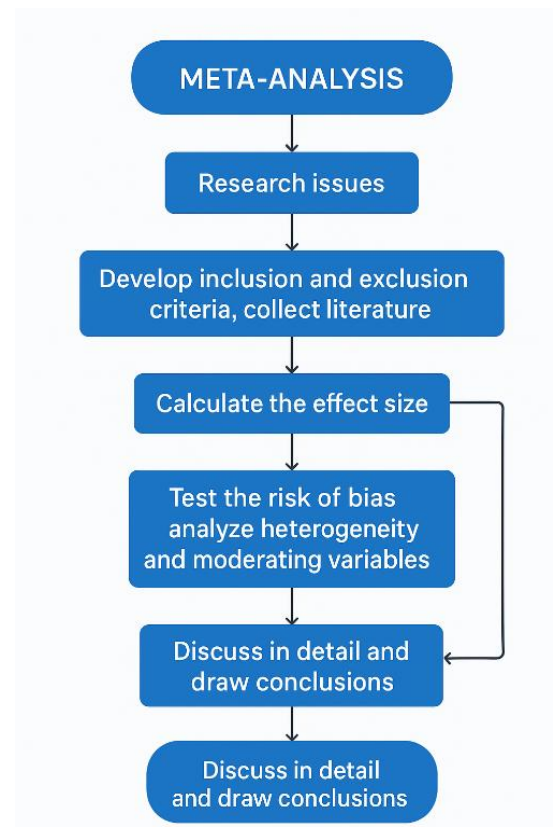


Fig 1: The Research Framework

Literature Search

The researcher conducted a systematic literature search to identify relevant articles about the influence of the Inquiry-Based Learning (IBL) learning model on students' critical thinking skills. The search was focused on one international scientific database, Scopus, as it provides a collection of reputable academic journals relevant and verified in the field of education and learning psychology.

The search is performed using the search string: TITLE (inquiry AND critical AND thinking) AND (LIMIT-TO(DOCTYPE, "ar")) AND (LIMIT-TO(LANGUAGE, "English")). The keyword is designed to find articles that explicitly list key terms in the title. The researcher only included articles in the form of journal articles and written in English to ensure the validity and comparability of the data.

The researchers established five inclusion criteria to filter out relevant articles. Included articles must explicitly include the terms Inquiry-Based Learning and critical thinking, report on the results of quantitative research, use experimental or quasi-experimental design, be available in full text versions, and be written in English. The researcher also searched the bibliography of the selected articles to find additional references that might be relevant. This process generates an initial number of articles, which are then further screened.

Researchers evaluate each article based on its title, abstract, method, and results section. Articles that did not empirically test the influence of IBL on critical thinking skills were excluded. Literature review articles, theoretical articles, qualitative studies, and studies that do not report sample size or statistical data, such as standard deviation, *t*, *F*, or *p*-value, are also excluded from the analysis. Studies using a single-group pretest-posttest or survey design without a comparison group were also excluded. This procedure resulted in 23 articles that met the selection criteria and provided 23 independent effect measures to be analyzed in this study, as shown in PRISMA Figure 2.

Participants and Sampling

In the meta-analysis, there are no specific rules or requirements regarding the number of literature articles; however, the selection was adjusted to focus on literature articles related to the keyword learning inquiry, resulting in 23 articles. The analyzed study involved a total of 23 articles published between 2016 and 2025. Participants included students from various educational levels, ranging from elementary school to college. The total number of participants from all studies who met the inclusion criteria was approximately 2,500 students. The sample size of each study ranged from 21 to 103 participants per group. All participants were research subjects from either the experimental group, which used the IBL learning model, or the control group, which used the non-IBL learning method.

Inclusion and Exclusion Criteria

Inclusion criteria are established to ensure that only studies relevant to the analysis and meeting the quality standards are included. Studies should use experimental, quasi-experimental, or pretest-posttest designs that explicitly implement the IBL model. Studies should also measure critical thinking skills as a primary dependent variable, and provide quantitative data that contain information allowing for the calculation of effect sizes (e.g., mean, standard deviation,

t-value, F-value, or p-value). Participants in the study must be from primary, secondary, or higher education.

In contrast, studies that are qualitative or descriptive, without quantitative data, those that do not focus on critical thinking skills, articles that only describe the IBL model without outcome measurement, as well as previous literature reviews or meta-analysis articles, are excluded from the analysis process.

Coding Schema

The researcher established a variable coding scheme for each selected article based on the theoretical framework and focus of the meta-analysis study. The encoded variables included the type of Inquiry-Based Learning approach, the critical thinking construct measured, the type of critical thinking assessment instrument, the role of the teacher in the experimental group, the kind of instruction of the control group, the duration of the intervention, the level of education of the participants, the country of origin of the research, the year of publication, the type of publication, the name of the author, and the sample size which can be seen in table 1.

The types of IBL are categorized into two kinds, namely guided inquiry and open inquiry. The guided approach places the teacher as a facilitator who provides the initial structure, while the open approach allows students to design the entire investigation process independently. Critical thinking constructs are grouped into two categories based on Facione (1990), namely skill-based and disposition-based. Measurement instruments are coded as original (compiled by researchers), validated (has been tested for validity in other studies), or standardized (using standard tools such as CCTST, WGCTA, or CCTDI).

The role of teachers in the experimental group was recorded based on the presence of instructional assistance, with a code of "yes" indicating the presence of the aid and "no" indicating complete independence. The types of instruction in the control group were categorized as active (e.g., guided discussions or experiments), passive (such as lectures), mixed, or no intervention. The duration of the intervention was recorded in minutes as a continuous variable.

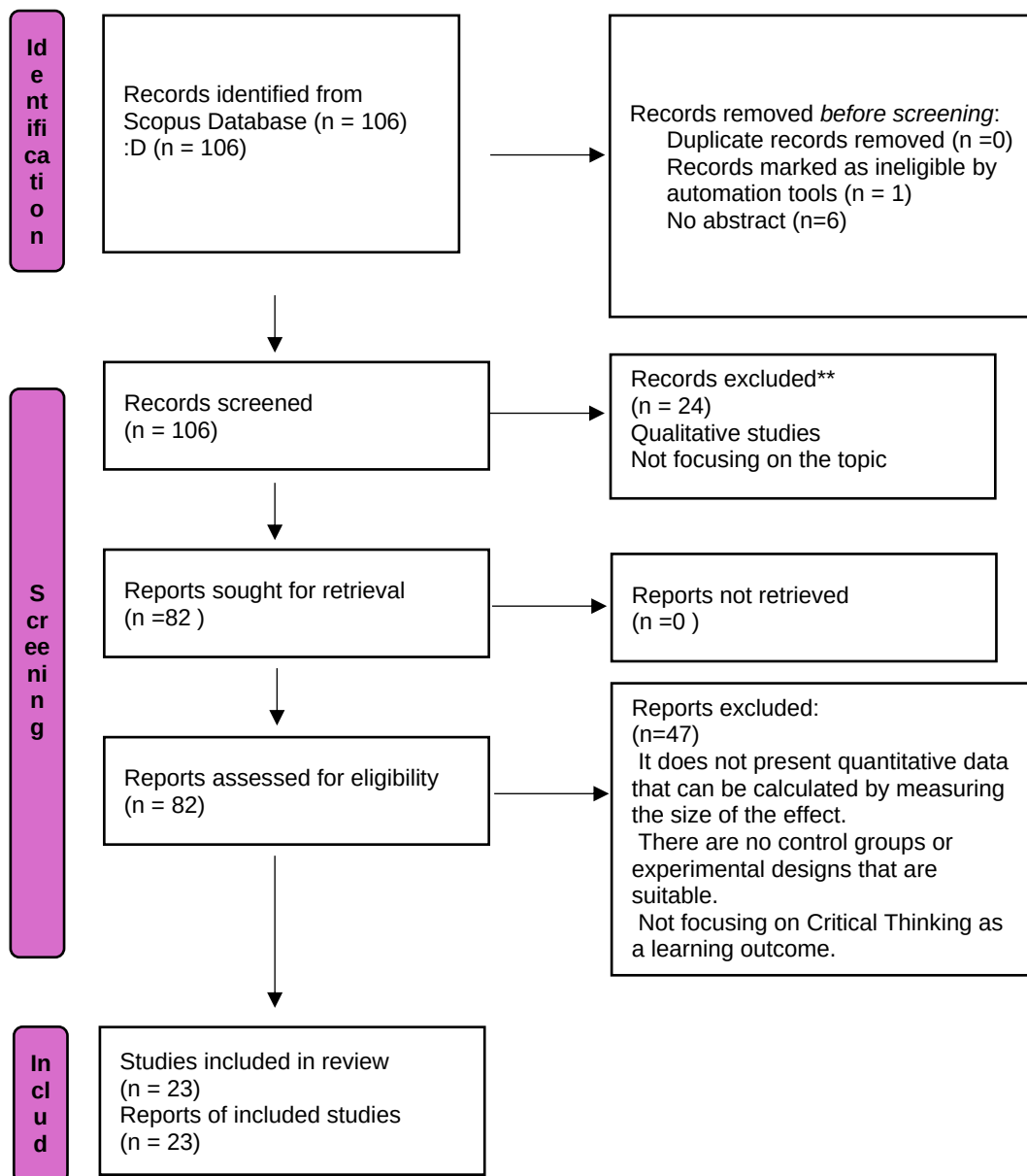


Fig 2: Flow Diagram PRISMA Inquiry on Critical Thinking

Table 1: Studies Included in this meta-analysis

Study Name	Year	Types of Inquiry	Critical thinking category	Instrument Type	The role of teachers
(Aditya et al., 2022)	2022	guided inquiry	Skill Based	Validated	active
(Yasa et al., 2024)	2024	guided inquiry	Skill Based	Validated	active
(Hwang & Chen, 2017)	2017	guided inquiry	Skill Based	Validated	active
(Hairida, 2016)	2016	guided inquiry	Skill Based	Validated	active
(Irwanto, 2023)	2023	guided inquiry	Skill Based	Validated	active
(Duran & Dökme, 2016)	2016	guided inquiry	Skill Based	Validated	active
(Harjono et al., 2025)	2025	guided inquiry	Skill Based	Validated	active

(Wahyudi et al., 2019)	2019	guided inquiry	Skill Based	Validated	active
(Putu Verawati et al., 2022)	2022	guided inquiry	Skill Based	Validated	active
(Rafiq et al., 2023)	2023	guided inquiry	Skill Based	Validated	active
(Prayogi et al., 2023)	2023	guided inquiry	Skill Based	Validated	active
(Prayogi et al., 2024)	2024	guided inquiry	Skill Based	Validated	active
(Sari et al., 2021)	2021	guided inquiry	Skill Based	Validated	active
(Perdana et al., 2020)	2020	guided inquiry	Skill Based	Validated	active
(Prayogi et al., 2022)	2022	guided inquiry	Skill Based	Validated	active
(Low, 2024)	2024	guided inquiry	Skill Based	Validated	active
(Suwono et al., 2023)	2023	guided inquiry	Skill Based	Validated	active
(Irwanto et al., 2019)	2019	guided inquiry	Skill Based	Validated	active
(Van Brederode et al., 2020)	2020	guided inquiry	Skill Based	Validated	active
(Wale & Bishaw, 2020)	2020	guided inquiry	Skill Based	Validated	active
(Lu et al., 2019)	2019	guided inquiry	Skill Based	Validated	active
(Dewi et al., 2021)	2021	guided inquiry	Skill Based	Validated	active
(Yuliarti et al., 2023)	2023	guided inquiry	Skill Based	Validated	active

Meta Analysis Process

This meta-analysis aims to determine the overall effect size of the Inquiry-Based Learning (IBL) learning model on students' critical thinking skills. The analysis process involves calculating the size of the aggregate effect and testing the moderator variables based on the study's characteristics. The researcher used Comprehensive Meta-Analysis (CMA) software, version 3.3, to calculate the effect size and execute the entire statistical procedure.

The effect size calculation was performed using Hedges' g as a correction for the standard effect size in small samples. The researcher calculated the standardized mean difference using sample size, mean value, and standard deviation data in each group.

Homogeneity tests were performed to assess the extent to which the effect sizes between studies were uniform or heterogeneous. The results of the Q test showed significant values ($Q = 515.68$; $p < 0.001$), and the I^2 index exceeded 75%, indicating a high degree of heterogeneity between studies. Therefore, the researcher used a random-effects model to calculate the size of the aggregate effect and proceeded to the moderator analysis stage. For moderators in the form of categorical variables such as education level and type of inquiry, the researcher used a subgroup analysis technique. For continuous moderator variables such as sample size and year of publication, the researchers used meta-regression.

The researchers also tested for the possibility of publication bias using funnel plots and fail-safe number calculations. The results of the plot funnel visualization showed an asymmetrical pattern of effect distribution, while the fail-safe number value did not exceed the minimum limit of $5k + 10$ (with k = number of studies), indicating a potential publication bias (Rothstein et al., 2005). To adjust the bias, the researcher applied the trim-and-fill method. However, the researchers also consider that this method may result in false corrections in the event of extreme variability between studies or when the relationship between sample size and effectiveness is inverse. Therefore, selection modelling is used as an additional approach to adjust for the possibility of publication bias, as recommended (Terrin et al., 2003).

4. Result

Descriptive Statistics

A total of 23 articles published between 2016 and 2025 resulted in 23 independent effect measures; about 2,500 participants were involved; sample sizes varied between 21 and 103 participants per group; and the effect size ranges from 0.000 to 9.817. As shown in the forest plot (Figure 2), the two studies produced substantial effect sizes (exceeding 8.0), which are likely statistical outliers (Prayogi et al., 2022, 2023, 2024; Verawati et al., 2022).

Homogeneity Test and Effect Size

The homogeneity test revealed significant heterogeneity between studies ($Q = 515.68$; $p < 0.001$), supporting the use of a random-effects model. The results of the random-effects analysis showed that inquiry-based learning had a large and significant influence on improving students' critical thinking skills, with Hedges's g of 2,737 (95% CI [2,075, 3,398]; $z = 8,110$; $p < 0.001$). These findings suggest that the inquiry approach is consistently effective across a wide range of studies.

Sensitivity Analysis

To ensure the resilience of the meta-analysis results to the influence of studies with extreme effect sizes, sensitivity analysis was performed by removing five studies identified as outliers. These studies include works of (Prayogi et al., 2022, 2023, 2024; Verawati et al., 2022). These studies showed very large effect sizes (Hedges's $g > 8$), thus potentially distorting the overall aggregate estimate. After the elimination of the six studies, the results of the analysis using the random-effects model still showed that inquiry-based learning had a large and statistically significant influence on students' critical thinking skills, with (Hedges's $g = 2,737$; 95% CI [2,075, 3,398]; $p < 0.001$), indicating that the results of the meta-analysis were robust and did not rely on studies with extreme effects.

These findings indicate that the results of the meta-analysis are robust and are not entirely influenced by studies with extreme effects, thus supporting the validity of the overall conclusions.

Bias Publications

Publication bias analysis was performed using the plot funnel, Egger regression test, and Duval and Tweedie's trim and fill method. The funnel plot shows a pattern of asymmetry, which is

reinforced by the results of Egger's test with an intercept value of 10.22 ($p < 0.001$), indicating an indication of publication bias. The trim and fill analysis estimated that there were 6 unreported studies (missing studies). After adjustment, the effect size decreased from $g = 2.009$ to $g = 1.028$ (CI: 0.393 to 1.663), but remained statistically significant.

These results suggest that despite indications of publication bias, the effectiveness of inquiry-based learning in improving critical thinking skills remains substantial and statistically valid.

Moderator Analysis

The researcher conducted a moderator analysis to assess the stability of the inquiry-based learning effect measure on students' critical thinking skills. This step was taken after significant heterogeneity was found between studies, as indicated by the high Q value and I^2 index. This analysis aims to identify the possibility of study variables that contribute to effect variation, as well as ensure that the findings are consistent and reliable.

The moderator evaluation was conducted based on an approach relevant to the type of data being analyzed, i.e. using the Hedges's effect measure g in experimental studies. The results of this analysis provide methodological support in strengthening the validity of the overall meta-analysis results which can be seen in Figure 3, Figure 4 and Table 2

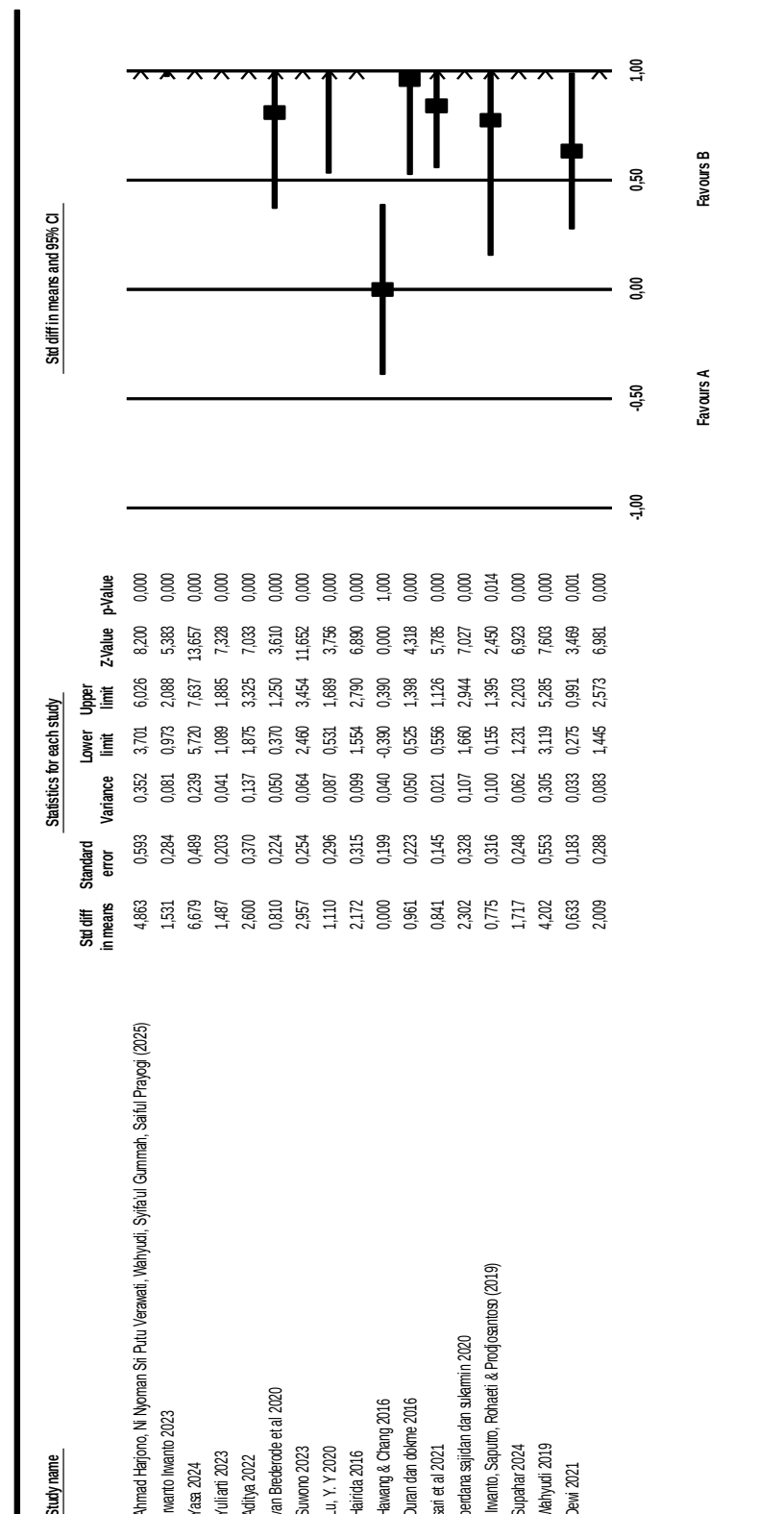


Fig 3: Forest Plor for the Random-Effects Model

Table 2: Random-Effects Model of the Effect Inquiry on Critical Thinking: A Key to Understanding the Impact of IBL on Critical Thinking

Model	Effect size and 95% Confidence interval						Test of null (2-tail)	
Model	Number Studies	Poin Estimate	Standard error	Variance	Lower limit	Upper limit	Z-Value	P-Value
Fixed	17	1.331	0.060	0.004	1.213	1.450	22.038	0.000
Random	17	1.987	0.285	0.081	1.428	2.545	6.975	0.000

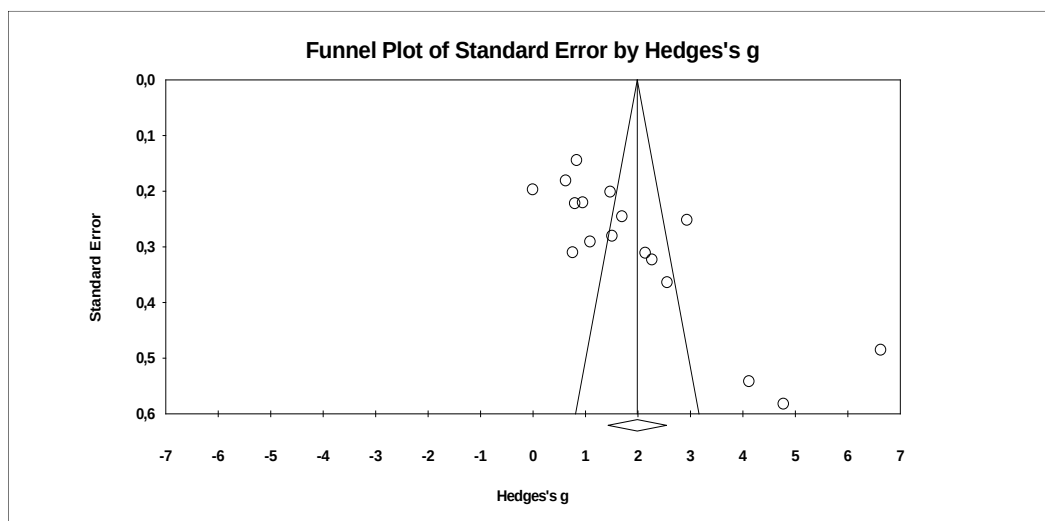


Fig 4: Funnel Plot of the Effect Sizes with 95% Confidence Interval

Meta-Correlational Analysis

The relationship between inquiry-based learning (IBL) and students' critical thinking skills has been extensively studied by researchers in various educational contexts. Findings from several studies indicate that the IBL approach can enhance students' ability to think reflectively, logically, and analytically. To ensure the consistency of these relationships, the researchers conducted a comprehensive meta-analysis of 17 relevant studies, using a measure of the correlation effect (r) and its transformation value, expressed as Fisher's Z .

Preliminary analysis using a fixed-effect model showed that inquiry-based learning had a strong and significant relationship with students' critical thinking skills. The study's results showed an aggregate correlation value of 0.693, with a 95% confidence interval ranging from 0.669 to 0.715. A Z -value of 37.189 and a p -significance of 0.001 suggest that this relationship did not occur by chance but was statistically significant and repeated in various study contexts. The researcher transformed the correlation value into Fisher's Z form to obtain a more stable and compatible effect estimate for follow-up tests such as moderator analysis and meta-regression. The transformation results showed a value of $Z = 0.853$, with a confidence interval of 0.808 to 0.898, and the exact significance ($p < 0.001$). The consistency between these two measurement approaches indicates that inquiry learning has a significant contribution to the development of critical thinking skills. A summary of the results of the correlation meta-analysis based on the fixed effects model can be seen in table 3.

Table 3: Summary of Meta-Analysis of Correlation (Fixed Effect Model)

Type	Effect Size	Lower Limit	Upper Limit	Z-Value	Sig. (p)
Correlation	0.693	0.669	0.715	37.189	0.000
Fisher's Z	0.853	0.808	0.898	37.189	0.000

The interpretation of the table shows that all the studies analyzed make a positive and consistent contribution to the relationship between inquiry approaches and students' critical thinking skills. Almost all of the confidence intervals of each study did not intersect with zero, indicating the existence of a statistically significant relationship.

These findings align with the perspective of social and cognitive constructivist theories, which view students as active subjects in constructing their knowledge. In the inquiry approach, the learning process, which emphasizes inquiry, exploration, and reflective dialogue, creates an environment that opens up space for learners to develop their thinking schemas. This refers to Piaget's framework of assimilation and accommodation, which states that new learning stimuli will trigger the reorganization of cognitive structures through the process of adaptation. When learners are given the challenge of asking questions, investigating, and drawing conclusions on their own, their critical thinking skills are not only trained but also naturally developed through the learning experience itself. Therefore, inquiry-based learning approaches can be positioned as a relevant and contextual strategy in answering the challenges of developing critical thinking skills in the 21st century, inspiring educators, researchers, and policymakers to apply these findings in their work.

Impact of IBL on Critical Thinking

Researchers found that inquiry-based learning has a significant influence on students' critical thinking skills. The analysis of the results in Table 5 shows that the correlation value of 0.693 with a significance value of $p = 0.000$ is well below the threshold of 0.05. These results indicate that the relationship between the application of the inquiry model and the improvement of critical thinking is statistically strong and consistent.

The researchers confirmed the findings through Fisher's Z transformation, which yielded a combined effect value of 0.853 with a significance value of $p = 0.000$. The consistency of these results shows that inquiry learning tends to encourage students to form a reflective, analytical, and evaluative mindset.

Our findings confirm that inquiry-based learning is not just an instructional approach, but a powerful cognitive strategy. IBL plays a crucial role in enabling the reorganization of students' thinking schemas. The process of questioning, exploring, and inferring in IBL fosters a mental state that encourages the development of a deeper knowledge structure, a process that, according to Piaget, occurs through the interplay of assimilation and accommodation. Therefore, IBL can be considered a fundamental approach in efforts to improve critical thinking skills in the 21st-century learning environment.

5. Discussion

Inquiry-based learning has a significant influence on students' critical thinking skills, as shown by the results of the meta-analysis, which showed a correlation value of 0.693 with a p-value of < 0.001 . These findings were reinforced by Fisher's Z transform value of 0.853, indicating a strong and consistent relationship between the application of IBL and improved critical thinking. Additionally, students who studied using the inquiry model demonstrated a significant improvement in critical and analytical thinking skills compared to conventional learning methods, as evidenced by a substantial increase in pretest-posttest scores in various field studies. The findings in the analysis also suggest that inquiry-based learning encourages students to actively ask questions, discuss, and explore, thereby increasing their confidence in finding knowledge and solutions to the problems they face. These findings suggest that the IBL approach is not only an instructional method but also a cognitive strategy that allows for a reflective and evaluative reorganization of students' thinking schemas.

The critical thinking indicators, as formulated, include six components: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Each of these indicators is influenced by the other. For example, the activity of interpreting observed phenomena stimulates the development of interpretation skills. The process of evaluating arguments based on evidence encourages the strengthening of evaluation indicators. The exploratory activities and hypothesis submission that are at the core of inquiry develop inference skills. The elaboration of the investigation's results by students hones their explanations, while reflection on the learning process and results strengthens their self-regulation. This comprehensive influence of IBL on critical thinking indicators underscores its effectiveness in promoting a holistic development of students' critical thinking skills.

These processes demonstrate a close relationship with Piaget's theory of cognitive constructivism and the theory of proximal zone development (Vygotskij & Cole, 1981). Piaget emphasized that cognitive development occurs through a process of assimilation and schematic accommodation triggered by cognitive conflict. In the context of IBL, when learners encounter challenging situations and do not yet possess the appropriate cognitive structure, they form new schemas through accommodation. This aligns with the opinion Duran and Dökme (2016) that IBL can create productive cognitive conflicts to stimulate the reorganization of knowledge. Meanwhile, Vygotsky's theory underscores the importance of social interaction and scaffolding in the learning process. In IBL, the role of the teacher as a facilitator who provides temporary assistance is part of the critical thinking process that develops in the student's proximal zone. Research Irwanto (2023) also showed that the IBL model had a positive influence on all critical thinking indicators, with the highest increase in the aspects of analysis and inference. This indicates that inquiry encourages learners not only to receive information, but also to compare, analyze, and draw logical conclusions.

When compared to other learning models such as Problem-Based Learning (PBL), the IBL model has been effective in developing critical thinking skills in groups of students with low ability levels (Darhim et al., 2020; Hürsen, 2020; Plummer et al., 2022; Scott, 2021; Yeung et al., 2023). Duran and Dökme (2016) Notes that IBL has the advantage of providing an open exploration space, while PBL focuses more on practical problem-solving with more structured instruction. In addition, the results of a study conducted Dewi et al (2021) showed that inquiry learning was more successful in improving critical thinking skills in prospective teachers with converging learning styles than PBL.

The relationship between IBL and critical thinking can be understood from the perspective of Piaget's theory, specifically the concepts of assimilation and accommodation. The IBL process, which encourages learners to question, explore, and infer for themselves, creates cognitive conditions that stimulate the formation of new schemas. This aligns with the statement that the inquiry approach encourages students' active participation in developing a meaningful and in-depth understanding of science. Meanwhile, Vygotsky's basic principles of learning in social contexts are also reflected in the practice of inquiry through group work, discussion, and question-and-answer sessions, which place social interaction as a lever for the development of critical thinking.

Although the results of the meta-analysis showed strong effectiveness of IBL, the study had some limitations. First, not all studies report results per critical thinking skill indicator. Second, the potential for publication bias is detected through the plot funnel test and Egger's test. Third, some studies reveal extreme effect sizes that require correction through sensitivity analysis. Therefore, further research is recommended to explore the role of each IBL indicator in more detail, considering variations in educational contexts and the role of teachers in learning facilitation.

Implication

The theoretical findings obtained from this meta-analysis highlight the need to revisit the assumptions underlying the typology of learning guides. The conceptual framework used was developed based on a review of the current literature on inquiry-based learning and was implemented for the first time in this meta-analysis. The framework has proven to be effective in grouping the various forms of guidance used in previous research based on a single dimension, but assumptions about the suitability of the type of guidance with the initial level of knowledge and skills of learners are not entirely in line with the current findings.

Although there is an effect of moderation on performance success, learning activities, and learning outcomes, all types of guidelines show a positive contribution. These findings indicate that a more general form of guidance still provides benefits for learners who still have limited questioning skills, while more experienced learners benefit more from active forms of guidance. This opinion is in line with Irwanto (2023) which explains that meta-analysis is a new insight to be used as material for reflection and further development in the future literature to refine the typology of inquiry-based learning guides.

The implications of these findings suggest that IBL deserves to be adopted more widely in 21st-century learning curricula. This model contributes not only to the cognitive aspect but also to the strengthening of a critical thinking disposition that is reflective, systematic, and open to new ideas. Teachers need to receive specialized training to develop effective IBL facilitation skills, accommodating the diverse learning styles and backgrounds of students, while ensuring that all critical thinking indicators are optimally stimulated during the learning process. In line with the opinion of Prayogi et al. (2023) that teachers must receive special training to deepen their knowledge so that later when applying they can become competent facilitators in their skills.

Findings in the field suggest that IBL is suitable for adoption in 21st-century curricula, offering researchers valuable insights. As active educators in this century, it is necessary to receive training related to IBL-based learning techniques, enabling them to address challenges and difficulties in their implementation. Another suggestion is aimed at unit holders or other

educational institutions to integrate special programs related to IBL training and monitor their implementation so that it can be measured concretely. The researcher also provides guidance to researchers in the field of curriculum development, suggesting they explore similar research with different variables to obtain diverse research results.

Limitations

The study has several technical limitations that need to be considered when interpreting the results. Not all primary studies present detailed data based on individual critical thinking skill indicators, so the analysis focuses more on the size of the aggregate effect. The heterogeneity between studies is quite high, so caution is needed when concluding about different educational contexts. Publication bias analysis reveals potential imbalances in the distribution of studies; However, adjustments using the trim and fill method still produce significant results. Variations in research design, teacher roles, and instrument types across studies can also moderate the influence on outputs. Therefore, the results of this study can be a solid basis for more in-depth follow-up studies in specific contexts and for more focused critical thinking indicators.

Conclusion

This study aims to present a comprehensive synthesis of research published between 2016 and 2025 on the effectiveness of Inquiry-Based Learning (IBL) in improving students' critical thinking skills. The meta-analysis highlights key findings that confirm the significant role of IBL in activating students' cognitive processes such as analysis, inference, and evaluation across various educational levels and contexts. The findings also support the robustness of the results after adjustments for sensitivity and publication bias.

Inquiry-based learning has consistently shown effectiveness as both a pedagogical method and a cognitive strategy for fostering reflective and analytical thinking. Students involved in IBL environments are more likely to engage in inquiry, actively construct knowledge, and develop a deeper understanding through dialogic and investigative learning experiences. Theoretical foundations, such as Piaget's assimilation-accommodation and Vygotsky's zone of proximal development, provide meaningful explanations of how IBL facilitates the development of critical thinking through both individual and social learning mechanisms.

While the meta-analysis provides strong evidence of IBL's benefits, it also acknowledges the variation in implementation strategies and the limited reporting of effect sizes per specific critical thinking indicator. These aspects suggest opportunities for further investigation. Future studies should investigate how different forms of IBL impact each essential component of thinking, explore the role of teacher facilitation, and examine cultural and contextual differences across various educational settings.

These insights lay the groundwork for the broader application of Inquiry-Based Learning in 21st-century curricula. By deepening their understanding of how IBL supports cognitive growth, educators and policymakers can design more responsive instructional models that promote critical reasoning and equip students with the essential skills needed to navigate complex learning environments.

References

- Abaniel, A. (2021). Enhanced conceptual understanding, 21st century skills and learning attitudes through an open inquiry learning model in Physics. *Journal of Technology and Science Education*, 11, 30–43. <https://doi.org/10.3926/JOTSE.1004>
- Aditya, R. S., Yusuf, A., Solikhah, F. K., Gayatri, R. W., & Almutairi, R. L. (2022). Innovation in the Covid-19 Pandemic Using the Inquiry-Based Learning Approach To Improve Active Learning, Confidence, and Critical Thinking of Nursing Students. *Journal of Pharmaceutical Negative Results*, 13(6), 758–764. <https://doi.org/10.47750/pnr.2022.13.S06.104>
- Alarcon, D. A. U., Talavera-Mendoza, F., Paucar, F. H. R., Caceres, K. S. C., & Viza, R. M. (2023). Science and inquiry-based teaching and learning: A systematic review. 8. <https://doi.org/10.3389/feduc.2023.1170487>
- Antonio, R. P., & Prudente, M. S. (2023). Effects of Inquiry-Based Approaches on Students' Higher-Order Thinking Skills in Science: A Meta-Analysis. *International Journal of Education in Mathematics, Science and Technology*, 12(1), 251–281. <https://doi.org/10.46328/ijemst.3216>
- Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to Meta-Analysis*. John Wiley & Sons.
- Darhim, D., Prabawanto, S., & Susilo, B. (2020). The Effect of Problem-based Learning and Mathematical Problem Posing in Improving Student's Critical Thinking Skills. *International Journal of Instruction*, 13, 103–116. <https://doi.org/10.29333/IJI.2020.1347A>
- Dewi, D. K., Ardhana, W., Irtadji, Chusniyah, T., & Sulianti, A. (2021). Inquiry-based learning implementation to improve critical thinking of prospective teachers. *International Journal of Information and Education Technology*, 11(12), 638–645). <https://doi.org/10.18178/IJiet.2021.11.12.1575>
- Duran, M., & Dökme, İ. (2016). The Effect Of The Inquiry-Based Learning Approach On Student's Critical Thinking Skills. *EURASIA Journal of Mathematics, Science and Technology Education*, 12(12). <https://doi.org/10.12973/eurasia.2016.02311a>
- Facione, P. A. (2020). Critical Thinking: What It Is and Why It Counts 2020 Update: Vol. XXVIII (Issue 1).
- Finn, P. (2011). Critical thinking: Knowledge and skills for evidence-based practice. *Language, Speech, and Hearing Services in Schools*, 42 1, 69–72; discussion 88-93. [https://doi.org/10.1044/0161-1461\(2010/09-0037\)](https://doi.org/10.1044/0161-1461(2010/09-0037))
- Hürsen, Ç. (2020). The Effect of Problem-Based Learning Method Supported by Web 2.0 Tools on Academic Achievement and Critical Thinking Skills in Teacher Education. *Technology, Knowledge and Learning*, 26, 515–533. <https://doi.org/10.1007/s10758-020-09458-2>
- Hairida, H. (2016). The effectiveness using inquiry based natural science module with authentic assessment to improve the critical thinking and inquiry skills of junior high school

students. *Jurnal Pendidikan IPA Indonesia*, 5(2), 209–215.

<https://doi.org/10.15294/jpii.v5i2.7681>

Harjono, A., Verawati, N. N. S. P., Wahyudi, Gummah, S., & Prayogi, S. (2025). Integrating ethnoscience in inquiry-creative learning: a new breakthrough in enhancing critical thinking. *International Journal of Evaluation and Research in Education*, 14(1), 636–647.

<https://doi.org/10.11591/ijere.v14i1.29259>

Hwang, G. J., & Chen, C. H. (2017). Influences of an inquiry-based ubiquitous gaming design on students' learning achievements, motivation, behavioral patterns, and tendency towards critical thinking and problem solving. *British Journal of Educational Technology*, 48(4), 950–971. <https://doi.org/10.1111/bjet.12464>

Irwanto, I. (2023). Improving preservice chemistry teachers' critical thinking and science process skills using research-oriented collaborative inquiry learning. *Journal of Technology and Science Education*, 13(1), 23. <https://doi.org/10.3926/jotse.1796>

Irwanto, Saputro, A. D., Rohaeti, E., & Prodjosantoso, A. K. (2019). Using inquiry-based laboratory instruction to improve critical thinking and scientific process skills among preservice elementary teachers. *Eurasian Journal of Educational Research*, 2019(80), 151–170. <https://doi.org/10.14689/ejer.2019.80.8>

Karakuş, İ. (2024). University students' cognitive flexibility and critical thinking dispositions. *Frontiers in Psychology*, 15. <https://doi.org/10.3389/fpsyg.2024.1420272>

Liu, Y., & Pásztor, A. (2022). Effects of problem-based learning instructional intervention on critical thinking in higher education: A meta-analysis. *Thinking Skills and Creativity*, 45, 101069. <https://doi.org/10.1016/j.tsc.2022.101069>

Low, K., Mohamad, S., Chong, S., Rahman, M., Purnomo, E., & Gunsuh, A. (2024). Improving University Students' Critical Thinking and Problem-Solving Skills: How Problem-Based Learning Works during COVID-19 Pandemic?. *Journal of Advanced Research in Applied Sciences and Engineering Technology*. <https://doi.org/10.37934/araset.37.2.165176>.

Lu, Y., Smith, T. J., Lin, H., Smith, T. J., & Hong, Z. (2020). The Effects of Critique- Driven Inquiry Intervention on Students ' Critical Thinking and Scientific. 1996, 954–971. Doi: 10.33225/jbse/20.19.954

Martino, V. D., Pellegrini, M., Altomari, N., & Peru, A. (2025). Developing logical reasoning in primary school: The impact of a cognitive enhancement programme. *PROSPECTS*. <https://doi.org/10.1007/s11125-024-09709-5>

Okolie, U. C., Igwe, P., Mong, I. K., Nwosu, H., Kanu, C., & Ojemuyide, C. C. (2021). Enhancing students' critical thinking skills through engagement with innovative pedagogical practices in Global South. *Higher Education Research & Development*, 41, 1184–1198. <https://doi.org/10.1080/07294360.2021.1896482>

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, n71. <https://doi.org/10.1136/bmj.n71>

Pacheco Velazquez, E. (2024). Facing a VUCA World: Developing Learning Skills through Serious Games. *The International Journal of Design Education*, 18(2), 31-55. <https://doi.org/10.18848/2325-128X/CGP/v18i02/31-55>

Perdana, R., Rudibyani, R. B., Budiyo, Sajidan, & Sukarmin. (2020). The effectiveness of inquiry social complexity to improving critical and creative thinking skills of senior high school students. *International Journal of Instruction*, 13(4), 477-490. <https://doi.org/10.29333/iji.2020.13430a>

Plummer, K., Kebritchi, M., Leary, H. M., & Halverson, D. (2022). Enhancing Critical Thinking Skills through Decision-Based Learning. *Innovative Higher Education*, 47, 711-734. <https://doi.org/10.1007/s10755-022-09595-9>

Prayogi, S., Ahzan, S., Indriaturrahmi, & Rokhmat, J. (2022). Opportunities to Stimulate the Critical Thinking Performance of Preservice Science Teachers Through the Ethno-Inquiry Model in an E-Learning Platform. In *International Journal of Learning, Teaching and Educational Research* (Vol. 21, Issue 9, pp. 134-153). Society for Research and Knowledge Management. <https://doi.org/10.26803/ijlter.21.9.8>

Prayogi, S., Ahzan, S., Indriaturrahmi, Rokhmat, J., & Verawati, N. N. S. P. (2023). Dynamic blend of ethnoscience and inquiry in a digital learning platform (e-learning) for empowering future science educators' critical thinking. In *Journal of Education and e-Learning Research* (Vol. 10, Issue 4, pp. 819-828). Asian Online Journal Publishing Group. <https://doi.org/10.20448/jeelr.v10i4.5233>

Prayogi, S., Bilad, M. R., Verawati, N. N. S. P., & Asy'ari, M. (2024). Inquiry vs. Inquiry-Creative: Emphasizing Critical Thinking Skills of Prospective STEM Teachers in the Context of STEM Learning in Indonesia. In *Education Sciences* (Vol. 14, Issue 6). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/educsci14060593>

Putu Verawati, N. N. S., Harjono, A., Wahyudi, & Gummah, S. (2022). Inquiry-Creative Learning Integrated with Ethnoscience: Efforts to Encourage Prospective Science Teachers' Critical Thinking in Indonesia. *International Journal of Learning, Teaching and Educational Research*, 21(9), 232-248. <https://doi.org/10.26803/ijlter.21.9.13>

Quinn, S., Hogan, M., Dwyer, C. P., Finn, P., & Fogarty, E. (2020). Development and Validation of the Student-Educator Negotiated Critical Thinking Dispositions Scale (SENCTDS). *Thinking Skills and Creativity*. <https://doi.org/10.1016/j.tsc.2020.100710>

Rafiq, A., Triyono, M., & Djatmiko, I. W. (2023). The Integration of Inquiry and Problem-Based Learning and Its Impact on Increasing the Vocational Student Involvement. *International Journal of Instruction*. <https://doi.org/10.29333/iji.2023.16137a>

Rothstein, H. R., Sutton, A. J., & Borenstein, M. (Eds.). (2005). *Publication Bias in Meta-Analysis: Prevention, Assessment and Adjustments*. Wiley.

Seevaratnam, V., Gannaway, D., & Lodge, J. (2023). Design thinking-learning and lifelong learning for employability in the 21st century. *Journal of Teaching and Learning for Graduate Employability*. <https://doi.org/10.21153/jtlge2023vol14no1art1631>

- Sari, R. M., Sumarmi, Astina, I. K., Utomo, D. H., & Ridhwan. (2021). Increasing Students Critical Thinking Skills and Learning Motivation Using Inquiry Mind Map. *International Journal of Emerging Technologies in Learning*, 16(3), 4–19. <https://doi.org/10.3991/ijet.v16i03.16515>
- Sharma, S., Saragih, I. D., Tarihoran, D. E. T. A. U., & Chou, F.-H. (2023). Outcomes of problem-based learning in nurse education: A systematic review and meta-analysis. *Nurse Education Today*, 120, 105631. <https://doi.org/10.1016/j.nedt.2022.105631>
- Simonovic, B., Vione, K. C., Stuppel, E., & Doherty, A. (2023). It is not what you think it is how you think: A critical thinking intervention enhances argumentation, analytic thinking and metacognitive sensitivity. *Thinking Skills and Creativity*. <https://doi.org/10.1016/j.tsc.2023.101362>
- Habibah, S., Khusna, H., Putranta, H., Immanuela, I., Oktavianto, F., & Religia, R. (2024). MIB-Inquiry-Infographic Android Application and Its Impact on Students' Critical Thinking Skills during the COVID-19 Pandemic. *European Journal of Educational Research*. <https://doi.org/10.12973/eu-jer.13.2.511>
- Suryono, W., Winiarsri, L., Santosa, T. A., Sappaile, B. I., & Solehuddin, Moh. (2023). Effectiveness of The Inquiry Training Model to Improve Students' Critical Thinking Skills in Learning: Systematic Literature Reviews and Meta-Analysis. *Journal of Science Education Research*, 9(10), 947–954. <https://doi.org/10.29303/jppipa.v9i10.4804>
- Sutiani, A., Situmorang, M., & Silalahi, A. (2021). Implementation of an Inquiry Learning Model with Science Literacy to Improve Student Critical Thinking Skills. *International Journal of Instruction*, 14(2), 117–138. <https://doi.org/10.29333/iji.2021.1428a>
- Suwono, H., Rofi'Ah, N. L., Saefi, M., & Fachrunnisa, R. (2023). Interactive socio-scientific inquiry for promoting scientific literacy, enhancing biological knowledge, and developing critical thinking. *Journal of Biological Education*, 57(5), 944–959. <https://doi.org/10.1080/00219266.2021.2006270>
- Suyitno, S., Hastuti, W., Sudarjo, S., & Yasin, M. H. M. (2024). Assessing the enhancement of students' critical thinking skills through problem-based learning. *Edelweiss Applied Science and Technology*. <https://doi.org/10.55214/25768484.v8i6.3161>
- Terrin, N., Schmid, C. H., Lau, J., & Olkin, I. (2003). Adjusting for publication bias in the presence of heterogeneity. *Statistics in Medicine*, 22(13), 2113–2126. <https://doi.org/10.1002/sim.1461>
- Van Brederode, M. E., Zoon, S. A., & Meeter, M. (2020). Examining the effect of lab instructions on students' critical thinking during a chemical inquiry practical. *Chemistry Education Research and Practice*, 21(4), 1173–1182. <https://doi.org/10.1039/d0rp00020e>
- Vegas, S., & Djukri, D. (2021). The Effect of Problem-Based Learning on the Critical Thinking Skill of the Students. *Scientific Journal of Paleontology* <https://doi.org/10.26811/PEURADEUN.V9I1.411>
- Velazquez, E. P. (2024). Facing a VUCA World: Developing Learning Skills through Serious Games. *The International Journal of Design Education*. <https://doi.org/10.18848/2325-128x/cgp/v18i02/31-55>

Verawati, N. N. S. P., Harjono, A., Wahyudi, W., & Gummah, S. (2022). Inquiry-Creative Learning Integrated with Ethnoscience: Efforts to Encourage Prospective Science Teachers' Critical Thinking in Indonesia. *International Journal of Learning, Teaching and Educational Research*, 21(9), 232–248. <https://doi.org/10.26803/ijlter.21.9.13>

Vygotskij, L. S., & Cole, M. (1981). *Mind in society: The development of higher psychological processes* (Nachdr.). Harvard Univ. Press.

Wahyudi, Verawati, N. N. S. P., Ayub, S., & Prayogi, S. (2019). The effect of scientific creativity in inquiry learning to promote critical thinking ability of prospective teachers. *International Journal of Emerging Technologies in Learning*, 14(14), 122–131. <https://doi.org/10.3991/ijet.v14i14.9532>

Yasa, A. D., Rahayu, S., Handayanto, S. K., & Ekawati, R. (2024). Evaluating the Impact of Smart Learning-Based Inquiry on Enhancing Digital Literacy and Critical Thinking Skills. *Ingenierie Des Systemes d'Information*, 29(1), 219–233. <https://doi.org/10.18280/isi.290122>

Yeung, M. M.-Y., Yuen, J., Chen, J. M.-T., & Lam, K. (2023). The efficacy of team-based learning in developing the generic capability of problem-solving ability and critical thinking skills in nursing education: A systematic review. *Nurse Education Today*, 122, 105704. <https://doi.org/10.1016/j.nedt.2022.105704>

Yuliarti, Suwandi, S., Andayani, & Sumarwati. (2023). Learning Model Inquiry-Based Local Wisdom Dilemmas Stories and Their Effects on Critical Thinking and Scientific Writing Abilities. *International Journal of Learning, Teaching and Educational Research*, 22(5), 538–557. <https://doi.org/10.26803/ijlter.22.5.27>

Workforce Stability and Employee Morale at Siquijor State College: An Assessment Toward State University Conversion

ABSTRACT

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This study assessed the workforce stability and employee morale at Siquijor State College as the institution strategically prepares for its transition into a state university. Employing a mixed-methods approach that integrated descriptive-correlational and qualitative designs, the research revealed significant relationships between employee needs, workforce stability, and overall employee morale at the College. Furthermore, statistical analysis indicated no significant differences in the perceived levels of workforce stability and employee morale across the various demographic profiles of the respondents. The qualitative data further enriched these quantitative findings, highlighting both areas of strength and potential for growth. While employees generally expressed positive sentiments regarding safety awareness, social interaction, and feeling their work is/was valuable, opportunities existed to enhance psychological safety for open communication, provide more leadership avenues, strengthen mechanisms for recognizing achievements, and ensure equitable professional growth opportunities for all employee classifications.

Keywords: Higher education transition, leadership support, organizational commitment, staff development, continuous improvement

1. Introduction

Siquijor State College (SSC), a higher educational institution and the only state college within the province of Siquijor, is presently engaged in a significant institutional transformation: its proposed conversion into a state university, formally articulated in Senate Bill No. 2807. This anticipated transition is poised to augment SSC's capacity to deliver quality tertiary education and foster socio-economic development within the region. Attaining university status, as stipulated by the Commission on Higher Education (CHED) Memorandum Order No. 46, series of 2012, necessitates stringent compliance with operational requirements, particularly concerning the composition and qualifications of its human capital. A critical challenge identified pertains to the current numerical and credentialing deficiencies among both permanent faculty and essential student support staff, which must be addressed to meet the prescribed standards for a university.

Siquijor State College (SSC), a higher educational institution and the only state college within the province of Siquijor, is presently engaged in a significant institutional transformation: its proposed conversion into a state university, formally articulated in Senate Bill No. 2807. This anticipated transition is poised to augment SSC's capacity to deliver quality tertiary education and foster socio-economic development within the region. Attaining university status, as stipulated by the Commission on Higher Education (CHED) Memorandum Order No. 46, series of 2012, necessitates stringent compliance with operational requirements, particularly concerning the composition and qualifications of its human capital. A critical challenge identified pertains to the current numerical and credentialing deficiencies among both permanent faculty and essential student support staff, which must be addressed to meet the prescribed standards for a university.

From a human capital perspective, the success of institutional transformation is fundamentally contingent upon the competence, motivation, and stability of its workforce. As frontline implementers of academic and administrative functions, SSC's employees directly influence organizational performance and compliance with CHED's university criteria. Consequently, understanding their needs, stability, and morale is indispensable to evaluating SSC's readiness for conversion.

Although existing literature recognizes the pivotal role of human capital in institutional transformation, localized studies examining workforce readiness and employee profiles in Philippine state colleges undergoing conversion remain scarce. To address this, the present study first seeks to characterize the demographic and professional profile of SSC personnel, thereby establishing the contextual foundation for subsequent analyses.

Furthermore, previous investigations have highlighted that employee needs—ranging from physiological to self-actualization—directly influence engagement and organizational commitment. Yet, there remains limited empirical evidence on how these needs are prioritized among personnel in higher education institutions facing structural transitions. Hence, this study aims to assess the extent of employees' needs across six domains—physiological, safety, social, self-esteem, self-actualization, and spiritual—to determine which dimensions are most critical in the context of SSC's conversion.

Another area of concern involves workforce stability, a key factor that determines institutional resilience and adaptability during organizational change. Despite its significance, few local studies have examined how elements such as inclusivity, health and well-being, communication,

and policy maturity contribute to overall stability. Accordingly, this study investigates the extent of workforce stability among SSC personnel, encompassing both environmental and systemic factors that shape employee retention and performance.

Similarly, employee morale, which profoundly influences productivity and institutional alignment, remains underexplored in the context of Philippine state colleges. Thus, this research evaluates the overall level of morale among SSC employees, recognizing its role in sustaining motivation during a period of institutional transformation.

To gain a deeper understanding of the human dynamics underlying SSC's transition, this study further explores the relationships among employees' needs, workforce stability, and morale. It also examines whether variations in these dimensions are associated with demographic characteristics, providing a more nuanced picture of workforce conditions within the institution.

Finally, to link these internal dynamics with SSC's broader organizational direction, the study seeks to capture employees' perceptions of the institution's readiness for university conversion, considering their lived experiences and workplace realities.

Collectively, these gaps and theoretical considerations provide the rationale for the present study, which seeks to examine employee needs, workforce stability, and morale as key determinants of SSC's readiness for state university conversion.

2. Literature Review

The study is anchored on Maslow's (1943) Hierarchy of Needs, complemented by Wilber's (2000) elaboration on spiritual needs, workforce sustainability attributes (Karakhan et al., 2020), and the soft elements of the McKinsey 7S Framework—Skills, Staff, and Shared Values (Peters & Waterman, 1980). Maslow's framework provides a basis for examining employees' needs across physiological, safety, social, esteem, and self-actualization domains, with Wilber's perspective extending the analysis to include spiritual fulfilment as an essential dimension of human motivation. The workforce sustainability attributes identified by Karakhan et al. (2020) offer a lens for assessing factors that contribute to a stable, resilient, and engaged workforce. Additionally, the McKinsey soft elements facilitate the evaluation of organizational alignment, human resource effectiveness, and the integration of skills, staff capacity, and shared values within institutional processes. Collectively, these theoretical perspectives provide a comprehensive foundation for investigating the interrelationships among employee needs, workforce stability, and morale in the context of SSC's transition toward university status. Collectively, these theoretical perspectives provide a comprehensive foundation for investigating the interrelationships among employee needs, workforce stability, and morale in the context of SSC's transition toward university status (Figure 1).

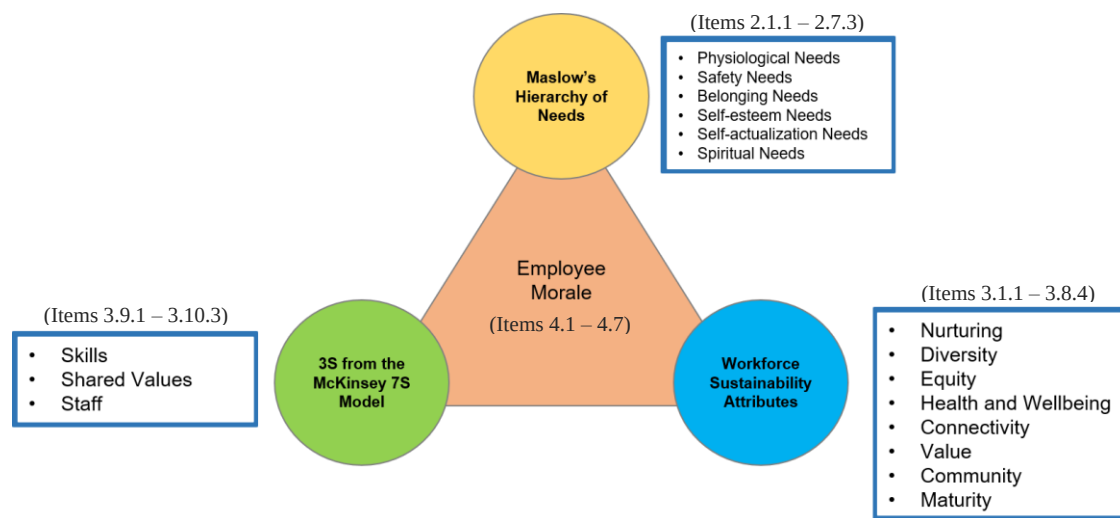


Figure 1. Schematic Diagram of the Theoretical Framework

Workforce Needs, Stability, and Morale

Maslow’s Hierarchy of Needs (1954) provides a foundational framework for understanding human motivation, positing that individuals are driven by a series of hierarchical needs ranging from basic physiological requirements to self-actualization. In the context of SSC’s conversion into a state university, recognizing and addressing employee needs is essential for fostering motivation, engagement, and retention. Unmet needs—from job security to opportunities for professional growth—can negatively impact morale and contribute to turnover (Iddrisu, 2023). These theoretical perspectives align with the Skills and Staff components of McKinsey’s 7S Model, emphasizing the importance of developing and retaining a competent, motivated workforce. Addressing employee needs effectively ensures that staff remain engaged and committed, supporting workforce stability and institutional objectives during transitional periods.

Workforce sustainability, operationalized through metrics such as turnover, retention, and engagement (Gordon, 2017; Soni et al., 2024), aligns closely with Maslow’s emphasis on meeting employee needs. High turnover disrupts workforce maturity, team cohesion, and institutional memory, undermining critical sustainability attributes such as nurturing, value, and community (Karakhan et al., 2020; Noorulkhathija & Hussain, 2025; Al-Suraihi et al., 2021). Employees whose expectations and aspirations are unmet are more likely to leave, demonstrating the interdependence between individual-level motivational needs and broader organizational sustainability practices. Addressing these needs proactively enhances workforce stability and the effectiveness of organizational systems, reflecting the interaction between Maslow’s lens and structural frameworks such as the 3S McKinsey Model.

While Maslow emphasizes individual hierarchical needs, workforce sustainability frameworks focus on organizational-level stability and resilience. Integrating these perspectives reveals that fulfilling individual needs—such as recognition, growth, and self-actualization—directly supports organizational stability and staff retention. However, tensions may arise when institutional priorities, such as compliance with CHED requirements or workload distribution, conflict with employees’ personal development goals. This theoretical triangulation clarifies

how addressing both individual and systemic needs can optimize morale and institutional readiness during SSC's transition to university status.

Employee morale, defined as the overall emotional, attitudinal, and motivational state of staff, is influenced by the alignment of individual needs, organizational support, and institutional requirements. When employees' fundamental needs are met, they perceive organizational backing through sustainable workforce practices and structured faculty development, morale increases, fostering engagement, retention, and institutional commitment (Kuselar & Kitessa, 2020; Khumalo, 2022).

Taken together, Maslow's hierarchy of needs, workforce sustainability attributes, and the McKinsey 3S framework provide a comprehensive lens for understanding how individual and organizational factors interact to influence morale and stability, forming the basis for the study's research questions.

Legislative and Regulatory Frameworks

The experiences of other Philippine state colleges undergoing university conversion provide relevant empirical grounding for SSC's transition. RA 10604 converted the Iloilo State College of Fisheries into the Iloilo State University of Science and Technology, integrating multiple campuses and emphasizing the expansion of academic programs, upgrading faculty qualifications, and strengthening organizational systems. Similarly, RA 11335 converted Guimaras State College into Guimaras State University, requiring enhanced human resource capacity, research productivity, and program diversification. RA 11336 elevated Carlos Hilado Memorial State College into a state university, mandating faculty qualification upgrades, multi-campus integration, and program expansion. Across these cases, successful conversion necessitated addressing faculty needs, workload pressures, and organizational alignment—challenges directly linked to the McKinsey Skills, Staff, and Shared Values dimensions and workforce sustainability principles (Karakhan et al., 2020).

Several CHED Memorandum Orders (CMOs) further specify institutional requirements for conversion. CMO No. 46, s. 2012 mandates outcomes-based and typology-aligned program offerings, graduate program development, and faculty qualification thresholds, including a minimum of 50% of faculty with master's degrees and 25% with doctorates. CMO No. 48, s. 1996 establishes minimum program, faculty, and resource requirements for state university eligibility, such as offering at least twenty academic programs, a critical mass of graduate faculty, and sufficient facilities. CMO No. 28, s. 2013 prescribes faculty workload, balancing instruction, research, extension, and administrative duties while supporting professional development. CMO No. 18, s. 2022 introduces updated quality assurance standards, requiring internal QA systems, strengthened governance, research and extension offices, and compliance with learning outcome benchmarks. These CMOs collectively emphasize that university conversion is a complex, human-centered process demanding attention to both organizational systems and workforce well-being.

Synthesis and Relevance to SSC

The legislative and regulatory requirements underscore that SSC's transition is not merely structural but also human-centered, demanding the alignment of institutional goals with employee capabilities, motivations, and stability. Meeting faculty qualification standards, expanding programs, and complying with CHED mandates place increased demands on staff,

affecting morale, workload, and retention. Integrating Maslow’s hierarchy of needs with workforce sustainability attributes and McKinsey’s 3S model provides a conceptual lens to assess how SSC can maintain workforce engagement, institutional alignment, and operational readiness. Collectively, these frameworks allow for a comprehensive analysis of employee needs, workforce stability, and morale, situating SSC’s university conversion within both theoretical and practical contexts.

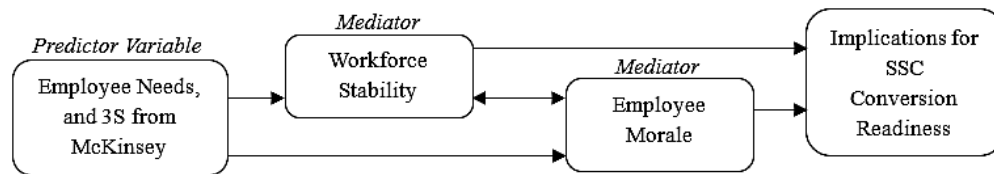


Figure 2. Conceptual Framework

3. Methodology

This study employed a mixed-methods design combining a descriptive–correlational quantitative approach with an embedded qualitative component to generate both measurable and interpretive insights. The quantitative strand assessed the extent of employee needs, workforce sustainability, and employee morale, whereas the qualitative strand explored employees’ perceptions of Siquijor State College’s (SSC) readiness for state university conversion. The embedded design enabled the qualitative narratives to contextualize the quantitative relationships, ensuring a comprehensive understanding of employee experiences and institutional dynamics during the conversion process. The research process followed a systematic sequence beginning with instrument construction and validation, pilot testing, sampling, data collection, quantitative and qualitative analyses, and final integration of findings.

The study population consisted of all 134 SSC employees, comprising 84 faculty members and 50 staff members. To ensure representativeness across employment strata, sample sizes were computed separately using Slovin’s formula where N = population size, e = margin of error (expressed as decimal):

$$n = \frac{N}{1 + N(e)^2}$$

with distinct margins of error appropriate for each group—0.062 for faculty and 0.055 for staff—both within the recommended 5–10% range for social science research (Israel, 1992; Krejcie & Morgan, 1970).

Faculty:

$$\begin{aligned}
 n &= \frac{84}{1 + 84(0.062)^2} \\
 &= \frac{84}{1.322896} \\
 n &= 63.497
 \end{aligned}$$

Staff:

$$\begin{aligned}
 n &= \frac{50}{1 + 50(0.055)^2} \\
 &= \frac{50}{1.15125} \\
 n &= 43.431
 \end{aligned}$$

These computations generated required sample sizes of 63.497 (faculty) and 43.431 (staff),

which were rounded up to 64 and 44, respectively, to guarantee adequate representation and avoid under sampling. A stratified random sampling technique was applied to secure proportional representation of both teaching and non-teaching personnel, ensuring that perspectives across organizational roles were adequately reflected.

Data were collected using a structured, self-administered questionnaire comprising five sections aligned with the study variables and research questions. The first section gathered demographic and professional information, which served as independent variables for determining differences in needs, stability, and morale. The second section assessed employee needs through items adapted from Zhang (2020), capturing multiple dimensions including physiological, safety, social, esteem, self-actualization, and spiritual needs. The third section measured workforce sustainability using dimensions identified by Karakhan et al. (2020), such as nurturing, diversity, equity, well-being, value, community, skills, and staffing. The fourth section evaluated employee morale through a researcher-developed scale constructed from indicators of job satisfaction, engagement, and commitment, and refined through expert validation. The fifth section captured perceptions of SSC's readiness for university conversion through researcher-made items addressing communication, resource adequacy, leadership support, and perceived role changes. All new or modified instrument sections underwent expert review and pilot testing with 30 SSC employees not included in the main sample. Reliability testing yielded Cronbach's alpha values of 0.88 for employee needs, 0.92 for workforce sustainability, and 0.96 for employee morale, indicating strong to excellent internal consistency.

Ethical principles guided all stages of data collection. Participants received informed consent forms detailing the study's purpose, procedures, voluntary nature, confidentiality safeguards, and data-use limitations. Anonymity was assured by avoiding the collection of identifying information and by securely storing responses. Data collection proceeded only after consent was obtained, and participation entailed minimal risk. These measures ensured adherence to institutional and disciplinary ethical standards.

Quantitative data were analyzed using descriptive and inferential statistics. Frequency and percentage distribution described the respondents' demographic characteristics, while weighted means assessed the extent of employee needs, workforce sustainability, and morale.

Table 1. Scales Used for Interpretation

Scale (Range)	Extent	Interpretation <i>Employees feel/perceive...</i>
1 (1.00 – 1.75)	Very Low Fulfillment	that their fundamental needs are largely unmet, suggesting significant concerns that need urgent attention
	Not Stable	significant instability, indicating serious concerns about their work environment and roles
	Very Low Morale	dissatisfied and disengaged
2 (1.76 – 2.50)	Low Fulfillment	that many of their needs are not being adequately addressed, indicating potential dissatisfaction
	Moderately Stable	some instability or uncertainty affecting their roles
	Low Morale	disengaged and have concerns
3 (2.51 – 3.25)	High Fulfillment	that their needs are being met, though there may be some areas that require improvement
	Stable	stable, though there may be areas needing improvement
	High Morale	positive, with some areas that may require improvement
4 (3.26 – 4.00)	Very High Fulfillment	that their needs are being fully met, resulting in high satisfaction level
	Very Stable	high level of stability in their positions and work environment
	Very High Morale	highly engaged and satisfied

Needs

Workforce Stability

Morale

Upon conducting the Shapiro–Wilk test, several variables were found to be non-normally distributed; accordingly, non-parametric tests were employed. Spearman’s rho determined the relationships among the core variables. To evaluate the strength of the relationships among the variables, Spearman’s rho correlation coefficients were interpreted using the guidelines of Rea and Parker (1992), as follows:

0.00 < 0.10 – Negligible
0.10 < 0.20 – Weak
0.20 < 0.40 – Moderate
0.40 < 0.60 – Relatively strong
0.60 < 0.80 – Strong
0.80 < 1.00 – Very strong

while the Kruskal–Wallis H and Mann–Whitney U tests examined differences across demographic and professional groups. Effect sizes were interpreted using Cohen’s (1998) conventional thresholds:

<i>r value</i>	<i>Effect size</i>	<i>Interpretation</i>
0.10	Small	Minimal difference between groups
0.30	Medium	Moderate difference
0.50	Large	Substantial difference

These analyses ensured robustness against violations of normality and accommodated the ordinal nature of several survey items.

The qualitative component consisted of open-ended question embedded in the survey to elicit employees’ perceptions of SSC’s readiness for university conversion. Responses were analyzed thematically following Braun and Clarke’s (2006, 2012) six-phase framework (Figure 3), which involved generating initial codes, identifying patterned meanings, and constructing themes that captured recurrent or salient viewpoints. Significant statements—those addressing the research questions or offering detailed reflections—were systematically organized into thematic categories (Refer to Appendix A). Integration of the qualitative and quantitative results occurred during interpretation, allowing qualitative themes to explain, deepen, or contrast quantitative patterns, thereby strengthening the validity and richness of the conclusions through triangulation.

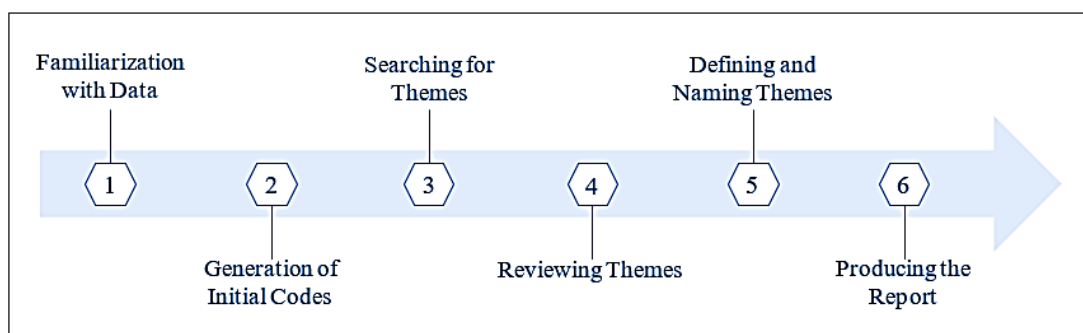


Figure 3. Braun and Clarke’s Six-phase Framework

This study acknowledges several limitations despite its methodological rigor. The final dataset consisted of 102 completed questionnaires, achieving a 94.4% response rate. The analysis of respondents’ demographic characteristics relative to the total employee population showed no significant deviations at $p\text{-value} > 0.05$, indicating limited risk of non-response bias. Nevertheless, the reliance on self-reported data introduces the possibility of subjective bias,

although this was mitigated through clear item construction and assurances of anonymity. The cross-sectional design restricts the ability to infer causality, and variability in employees' experiences may have contributed to heterogeneity in responses. Additionally, the embedded qualitative component was limited by the depth achievable through written responses, which may not fully capture the complexity of employees' perspectives. Despite these constraints, the study offers empirically grounded insights that can guide strategic planning and institutional development as SSC prepares for university conversion.

4. Results and Discussion

Profile of the Respondents

The respondent profile of Siquijor State College (Refer Appendix B) reflects a workforce whose demographic and employment characteristics hold meaningful implications for institutional development, particularly as the College moves toward state university status in mid-2025. The gender distribution demonstrates a relatively balanced composition, with a slight male predominance, a pattern that both diverges from Purdy's (2024) observation of male-dominated higher education faculties and aligns with broader public-sector patterns reported by the World Economic Forum (2023). This balance suggests that gender-related dynamics—such as access to professional opportunities, leadership pathways, and work-life policies—can be approached from a standpoint of equity rather than correction of imbalance.

The workforce is also characterized by a strong presence of employees in early to mid-career stages, with the largest proportion situated within the 25–34 age bracket and substantial representation extending to those in their mid-30s to mid-50s. Through Erikson's psychosocial framework, these groups are situated in developmental stages centered on relationship-building, productivity, and long-term contribution. Their motivations tend to be oriented toward career advancement, professional identity formation, and involvement in meaningful institutional roles. The predominantly married composition of the workforce further underscores the importance of policies that support work–life balance—an issue highlighted in Dubey's (2025) work, which emphasizes the heightened need for institutional flexibility and support among married employees.

Employment classification indicates that faculty members comprise a slight majority of the institutional workforce, presenting a departure from Pearce's (2025) documentation of staff-heavy distributions in many higher education institutions. This suggests an academic-forward institutional identity, which may shape priorities in resource allocation, professional development, and leadership cultivation. Tenure data reflect a dual structure: a significant portion of employees are relatively new to the institution, while a sizeable minority possess long-standing service. The newer cohort—comprising those with less than a year to five years of service—brings dynamism and adaptability but may also face higher turnover risk if institutional transitions are poorly communicated or misaligned with expectations. This interpretation is reinforced by Bichsel et al. (2023), who emphasize the vulnerability of early-career employees in periods of organizational change. In contrast, longer-tenured employees provide continuity, deep procedural knowledge, and institutional memory—assets that Malik (2024) argues are critical during periods of transformation.

Income distribution reveals a layered economic structure within the workforce, with a notable proportion situated in lower income brackets that may predispose them to financial precarity.

Within the framework of Adams' Equity Theory, this stratification raises considerations about perceived fairness in compensation, opportunities for advancement, and alignment between workload and remuneration. These perceptions can have direct implications for morale, commitment, and retention—especially at a time when organizational demands and expectations may intensify as part of the transition to university status.

Taken together, the demographic and employment characteristics of the Siquijor State College workforce point to the necessity of nuanced, evidence-based strategies. These include professional development pathways tailored to mid-career employees; structured support systems that facilitate work–life balance; deliberate engagement of long-tenured employees in mentorship and institutional planning; and transparent communication surrounding compensation and benefits to manage perceptions of equity. As the institution navigates its pivotal transition, leveraging both the strengths and needs of its diverse workforce will be central to ensuring continuity, stability, and collective commitment to its evolving mission.

The Extent of the Needs of Employees at Siquijor State College

The results presented in Figure 4 indicate that employees at Siquijor State College generally experience High Fulfillment of their needs, with a composite mean of 3.17. This suggests that, overall, employees perceive most of their needs as being met, though certain areas still require improvement. Among the different dimensions, Safety Needs emerged as the most fulfilled, with Faculty reporting a mean of 3.43 and Staff 3.60, interpreted as Very High Fulfillment according to the interpretation guide. This finding reflects that employees feel their safety needs are adequately addressed and that they experience strong institutional support in maintaining a secure environment. Similarly, Social Needs also rated highly, indicating that employees perceive sufficient opportunities for interaction and a sense of belonging within the workplace. This aligns with the conclusions of Arampatzi and Burger (2020), who argued that secure and socially supportive environments contribute positively to overall employee satisfaction.

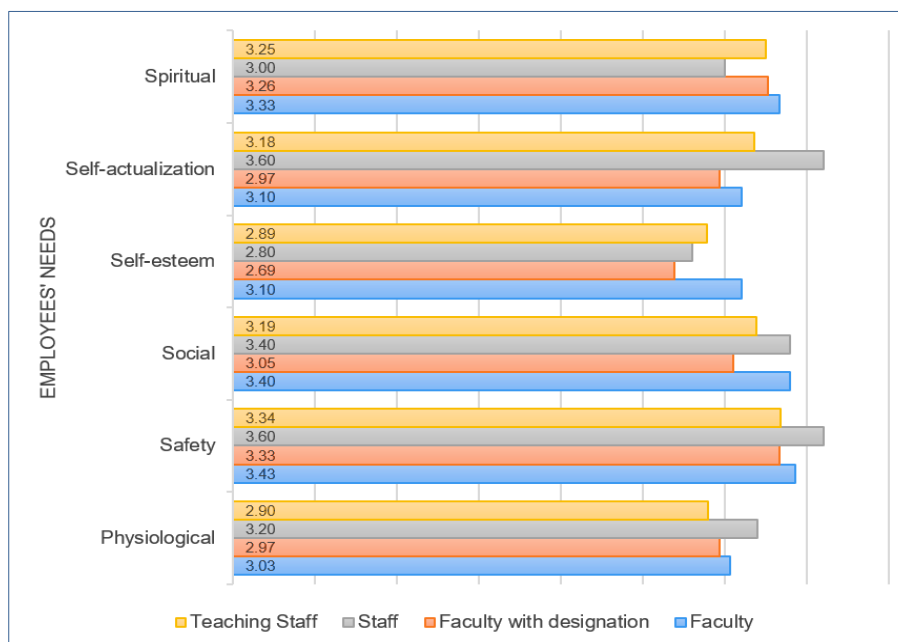


Figure 4. Extent of the Needs of Employees at Siquijor State College

Conversely, Self-Esteem and Self-Actualization Needs were identified as the least fulfilled,

particularly among Faculty with Designation (2.69) and Teaching Staff (3.18), which, while still within the High Fulfillment range, indicate areas requiring improvement. The qualitative data provide context for these ratings. Respondent 88 highlighted the absence of recognition mechanisms, stating: *“There are issues that need to be addressed: infrastructures, training and development, sense of ownership and accountability from personnel, mechanisms are not in place for acknowledging employee achievements, internet connectivity, ICT equipment, and culture biases.”* Likewise, Respondent 101 reported insufficient professional development opportunities, noting: *“From my experience, I am skeptical about institutions readiness for conversion into a state university ... I have not been provided opportunities such as job-related training or seminars that would enhance our skills. Without these resources, it’s hard to see how the institution can effectively manage the demands and expectations that come with becoming a state university.”* These statements underscore that higher-order needs related to recognition, growth, and achievement remain less satisfactorily fulfilled, despite the overall high scores.

An important observation emerges from the contradictions between quantitative scores and qualitative perceptions. While Safety Needs are rated highly, several respondents reported experiences suggesting gaps in psychological safety. Respondent 92 expressed concerns about discrimination and managerial practices: *“SSC is not yet ready for its conversion into a state university because of the ff. reasons: ... the management is not open to employees initiatives but practices fraudulent acts, employees are often discriminated.”* Similarly, Respondent 88 highlighted cultural biases and inequitable acknowledgment, and Respondent 4 emphasized that administrative decisions appear to favor upper management: *“Being one-sided to the decision making will never benefit us to become a state university. Based on my observation, most decisions are clearly patterned only to what will benefit the top administration, not for the whole organization.”* These comments suggest that while physical safety may be well addressed, aspects of psychological safety, equity, and inclusive governance remain areas of concern, consistent with Radziwill and Benton (2024), who emphasize that psychological safety is essential for well-being and optimal performance.

Similarly, the quantitative measure of Physiological Needs—although generally rated positively—revealed some specific concerns. For instance, inadequate facility comfort and maintenance, reflected in lower individual assessments, with a mean score of 2.55, highlights the need for attention to the physical work environment, complementing respondents’ feedback about infrastructure limitations (Respondent 88).

Taken together, these findings suggest that while Siquijor State College effectively addresses foundational and social needs, significant gaps remain in meeting higher-level needs such as recognition, professional development, and psychological safety. To achieve Very High Fulfillment across all employee needs, the institution should focus on establishing transparent policies, strengthening recognition systems, providing robust professional development opportunities, and fostering an environment that promotes both physical and psychological well-being. Addressing these areas is particularly critical as the College prepares for its transition to state university status, where fulfilling higher-order employee needs will contribute not only to morale and stability but also to institutional readiness.

The Extent of Workforce Stability at Siquijor State College

The results presented in Figure 5 indicate that employees at Siquijor State College generally perceive their work environment as Stable, reflected in an overall mean of 3.23. According to

the interpretation guide, this suggests that the workforce experiences a reliable and steady institutional setting, though certain aspects still require attention to achieve optimal functioning. Among the workforce attributes, Skills received the highest rating with a mean of 3.40, interpreted as Very Stable, indicating that employees feel competent and confident in performing their duties. Similarly, Staff reported stable comfort in seeking support from colleagues, with a mean score of 3.22, suggesting that collaborative assistance is readily available. Positive perceptions of Community, including team-building activities and social events both had a mean score of 3.22, further highlight the nurturing of interpersonal relationships within the college. These findings align with Vorecol (2022), who emphasizes that robust team-building mechanisms enhance workplace cohesion and foster positive relational dynamics.

Despite this overall stability, certain workforce dimensions fall at the lower end of the Stable range, signaling areas for targeted improvement. Nurturing, which reflects opportunities for continuous learning and skill enhancement, was rated at 3.08, suggesting that professional development resources may be perceived as insufficient. This is reinforced by Respondent 101, who stated: *“From my experience, I am skeptical about institutions readiness for conversion into a state university ... I have not been provided opportunities such as job-related training or seminars that would enhance our skills.”* Such insights are consistent with Erskine-Sackey (2021), who highlights that professional development opportunities are critical for maintaining employee performance and engagement.

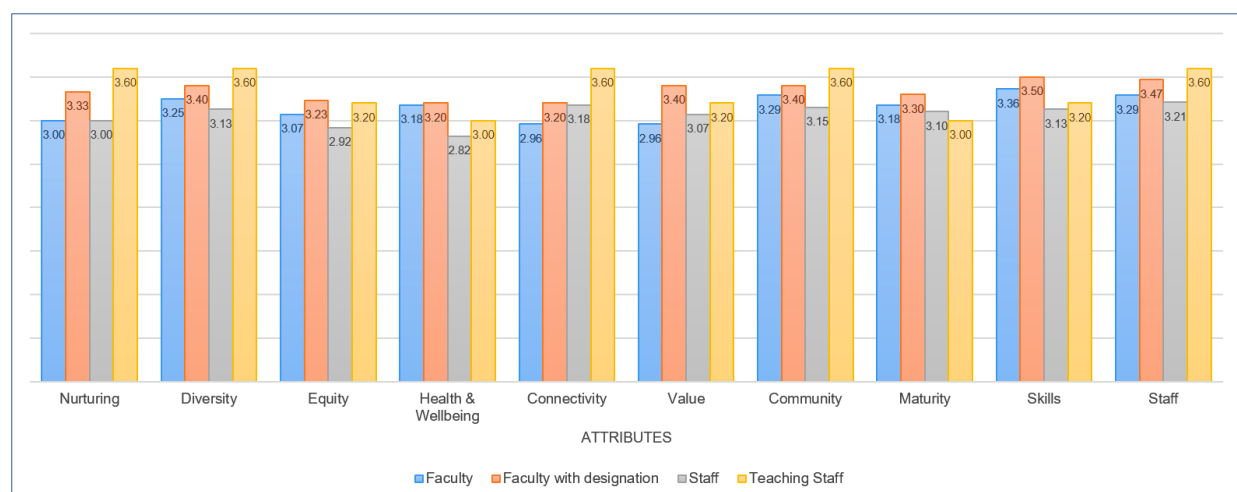


Figure 5. Extent of Workforce Stability at Siquijor State College

Additional areas requiring attention include Diversity, with a mean score of 3.08, and Connectivity, with a mean score of 3.02, which, while still interpreted as Stable, indicate limited encouragement for diverse viewpoints and two-way communication. Equity, rated at 2.83, approaches the lower threshold of the Stable range, suggesting perceived inequities in opportunities for employees to express opinions or participate meaningfully in institutional processes. These concerns are mirrored in qualitative feedback. Respondent 4 observed: *“Being one-sided to the decision making will never benefit us to become a state university. Based on my observation, most decisions are clearly patterned only to what will benefit the top administration, not for the whole organization.”* Similarly, Respondent 92 reported: *“SSC is not yet ready for its conversion into a state university because ... the management is not open to employees initiatives but practices fraudulent acts, employees are often discriminated.”* Such statements highlight gaps in inclusivity, transparency, and ethical conduct, demonstrating that workforce stability is not solely a matter of procedural functioning but also of equitable and

participatory organizational culture.

In the domain of Maturity, with a mean score of 3.02, employees expressed reservations about empowerment in decision-making, reflecting perceptions that autonomy and shared governance are limited. This observation aligns with Annamalai (2022), who concluded that perceived inequity and restricted participation negatively affect employee satisfaction and organizational commitment.

Taken together, the findings suggest that Siquijor State College maintains strong foundations of workforce stability, particularly in employee competence, collegial support, and social cohesion. However, persistent challenges remain in areas such as professional development, inclusiveness, equity, ethical leadership, and empowerment. According to the interpretation guide, the workforce is currently functioning within a Stable range but has not yet reached Very Stable, which is required for fully engaged and resilient employees. To enhance stability, the institution must strengthen continuous learning support, formalize avenues for employee participation, ensure equitable opportunities for voice and recognition, institutionalize transparent communication mechanisms, and actively address concerns about discriminatory or unethical practices. These recommendations align with Letlatsa (2022), who emphasized that addressing these dimensions promotes an empowered, valued, and fully engaged workforce, essential for effectively navigating the transition to state university status.

The Extent of Employee Morale at Siquijor State College

Figure 6 illustrates the extent of employee morale at Siquijor State College, revealing a predominantly positive and encouraging institutional climate. All indicators fall within either High Morale or Very High Morale, suggesting that employees generally feel engaged, valued, and aligned with the college's mission. The strongest contributor to morale is employees' sense of commitment to institutional objectives, reflected in the highest mean score of 3.39, interpreted as Very High Morale according to the interpretation guide. This demonstrates that employees not only understand the institutional direction but also feel deeply dedicated to advancing it. Supporting this, Respondent 29 stated: *"I am optimistic with the dedication of the leadership of our college president and the collaborative efforts of the faculty and staff, I believe that with sustained commitment and strategic planning SSC is on a solid path toward a successful transition into a state university."* Such feedback highlights the intrinsic motivation and alignment between individual and institutional goals, reinforcing the quantitative finding.

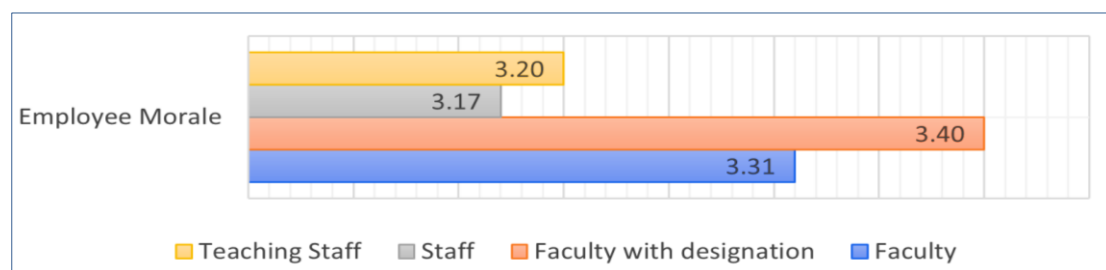


Figure 6. Extent of Employee Morale at Siquijor State College

Similarly, employees reported high perceptions of meaning and purpose in their daily work, with a mean score of 3.31, indicating that roles are perceived as significant. Optimism about the college's transition to state university status also contributed to morale, with mean scores

ranging from High Morale, 3.20 to Very High Morale, 3.54. For instance, Respondent 84 remarked: *“While there are still areas that need improvement, I believe SSC is on the right track towards its conversion into a state university.”* This optimism is critical during periods of institutional transformation, helping maintain continuity, unity, and forward momentum. High ratings were also observed for satisfaction with professional relationships, with mean scores ranging from 3.08 to 3.37, interpreted as High to Very High Morale, indicating that collegiality, cooperation, and the comfort in seeking help from colleagues significantly contribute to a supportive work environment. These findings resonate with the workforce stability results, where Skills, Community, and collegial support were identified as institutional strengths, suggesting that competence and interpersonal trust reinforce both stability and morale.

Despite the overall positive picture, certain indicators with lower scores—though still within the High Morale range—highlight subtle areas for improvement. Leadership communication was rated with mean scores ranging from 3.08 to 3.32, reflects opportunities for more consistent and transparent dissemination of the institutional vision. Qualitative responses provide context for this finding. Respondent 4 observed: *“Being one-sided to the decision making will never benefit us to become a state university. Based on my observation, most decisions are clearly patterned only to what will benefit the top administration, not for the whole organization.”* This suggests that while the college has a clear direction, inclusive communication practices may not be fully realized, potentially affecting employee understanding and trust. Similarly, Respondent 101 highlighted concerns regarding support and professional growth, indicating that lack of opportunities for skill enhancement can influence perceptions of leadership and morale: *“I have not been provided opportunities such as job-related training or seminars that would enhance our skills.”*

Other areas warranting attention include the sense of pride and belonging within the workplace, with mean scores ranging from 3.10 to 3.40, and the overall quality of professional relationships. Respondent 88 emphasized the need for recognition mechanisms and accountability, stating: *“Mechanisms are not in place for acknowledging employee achievements ... sense of ownership and accountability from personnel need to be strengthened.”* This feedback aligns with the findings on unmet higher-order needs, reinforcing that morale is not only a function of engagement but also of recognition, equity, and inclusion, consistent with Khumalo (2022), who underscores the essential role of management support, communication, and acknowledgment in sustaining morale in higher education institutions.

Taken together, these results portray a workforce functioning at a strong morale baseline, characterized by commitment, optimism, and meaningful engagement. However, targeted improvements in leadership communication, inclusive decision-making, recognition, and continuous professional development can help elevate morale from consistently High to more uniformly Very High. Strengthening these areas would enhance employee motivation, cohesion, and readiness—critical components as Siquijor State College prepares to transition to state university status, aligning employee well-being with institutional goals.

The Relationships Among the Extent of Needs, Morale, and Workforce Stability of the Respondents

The correlation analysis between the extent of employee needs and workforce stability at Siquijor State College (Refer to Appendix C) revealed consistently significant and meaningful relationships across all variables. With p-values of 0.000 for all tested correlations, these results

demonstrate high statistical significance, confirming that employee needs are fundamentally intertwined with both workforce stability and employee morale. This finding reinforces and extends earlier results, which indicated High to Very High Fulfillment of employee needs, Stable workforce conditions, and High to Very High Morale across the institution.

The correlation between Employees' Needs and Workforce Stability not only rejects the null hypothesis (H_{01}) but exhibits relationships ranging from moderate to strong, based on the interpretation guide. Specifically, dimensions such as community, equity, health and well-being, and value showed moderate to strong correlations, with r_s values approximately between 0.20 and 0.60, with self-esteem needs. These strengths indicate that fostering fairness, belongingness, well-being, and recognition significantly stabilizes the workforce. Qualitative feedback supports this, as Respondent 92 reported: *"SSC is not yet ready for its conversion into a state university because of the lack of required resources, the management lacks drive/initiatives, the management is not open to employees' initiatives but practices fraudulent acts, employees are often discriminated."* Similarly, Respondent 4 observed: *"Being one-sided to the decision making will never benefit us to become a state university. Most decisions are clearly patterned only to what will benefit the top administration, not for the whole organization."* These comments highlight that when higher-order needs like recognition and equity are unmet, workforce stability can be undermined despite generally favorable quantitative ratings. Such findings align with Davidescu et al. (2020), who emphasize that satisfying employee needs is a key determinant of workforce stability.

The relationship between Employees' Needs and Employee Morale, which led to the rejection of H_{02} , reveals even stronger associations, with several coefficients falling within the strong range from 0.60 to 0.80. The strongest correlations were observed for self-actualization needs, with an r_s value of 0.686, self-esteem needs, with an r_s of value 0.648, and social needs, with an r_s value of 0.607. These results are consistent with earlier findings showing that employees exhibit meaningful engagement, pride, and optimism, yet they also underscore the need to strengthen recognition, growth opportunities, and interpersonal support to elevate morale to uniformly Very High. Respondent 88 remarked: *"Mechanisms are not in place for acknowledging employee achievements ... sense of ownership and accountability from personnel need to be strengthened,"* while Respondent 101 emphasized: *"I have not been provided opportunities such as job-related training or seminars that would enhance our skills."* These statements demonstrate that higher-order needs, beyond mere fulfillment of basic and safety needs, play a crucial role in shaping morale, consistent with Okpala (2020), who stressed the importance of recognition, social connectedness, and motivation in fostering productive, high-performing employees.

Additionally, the correlation between Workforce Stability and Employee Morale, which led to the rejection of H_{03} demonstrates a similarly powerful relationship. The strongest coefficient was observed between skills and morale, with an r_s value of 0.759, followed by community and morale, with an r_s value of 0.707, both classified as strong. These findings reinforce previous interpretations that employees perceive themselves as competent and benefit from supportive collegial environments, which were identified as institutional strengths in the workforce stability results. For instance, Respondent 29 expressed optimism regarding institutional leadership and collaboration: *"I am optimistic with the dedication of the leadership of our college president and the collaborative efforts of the faculty and staff ... SSC is on a solid path toward a successful transition into a state university."* Such observations align with Ngambi (2020), who emphasized that leadership competencies—including communication, team building, and trust—enhance employee morale. These correlations suggest that competence

and a sense of community not only stabilize the workforce but also significantly elevate morale.

Taken together, the findings highlight clear strategic priorities for Siquijor State College as it prepares for its transition to a state university. The moderate to strong correlations across variables underscore that enhancing employee outcomes requires a holistic approach, addressing not only well-met basic and safety needs but also higher-order needs such as recognition, professional growth, psychological safety, and inclusivity. Policies should strengthen community-building practices, reinforce equitable treatment, expand opportunities for skill enhancement, and establish clear mechanisms for valuing employee contributions. Integrating these strategies can leverage the institution's existing strengths to move from merely stable and highly motivated working conditions to an environment characterized by Very High Stability, Fulfilment, and Morale, essential for its successful transition into a state university.

The Difference on the Extent of Workforce Stability and Morale Among the Respondents According to Their Profile

The comparative analysis examining whether workforce stability and employee morale differed across various demographic and employment-related categories at Siquijor State College (Refer to Appendix D) consistently indicates no statistically significant differences. Variables such as sex, age, marital status, employment classification, years of service, and monthly income all yielded p-values ranging from 0.093 to 0.433 for workforce stability and from 0.120 to 0.839 for employee morale, each exceeding the 0.05 significance threshold. Accordingly, the study fails to reject the null hypotheses, suggesting that perceptions of workforce stability and morale are consistent across demographic and employment subgroups. Moreover, computed effect sizes ranging from $r = 0.021$ to 0.092 fall within the small range around $r = 0.10$, confirming that even where minor numerical differences exist, these are not practically meaningful. This uniformity across respondent profiles is particularly notable when considered alongside earlier results showing High Fulfillment of employee needs, Stable workforce conditions, and High Morale, indicating that the institutional environment fosters equitable experiences across all employees regardless of demographic characteristics.

This finding is further corroborated by qualitative responses illustrating that employee perceptions of institutional stability and morale are shaped more by organizational practices than individual circumstances. For instance, Respondent 29 shared optimism regarding leadership and collaboration: *"I am optimistic with the dedication of the leadership of our college president and the collaborative efforts of the faculty and staff ... SSC is on a solid path toward a successful transition into a state university."* Similarly, Respondent 88 highlighted concerns about recognition and accountability mechanisms, stating: *"Mechanisms are not in place for acknowledging employee achievements ... sense of ownership and accountability from personnel need to be strengthened."* These observations indicate that while employees experience both positive engagement and challenges, such experiences are broadly distributed across all groups rather than being confined to specific demographic categories.

The present findings contrast with studies suggesting that demographic and employment characteristics often shape workplace outcomes. For example, Bichsel et al. (2023) reported that race, gender, and age significantly influenced workforce stability and retention patterns in higher education institutions. Conversely, the current results align with Phillips (2024), who found no significant predictive power of gender, ethnicity, or years of experience on faculty job satisfaction within a historically Black university. Within the context of Siquijor State

College, this lack of significant group differences reflects a notably homogeneous institutional climate, further supported by earlier correlation results demonstrating strong, institution-wide relationships among employee needs, workforce stability, and morale. These correlations indicate that systemic organizational factors—including leadership competence, recognition practices, professional development opportunities, and equitable communication mechanisms—are the primary drivers of employee outcomes, rather than individual sociodemographic characteristics.

The implications for policy and institutional development are clear. Enhancing workforce stability and morale requires universal strategies rather than targeted interventions. Initiatives should focus on strengthening communication practices, implementing transparent recognition systems, promoting equitable treatment, and expanding opportunities for professional development—all factors previously identified as central to fulfilling employee needs and sustaining both workforce stability and morale. Considering the institution's ongoing transition toward state university status, these findings underscore the importance of cultivating an inclusive and cohesive work environment where positive experiences, engagement, and opportunities are shared equitably across all employee groups, thereby reinforcing the organizational foundations necessary for a successful institutional transformation.

Overall, the findings demonstrate that while foundational employee needs are largely fulfilled and workforce stability is maintained, higher-order needs such as self-esteem, professional growth, and participatory decision-making remain areas requiring strategic attention to strengthen morale and institutional readiness.

5. Conclusion

The findings from this study at Siquijor State College offer valuable insights into the interplay between employee needs, workforce stability, and morale during the institution's transition toward state university status. From a theoretical perspective, this research validates and extends Karakhan's model of employee needs within a higher education context, demonstrating that the fulfillment of Maslow's hierarchical needs—from physiological and safety needs to higher-order self-esteem and self-actualization—is strongly and positively associated with both workforce stability and employee morale. The study's correlation analyses, which revealed strong relationships between higher-order needs (i.e., self-actualization, self-esteem, and social needs) and workforce outcomes, provide empirical evidence supporting the model's applicability in higher education institutions, thereby contributing to the broader literature on organizational behavior and human resource theory.

From an institutional practice perspective, the research offers actionable diagnostics for conversion readiness. The combined quantitative and qualitative findings highlight strengths—such as high competence, strong social cohesion, and commitment to institutional mission—as well as areas requiring strategic attention, including psychological safety, professional development opportunities, equitable recognition systems, and inclusive decision-making processes. By addressing these areas, the College can enhance its workforce stability, elevate morale, and foster a more engaged, committed, and capable workforce. This approach provides a practical roadmap for higher education institutions seeking to manage organizational change effectively while preparing for structural transitions such as achieving state university status.

Finally, in terms of policy contributions, the study underscores the importance of aligning

institutional initiatives with regulatory and developmental frameworks. Policies designed to ensure employee well-being, equity, recognition, and professional growth directly support compliance with CHED requirements and align with Sustainable Development Goals related to decent work, equality, and lifelong learning. Implementing structured programs for professional development, transparent communication channels, inclusive governance, and systematic recognition not only strengthens workforce outcomes but also ensures that institutional practices meet national and international standards for higher education quality and human capital development.

In conclusion, by simultaneously addressing theoretical, practical, and policy dimensions, Siquijor State College can leverage its current strengths while strategically targeting areas for growth. This integrated approach ensures a stable, high-morale workforce, cultivates an inclusive and competent organizational culture, and positions the College to successfully achieve its transition to a thriving and recognized state university.

6. Recommendations

Based on the findings of this study, the following recommendations are proposed to strategically enhance employee needs fulfillment, workforce stability, and morale at Siquijor State College in preparation for its transition to a state university. Recommendations are prioritized into High, Medium, and Low based on resource requirements and potential impact, and are explicitly linked to the empirical evidence from the study.

High Priority
Developmental Area: Safety & Psychological Needs Specific Goal Ensure a psychologically safe, ethical, and transparent institutional culture by December 31, 2025 Key Actions/Initiatives ▪ Establish and enforce zero-tolerance policies for discrimination, harassment, and unethical practices, with clear reporting and disciplinary procedures. ▪ Implement mandatory ethics, transparency, and psychological safety training for all managers and leaders. ▪ Conduct audits of workplace safety and security measures. Empirical Basis Despite high quantitative Safety Needs scores (Faculty 3.43; Staff 3.60), respondents reported discrimination, cultural bias, and lack of psychological safety (Respondents 4, 88, 92, 101), indicating gaps between perceived physical safety and actual psychological well-being.
Developmental Area: Social Needs & Communication Specific Goal

Strengthen inclusivity, collaboration, and open communication to foster belonging and engagement by December 31, 2026

Key Actions/Initiatives

- Implement a multi-directional communication strategy with regular updates, feedback mechanisms, and forums for employee input.
- Conduct structured team-building programs with follow-up activities to sustain cohesion.
- Promote participatory decision-making to ensure all voices are heard.

Empirical Basis

Social Needs were high ($w\bar{x} = 3.40$), but limited openness in sharing ideas ($w\bar{x} = 2.68$) and qualitative feedback (Respondents 4, 88) highlighted insufficient inclusivity and participatory communication.

Developmental Area: Employee Morale & Recognition

Specific Goal

Enhance morale and motivation by ensuring employees feel valued and acknowledged by December 31, 2026

Key Actions/Initiatives

- Establish formal recognition programs for achievements across all employee classifications.
- Provide opportunities for staff to lead initiatives or projects, with institutional acknowledgment.
- Strengthen leadership communication of goals and vision.

Empirical Basis: Morale was generally High to Very High ($w\bar{x} = 3.08$ – 3.54), yet leadership communication and sense of belonging scored lower ($w\bar{x} = 3.08$ – 3.10), with Respondent 88 emphasizing lack of recognition and acknowledgment of contributions.

Medium Priority

Developmental Area: Self-esteem & Self-actualization Needs

Specific Goal

Promote professional growth, skill mastery, and self-actualization by December 31, 2026

Key Actions/Initiatives

- Launch a comprehensive professional development program including technical, leadership, and soft-skills training.
- Implement mentorship programs linking long-tenured and newer employees.
- Allocate resources for seminars, certifications, and skill-enhancing initiatives.

Empirical Basis

Self-esteem ($w\bar{x} = 2.69$) and Self-actualization ($w\bar{x} = 3.18$) were lower among certain employee groups; Respondent 101 reported insufficient professional growth and training opportunities.

Developmental Area: Workforce Stability & Skills Specific Goal Maintain and enhance employee competence and community cohesion by December 31, 2026 Key Actions/Initiatives ▪ Foster team collaboration through ongoing projects and cross-departmental initiatives. ▪ Encourage employee involvement in decision-making and institutional initiatives. ▪ Recognize long- serving staff as knowledge resources in strategic planning and mentorship. Empirical Basis Skills ($w\bar{x} = 3.40$) and Community ($w\bar{x} = 3.22$) were strong, but Maturity ($w\bar{x} = 3.02$) and Connectivity ($w\bar{x} = 3.08$) indicated limited empowerment and collaboration; Respondents 4, 101 noted gaps in participatory decision-making and mentorship.
Low Priority
Developmental Area: Physiological Needs & Work Environment Specific Goal Maintain functional and comfortable facilities by December 31, 2026 Key Actions/Initiatives ▪ Routine maintenance and upgrades for offices, classrooms, and restrooms. ▪ Transparent reporting of progress on facility improvements. Empirical Basis Physiological Needs were generally high ($w\bar{x} > 3.0$) suggest functional facilities, but lower ratings for comfort and maintenance ($w\bar{x} = 2.55$) highlight areas needing improvement.

References

- Albert, J. R. G. (2024, December 16). The middle class in the Philippines: Growing but vulnerable – Analysis. *The Philippine Institute for Development Studies*.
<https://www.pids.gov.ph/details/news/in-the-news/the-middle-class-in-the-philippines-growing-but-vulnerable-analysis>
- Al-Naabi, I., & Al-Shukaili, N. (2023). Working from home in higher education: A systematic review. *Journal of University Teaching & Learning Practice*, 20(1). Retrieved from <https://open-publishing.org/journals/index.php/jutlp/article/view/742>
- Alonzo, R. R. T. (2025). Bridging skills gaps: A learning needs analysis of non-teaching personnel in higher education. *International Journal of Innovative Research and Scientific Studies*, 8(1), 1206–1214. <https://doi.org/10.53894/ijirss.v8i1.4569>
- Annamalai, S. (2022). Influence of perceived equity, job enrichment, and burnout among educators in Indian private universities on job satisfaction and the desire to quit. *Frontiers in Education*, 7, 991068. <https://doi.org/10.3389/feduc.2022.991068>
- Arampatzi, E., & Burger, M. (2020). Facility management services and employee well-being. *Journal of Facilities Management*, 18(2), 109–130. <https://doi.org/10.1108/jfm-10-2019-0055>
- Astudillo, P. L. (2024). The role of personal accountability in the relationship between competence and compliance in the procurement process of Philippine basic education. *International Journal of Research and Innovation in Social Science*, 8(7), 1549–1562. <https://doi.org/10.47772/IJRISS.2024.807125>
- Bichsel, J., Bradley, C., & McChesney, J. (2023). The CUPA-HR 2023 Higher Education Employee Retention Survey. *College and University Professional Association for Human Resources*. <https://www.cupahr.org/surveys/research-briefs/higher-ed-employee-retention-survey-findings-september-2023/>
- Bichsel, J., Fuesting, M., Tubbs, D., & Schneider, J. (2023, September). Higher ed employee retention survey findings: September 2023. *CUPA-HR*.
<https://www.cupahr.org/surveys/research-briefs/higher-ed-employee-retention-survey-findings-september-2023/>
- Braun, V., & Clarke, V. Using thematic analysis in psychology, *Qual. Res. Psychol.* 3 (2) (2006) 77–101, <https://doi.org/10.1191/1478088706qp063oa>
- Cohen, J. (1998). *Statistical power analysis for behavioural sciences*. Lawrence Erlbaum Associates, Hillsdale.
- Davidescu, A. A., Apostu, S.-A., Paul, A., & Casuneanu, I. (2020). Work flexibility, job satisfaction, and job performance among Romanian employees—Implications for sustainable human resource management. *Sustainability*, 12(15), 6086. <https://doi.org/10.3390/su12156086>

Dubey, V. (2025, February). Impact of marital status on work-life balance of female employees. *International Journal of Creative Research Thoughts - IJCRT*, 13(2), 164-170. <http://www.ijcrt.org/papers/IJCRTAU02022>

Erskine-Sackey, S. (2021). Impact of staff training and development on employee performance: the moderating role of work engagement. *Global Journal of Management and Business Research: Administration and Management*, 21(A9), 1–10. <https://journalofbusiness.org/index.php/GJMBR/article/view/3424>

Gopinath, R. (2020). An investigation of the relationship between self-actualization and job satisfaction of academic leaders. *International Journal of Management*, 11(8), 753–763. https://www.researchgate.net/publication/344016283_An_Investigation_of_the_relationship_between_Self-Actualization_and_Job_Satisfaction_of_Academic_Leaders

Israel, G. D. (1992). *Determining Sample Size*. University of Florida Cooperative Extension Service, Institute of Food and Agriculture Sciences, EDIS, Florida.

Jain, A., & Singh, B. (2022). Role of workplace spirituality, empathic concern, and organizational politics in employee well-being. *Frontiers in Psychology*, 13, 910545. <https://pmc.ncbi.nlm.nih.gov/articles/PMC9105451/>

Karakhan, A. A., Gambatese, J., & Simmons, D. R. (2020). Development of assessment tool for workforce sustainability. *Journal of Construction Engineering and Management*, 146(4). [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001794](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001794)

Khumalo, N. (2022). Factors that affect the morale of employees in the institution of higher learning in south africa. *International Journal of Higher Education*, 11(3), 58–70. <https://doi.org/10.5430/ijhe.v11n3p58>

Koo, J., Lee, H., & Lee, J. (2024). Give me my flowers before I die! Linking employee recognition, job satisfaction, and turnover intention. *Frontiers in Psychology*, 15, 123456. <https://www.sciencedirect.com/science/article/pii/S259029112400250X>

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610.

Rea, L. M., & Parker, R. A. (1992). *Designing and conducting survey research: a comprehensive guide*. San Francisco: Jossey-Bass Publishers.

Lee, J., Kim, H., & Park, S. (2022). Examining workforce sustainability attributes and their impact on employee engagement in higher education. *Educational Management Administration & Leadership*, 50(4), 712-730.

Letlatsa, R. (2022). Investigating employee perceptions of a communication strategy for higher education institutions in Lesotho. *ResearchGate*. 27(1), 1–18. https://www.researchgate.net/publication/374936934_Investigating_Employee_Perceptions_of_a_Communication_Strategy_for_Higher_Education_Institutions_in_Lesotho

Li, K., & Griffin, M. A. (2022). Safety behaviors and job satisfaction during the pandemic: The mediating roles of uncertainty and managerial commitment. *Journal of Safety Research*, 82, 166–175. <https://doi.org/10.1016/j.jsr.2022.05.008>

Mafindi, S. (2021). Assessing the impact of faculty development programs on organizational commitment and performance in higher education institutions. *International Journal of Educational Management*, 35(3), 493-507.

Malik, A. (2024, March 13). *The enduring influence: How tenured employees shape organizational culture*. Forbes.
<https://www.forbes.com/councils/forbestechcouncil/2024/03/13/the-enduring-influence-how-tenured-employees-shape-organizational-culture/>

Ngambi, H. C. (2020). The relationship between leadership and employee morale in higher education. *Global Journal of Business Management*, 14(3), 1–15.
<https://www.internationalscholarsjournals.com/articles/the-relationship-between-leadership-and-employee-morale-in-higher-education.pdf>

Okpala, B. (2020). A measure of the impact of employee motivation on multicultural team performance using the spearman rank correlation coefficient. *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.3637220>

Phillips, L. (2024). *The predictability of selected academic, demographic, and job-related factors on the job satisfaction of faculty members employed at a historically black university*. Texas Southern University. <https://digitalscholarship.tsu.edu/dissertations/99>

Price, M. (2025, April 8). *Adopt the six-fold path to create workplace happiness*. The Australian. <https://www.theaustralian.com.au/business/empower-employees-and-create-workplace-happiness/news-story/29f5bdfc573ea71e750a5ea8e1c39562>

Purdy, M. (2024). Closing the gap: A literature review of gender disparities in higher education. *Pepperdine Journal of Communication Research*, 12(1), Article 5.
<https://digitalcommons.pepperdine.edu/pjcr/vol12/iss1/5>

Radziwill, N., & Benton, M. C. (2024, July 13). *Unleashing excellence through inclusion: navigating the engagement-performance paradox*. arXiv.org.
<https://arxiv.org/abs/2407.09987>

Smith, A., & Jones, B. (2023). The impact of shared values on employee engagement in educational institutions. *Journal of Educational Leadership*, 48(2), 145-162.

U.S. Department of Health and Human Services. (2022). The U.S. Surgeon General's Framework for Workplace Mental Health and Well-Being.
<https://www.hhs.gov/surgeongeneral/reports-and-publications/workplace-well-being/index.html>

Vorecol. (2022). The role of team-building activities in shaping a positive work environment: What works? <https://vorecol.com/blogs/blog-the-role-of-team-building-activities-in-shaping-a-positive-work-environment-what-works-200059>

Waterman, R. H., Jr., & Peters, T. J. (1980s). The McKinsey 7S Model.

Wilber, K. (2000). *A theory of everything: An integral vision for business, politics, science and spirituality*. Shambhala Publications.

World Economic Forum. (2023). Global gender gap report 2023.

<https://www.google.com/search?q=http://reports.weforum.org/globalgender-gap-report-2023/>

Zhang, Y. (2020). *Low staff morale analysis in the company based on Maslow's hierarchy needs theory*. Mahidol University Digital Archive.

<https://archive.cm.mahidol.ac.th/bitstream/123456789/3556/1/TP%20MM.013%202020.pdf>

Appendices

Appendix A: Sample Coding

Theme 1: Adequacy of Institutional Resources and Infrastructure

This theme reflects employees' perceptions regarding whether Siquijor State College has sufficient facilities, equipment, and physical resources to support its transition into a state university. Many respondents acknowledged visible institutional improvements, noting that the college has been making efforts to upgrade its infrastructure. As R3 expressed, "The college has improved some buildings and classrooms, which shows we are preparing for the conversion." Similarly, R7 shared that "Laboratories and equipment are slowly being upgraded, but there is still more work to be done." Conversely, some employees raised concerns about the adequacy of resources, with R12 stating, "Some facilities are still lacking and need major improvement before we can be at the university level." These statements collectively demonstrate both appreciation of ongoing developments and awareness of persisting limitations.

The findings indicate that while employees perceive progress in infrastructure, they also recognize the need for more comprehensive improvements to meet university standards. This theme aligns with institutional readiness frameworks emphasizing that adequate physical and technological resources are essential indicators of preparedness for university conversion.

Theme 2: Competence and Preparedness of Human Resources

This theme covers employees' evaluations of faculty and staff qualifications, professional development, and overall capability to operate at a university-level academic environment. Respondents noted efforts to enhance human resources, such as supporting faculty members in pursuing higher degrees. As R5 remarked, "More faculty are taking their master's and doctorate degrees in preparation for the conversion." R9 similarly commented, "We have trainings and seminars that help us improve our competencies." However, some respondents acknowledged existing gaps, such as R14 who said, "Not all faculty members meet the required qualifications yet, and we need more capacity-building programs." These varied views point to a workforce undergoing development but still working toward meeting full university standards.

Overall, findings show that human resource development is progressing but remains incomplete. Faculty qualifications and staff competencies are key components of university readiness, and employees perceive that while the college is moving forward, further advancement is needed to fully align with CHED requirements.

Theme 3: Institutional Commitment and Administrative Support

This theme explores employees' perceptions of leadership efforts, administrative initiatives, and the level of institutional commitment toward achieving university status. Many respondents expressed confidence in the administration's direction, with R2 stating, "The administration is very committed and is working hard to meet all requirements." R10 echoed this sentiment, remarking, "The leadership is active in planning and guiding us through the conversion process." Nonetheless, some employees emphasized areas for improvement in communication. R16 noted, "We need more regular updates so that all employees are fully aware of the progress." These reflections indicate that while administrative commitment is strong, communication gaps can affect employee engagement.

Findings suggest that employees generally view administrative leadership as a driving force in the conversion initiative. Consistent communication and inclusive participation are critical to strengthening overall organizational readiness for universityhood.

Theme 4: Readiness of Academic Programs and Curriculum Alignment

This theme captures perceptions regarding the alignment of current curricular offerings with university-level academic expectations. Respondents noted that curriculum revisions are ongoing, with R8 stating, “Our programs are being reviewed and updated to meet university requirements.” R11 added, “We are integrating more research components into the curriculum, which is needed for university status.” However, some employees expressed concerns about uneven progress, such as R15 who shared, “There are still programs that need refinement and updating to align with CHED standards.” These comments highlight that curricular preparedness varies across departments.

The findings suggest that academic program readiness is advancing but not yet fully achieved. Curriculum alignment remains a crucial aspect of institutional transformation, and employees perceive it as a significant area requiring continued attention.

Theme 5: Organizational Morale and Employee Engagement

This theme discusses employees’ motivation, morale, and willingness to participate in activities related to the university transition. Respondents described varying levels of engagement, with R1 stating, “Most employees are enthusiastic and supportive of the conversion.” R9 similarly shared, “The cooperation among faculty and staff has improved as we prepare for universityhood.” However, some cited concerns about workload and uncertainty. R17 remarked, “Some employees feel overwhelmed by the additional tasks and documentation required.” These mixed experiences show that morale and engagement depend on workload distribution and clarity of roles.

Findings suggest that while many employees are motivated, sustained engagement requires supportive management strategies. Organizational morale is a significant component of readiness, affecting the institution’s capacity to successfully transition into a university.

Appendix B: Profile of the Respondents (n=102)

Profile	Frequency	Percent
<i>Sex</i>		
Male	55	53.9
Female	47	46.2
<i>Age in Years</i>		
Under 25	3	2.90
25-34	38	37.3
35-44	26	25.5
45-54	26	25.5
55 and above	9	8.80
<i>Marital Status</i>		
Single	43	42.2
Married	55	53.9
Widowed	2	2
Separated	2	2
<i>Employee Classification</i>		
Faculty	28	27.5
Faculty with designation	30	29.4
Staff	39	38.2
Staff with teaching load	5	4.90
<i>Number of Years in the Institution</i>		
Less than 1 year	18	17.6
1-5 years	43	42.2
6-10 years	14	13.7
11-15 years	11	10.8
More than 15 years	16	15.7
<i>Monthly Income</i>		
Less than Php 9,520	9	8.80
Between Php 9,520 to Php 19,040	17	16.7
Between Php 19,040 to Php 38,080	35	34.3
Between Php 38,080 to Php 66,640	31	30.4
Between Php 66,640 to Php 114,240	7	6.90
Between Php 114,240 to Php 190,400	3	2.90

Appendix C: The Relationships Among the Extent of Needs, Morale, and Workforce Stability of the Respondents

Employees' Needs and Workforce Stability

Variables Correlated to the Needs of the Employees	Needs of the Employees											
	Physiological		Safety		Belonging		Self-esteem		Self-actualization		Spiritual	
	P-value	r _s	P-value	r _s	P-value	r _s	P-value	r _s	P-value	r _s	P-value	r _s
Nurturing	.003	.289	.000	.489	.000	.527	.000	.548	.000	.480	.000	.486
Diversity	.000	.502	.000	.686	.000	.684	.000	.697	.000	.621	.001	.323
Equity	.000	.497	.000	.547	.000	.605	.000	.722	.000	.562	.000	.418
Health & Wellbeing	.000	.550	.000	.590	.000	.603	.000	.719	.000	.679	.000	.434
Connectivity	.000	.438	.000	.618	.000	.620	.000	.609	.000	.543	.005	.276
Value	.000	.490	.000	.603	.000	.648	.000	.701	.000	.551	.000	.423
Community	.000	.438	.000	.631	.000	.634	.000	.747	.000	.676	.000	.350
Maturity	.000	.379	.000	.459	.000	.612	.000	.581	.000	.615	.000	.597
Skills	.000	.394	.000	.536	.000	.614	.000	.676	.000	.694	.000	.425
Staff	.000	.441	.000	.534	.000	.704	.000	.635	.000	.625	.000	.478
Decision: Reject H ₀₁												
Remarks: Significant												
Note: Spearman's Rank Order Correlation (r _s) at 0.05 Level of Significance p > 0.01; p < 0.05												

Employees' Needs and Morale

Variables Correlated to Employee Morale	r _s	p-value	Decision	Remarks
Physiological	.427	.000	Reject H ₀₂	Significant
Safety Needs	.573	.000	Reject H ₀₂	Significant
Belonging Needs	.607	.000	Reject H ₀₂	Significant
Self-esteem Needs	.648	.000	Reject H ₀₂	Significant
Self-actualization Needs	.686	.000	Reject H ₀₂	Significant
Spiritual Needs	.367	.000	Reject H ₀₂	Significant
Note: Spearman's Rank Order Correlation (r _s) at 0.05 Level of Significance p < 0.05				

Workforce Stability and Morale

Variables Correlated to Employee Morale	r _s	p-value	Decision	Remarks
Nurturing	.407	.000	Reject H ₀₃	Significant
Diversity	.698	.000	Reject H ₀₃	Significant
Equity	.594	.000	Reject H ₀₃	Significant
Health and Wellbeing	.608	.000	Reject H ₀₃	Significant
Connectivity	.560	.000	Reject H ₀₃	Significant
Value	.603	.000	Reject H ₀₃	Significant
Community	.707	.000	Reject H ₀₃	Significant
Maturity	.699	.000	Reject H ₀₃	Significant
Skills	.759	.000	Reject H ₀₃	Significant
Staff	.661	.000	Reject H ₀₃	Significant
Note: Spearman's Rank Order Correlation (r _s) at 0.05 Level of Significance p < 0.05				

Appendix D: The Difference on the Extent of Workforce Stability and Morale Among the Respondents According to Their Profile

Variables	df	Comp. Value	p-value	Decision	Remarks
Sex	-	U = 1166	.433	Failed to Reject H _{o4}	Insignificant
Age	4	H = 4.435	.350	Failed to Reject H _{o4}	Insignificant
Marital Status	3	H = 3.673	.299	Failed to Reject H _{o4}	Insignificant
Employment Classification	3	H = 5.623	.131	Failed to Reject H _{o4}	Insignificant
Number of Years Working in the Institution	4	H = 4.449	.349	Failed to Reject H _{o4}	Insignificant
Monthly Income	5	H = 9.427	.093	Failed to Reject H _{o4}	Insignificant

Note: Kruskal-Wallis Test (H) and Mann-Whitney U Test at 0.05 Level of Significance

Respondents' Profile and the Extent of Workforce Stability

Variables	df	Comp. Value	p-value	Decision	Remarks
Sex	-	U = 1225	.611	Failed to Reject H _{o5}	Insignificant
Age	4	H = 4.772	.312	Failed to Reject H _{o5}	Insignificant
Marital Status	3	H = 5.221	.156	Failed to Reject H _{o5}	Insignificant
Employment Classification	3	H = 4.338	.227	Failed to Reject H _{o5}	Insignificant
Number of Years Working in the Institution	4	H = 1.429	.839	Failed to Reject H _{o5}	Insignificant
Monthly Income	5	H = 8.746	.120	Failed to Reject H _{o5}	Insignificant

Note: Kruskal-Wallis Test (H) and Mann-Whitney U Test at 0.05 Level of Significance

Exploring the Impact of Deans' Transformational Leadership on Teaching Innovation among University Lecturers in Hebei, China

ABSTRACT

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Gu, Y., & Ghazali, S. S. (2025). Exploring the impact of deans' transformational leadership on teaching innovation among university lecturers in Hebei, China. *Journal of Institutional Research South East Asia*, 23(3), 69-89.

This research aims to investigate the relationship between deans' transformational leadership and teaching innovation among lecturers in universities located in Hebei, China. The theoretical framework of this study is the transformational leadership theory of James MacGregor Burns (1978) and expanded by Bernard Bass. The research is carried out from four dimensions. This study employed a simple random sampling method. The researchers conducted a questionnaire survey of full-time lecturers at universities in Hebei Province. SPSS statistical software was used to analyze 353 valid questionnaires. The study found that participants perceive deans as having high levels of transformational leadership practices. The Pearson correlation analysis shows that there is a significant positive correlation between the practice level of transformational leadership of deans and the teaching innovation level of lecturers. The ultimate goal of this study is to enable lecturers to make continuous teaching innovations under the guidance of the dean's transformational leadership, so as to improve classroom efficiency.

Keywords: Leadership, Teaching Innovation, Transformational Leadership, education administration, higher education administration

1. Introduction

Introduction

In the current era of innovation, both nations and individuals face growing challenges and global competition. The ability of younger generations to adapt to the demands of rapid social and technological change is closely tied to the quality of education they receive. Within higher education, lecturers play a vital role not only in transmitting knowledge but also in fostering creativity, leadership, and cultural advancement. Their teaching innovation directly influences students' learning outcomes, institutional quality, and national competitiveness. However, lecturers' innovative teaching practices are not determined by individual effort alone. Research indicates that leadership style and organizational environment also play crucial roles in shaping teaching innovation (Zainal & Mohd Matore, 2021). According to Binnewies and Gromer (2012), university lecturers' innovative behaviors are positively influenced by their leaders' support, trust, and constructive feedback, which encourage the generation and implementation of new ideas. Similarly, Bellibaş, Kılınç, and Polatcan (2021) emphasized that transformational leadership is a key driver of educational reform and lecturer quality improvement. As noted by Amtu, Makulua, Matital, and Pattiruhu (2020), the interaction between leadership and teaching innovation is vital to enhancing teaching effectiveness and institutional growth. In light of the above, this study seeks to examine the relationship between deans' transformational leadership and lecturers' teaching innovation in higher education institutions in Hebei Province. Specifically, it aims to identify how deans' leadership practices influence lecturers' innovation in teaching and to provide insights for improving university management and lecturer professional development.

Background of study

According to Amabile (2004), one of the most significant factors influencing subordinates' innovative behavior is the dean's leadership style, as it shapes the organizational climate that can either promote or hinder creativity. In the university context, deans' leadership practices play a vital role in determining the level of teaching innovation among lecturers. Yunus, Abdullah, and Jusoh (2019) found a moderate positive relationship between lecturers' perceptions of deans' leadership styles and their engagement in innovative teaching practices. When deans actively support creative teaching concepts, they help establish an organizational culture that values innovation, encourages critical thinking, and fosters a conducive climate for academic creativity. As strategic planners, resource coordinators, and academic leaders, deans directly influence institutional development. Their ability to design effective strategies, such as applying analytical tools like SWOT analysis, enhances interdisciplinary collaboration and academic quality.

In China, however, educational contexts vary widely across provinces due to differences in population size, economic growth, and teaching standards. While the link between dean transformational leadership and lecturer teaching innovation has been studied in other regions, there is a lack of focused research in Hebei Province, where higher education institutions face distinct challenges and opportunities. Therefore, this study aims to examine the impact of deans' transformational leadership on lecturers' teaching innovation within universities in Hebei Province, China. Specifically, it seeks to identify how leadership behaviors contribute to fostering an innovative academic climate and to provide empirical insights for strengthening leadership practices and teaching innovation in higher education.

Problem statement

Transformational leadership is widely recognized as a powerful driver of innovation in teaching practices (Al Mansoori and Koç, 2019). However, the extent to which deans in higher education institutions demonstrate transformational leadership, particularly in relation to fostering innovative teaching, remains unclear. While substantial research has explored the link between educational leadership and innovation (Al Hussein, Beltagi, and Moizer, 2021), there is a noticeable gap in addressing regional differences that may influence these dynamics. In particular, limited attention has been given to how transformational leadership functions within the unique educational context of Hebei Province, China. Addressing this gap is essential for providing evidence based guidance to local education leaders. Given the evolving demands of higher education and the push for innovative pedagogical approaches, this study aims to examine the impact of deans' transformational leadership on lecturers' teaching innovation in universities across Hebei Province.

Research objective and hypothesis

There has been extensive research on the influence of leadership style on subordinates' innovative behavior. Scholars generally agree that a leader's attitude and behavior are crucial prerequisites for encouraging new ideas, driving organizational transformation, setting innovation goals, and providing members with access to necessary resources to create a sustainable and innovative environment. Previous studies have demonstrated that the leadership style of deans significantly impacts university organizations, influencing not only institutional performance but also lecturers' professional growth, job satisfaction, and overall cohesion within the academic community. Lecturers, as the main implementers of educational goals, play a central role in advancing teaching innovation by developing creative teaching methods and enriching learning content.

Transformational leaders in universities, in particular, can inspire continuous innovation by modeling desired behaviors, promoting reform, and motivating lecturers to adopt creative and experimental teaching approaches. As leadership attitudes and practices are closely linked to institutional innovation and teaching quality, this study aims to determine the relationship between deans' transformational leadership and teaching innovation among lecturers in universities located in Hebei, China. To achieve the objective of this study, the following hypotheses were formulated.

H1: The dean's transformational leadership is positively correlated with lecturers' teaching innovation.

H1a: There is a significant correlation between the teaching innovation practices of universities lecturers and the dimensions of dean transformational leadership in Hebei, China.

Significance of study

a. Theoretical significance

A review of the existing literature on university leadership styles reveals that most studies have focused on the definitions, characteristics, current status, and development of deans' transformational leadership. By systematically analyzing the theories related to deans'

transformational leadership and drawing on insights from broader leadership theories in management (Lee, 2021), this study seeks to extend the current research, which remains largely limited to the scope of deans' transformational leadership. Through this research, it contributes to the enrichment of university leadership theory.

Most studies focus on the relationship between deans' leadership style and lecturers' organizational commitment, work involvement, and other behaviour. There is a paucity of research on the association between deans' leadership style and lecturers' innovative teaching practices. Therefore, this study also has some expansion and extension for university management style and teaching innovation theory.

b. Practical significance

Through the process of literature review, theoretical framework construction and data investigation and analysis, this study provides evidence of the positive impact of deans' transformational leadership on lecturers' teaching innovation. The findings not only highlight the current characteristics of transformational leadership among deans and the state of teaching innovation in universities, but also deepen the understanding of the critical role that transformational leadership plays in fostering teaching innovation in higher education. Moreover, the study emphasizes the importance for deans to cultivate an organizational climate that encourages innovation, offering practical insights for enhancing lecturers' innovative teaching capabilities.

2. Literature review

Definition and concept of transformational leadership

In his 1978 book *On Leadership*, leadership specialist James MacGregor Burns popularized the idea of transformational leadership. He defines transformational leadership as "the process by which the leader and his followers enhance each other's morals and motivations." (Burns, 1978, p.20). On this basis, Bass (1985) further deepened the theory of transformational leadership and formally defined the concept of transformational leadership in detail in 1985. He believes that transformational leaders have excellent leadership charisma. To advance employee needs, foster a culture of mutual trust and effective teamwork, and inspire workers to contribute more to the organization's and the group's interests, leaders can use targeted methods of employee motivation. These methods include helping workers independently recognize the significance and value of their work and the sense of responsibility they bear. According to his 1985 book *Leadership and Performance Beyond Expectations*, such leaders exhibit the following characteristics: Firstly, transformational leaders are representatives of integrity and fairness. Secondly, they can set a clear goal. Thirdly, transformational leaders have high expectations for future development. Fourthly, they can always encourage others. Fifthly, transformational leaders provide support and recognition for employees. Sixth, mobilize people's emotions and provide them with emotional value. Seventh, transformational leaders help people surpass their values. Finally, inspire people to achieve the impossible (Burns, 1985).

Transformational leadership is the ability of leaders to transform or motivate followers towards achieving organizational aims and objectives (Alqatawenh, 2018). This concept has been widely discussed by scholars since its appearance. Based on the existing research,

transformational leadership is considered to be a new leadership style that is multi-faceted and dynamic (Yi, Uddin & Sohel, 2019). It is specifically defined as the leader's transfer of positive values and behavioral concepts to subordinates based on specific situations and their own characteristics and other factors. By influencing employees' own behavior, it can achieve the development purpose of improving enterprise performance.

Dimensions for Transformational Leadership

Burns describes a leader as an individual capable of motivating followers to achieve both their own goals and those of their leaders more effectively. Transformational leadership, according to Burns, involves a leader who makes employees aware of the importance and responsibility of their tasks (Burns, 1978). Such leaders are able to stimulate the higher-level needs of their subordinates or broaden their desires and aspirations. They can inspire subordinates to act in the interests of the team, the organization, and the broader political good, rather than their own personal interests. Initially, Bass identified six dimensions of transformational leadership, but these were later condensed into three key factors. Bass and Avolio (1990) further categorized transformational leadership behaviors into four aspects: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Reza, 2019). Leaders who exhibit these qualities often possess strong values and ideals, enabling them to successfully motivate employees to put aside their personal interests and work collectively towards the larger goals of the team (Gupta & Gupta, 2025; Mbua, 2023).

Bass has been proposing transformational leadership for nearly 40 years. During this period, many scholars have carried out a lot of thinking and discussion on the construction and measurement tools of its dimension. Bass refined it into four dimensions, including charisma, personalized care, leadership charm and intellectual stimulation, and formed the Multifactor Leadership Questionnaire (MLQ) scale widely used by later scholars. This scale involves 24 items in 4 dimensions, and its reliability and validity have been effectively verified in empirical studies. Later, some scholars reclassified transformational leadership into different dimensions.

Theory for Transformational Leadership

The study of transformational leadership hinges on the transformational leadership theory. Transformational leadership theory provides a useful framework to examine how transformational leaders promote lecturers' teaching innovation. This theory, originally proposed by James MacGregor Burns in 1978 and later expanded by Bernard Bass, focuses on how leaders inspire and motivate followers to achieve exceptional outcomes (Deshwal & Ali, 2020). The theory comprises four key components: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Reza, 2019).

Past Research on Transformational Leadership

The study on transformational leadership can be traced back to the 1970s. Downtown (1974) proposed in 'Rebel Leadership' that when leaders have a certain leadership style, they can effectively enhance the trust between leaders and employees, improve the psychological state of employees and enhance their work efficiency. But Downtown does not define this leadership style. Later, Burns (1978) put forward the theory of transformational Leadership for the first time in his masterpiece 'Leadership' after a series of studies. He defined transformational leadership as a leader who makes employees realize the value of work results, so as to stimulate

the needs of employees at a higher level, constantly improve their work enthusiasm, and guide them to transcend selfish thoughts.

Past Research on Relationship of Variables

Transformational leadership has been widely examined as a key driver of innovation in organizational and educational contexts. Drawing from social learning theory and basic psychological needs theory, Ariyani and Hidayati (2018) investigated how transformational leadership influences employees' innovative behavior. Their study found a strong positive correlation, suggesting that transformational leadership creates favorable conditions for innovation by strengthening organizational systems and supporting employee autonomy and motivation. However, their findings are based on general organizational settings, limiting their direct applicability to educational environments.

In education, Ihsani, Inderawati, and Vianty (2020) studied transformational leadership among principals in private vocational senior high schools in Palembang. They found that the transformational behaviors of school leaders significantly impacted teacher performance. While their research does not directly measure teaching innovation, performance in the classroom serves as a relevant proxy, highlighting how leadership style can shape educators' professional engagement. Still, the study's focus on secondary education restricts its generalizability to the higher education context.

Zuraik and Kelly (2018) extended the discourse by examining the role of transformational leadership at the executive level, specifically CEOs, across 215 U.S.-based organizations. Their research emphasized both direct and indirect effects of CEO leadership on organizational innovation, mediated by the innovation climate. Notably, their findings differentiated between exploitation and exploration, with leadership showing greater influence over exploitation activities. This distinction is valuable, as it reveals that leadership may not equally encourage all types of innovation, a nuance often overlooked in educational leadership literature.

In higher education, Atiku and Anane-Simon (2020) emphasized that transformational leadership is vital for implementing innovative teaching and learning strategies. They argued that sustainable change in academic quality and instructional innovation cannot occur without leadership that actively supports and manages transformation. While conceptually strong, their study lacked empirical depth, relying more on narrative assertions than measurable outcomes.

Meng (2022) offered a robust empirical contribution by surveying 1,022 college instructors to analyze the relationship between deans' transformational leadership and teaching innovation. Using SPSS and AMOS for statistical analysis, the study confirmed that transformational leadership from academic deans significantly enhances lecturers' capacity to adopt innovative teaching methods. Unlike other studies, Meng directly linked leadership style with pedagogical innovation, offering stronger internal validity within the higher education context.

Collectively, these studies affirm that transformational leadership is a critical influence on innovative behavior in both organizational and educational settings. However, much of the literature either generalizes from corporate environments or focuses on secondary education. Few studies, such as Meng's, offer targeted insights into how leadership operates within universities, particularly in regional contexts like Hebei Province. This gap underscores the need for more localized and higher education-specific research to guide policy and leadership development.

Relational Theoretical Framework

Social cognitive theory was first put forward and summarized by Bandura (1971), and has been widely used in many fields such as pedagogy, psychology and management. It is an important theoretical basis for studying individual behavior (Smith, Williams & O'Donnell, 2019). Social cognitive theory holds that neither the internal factor theory of psychological trait theory nor the external factor theory of traditional behaviorism can fully explain individual behavior choice (Alahmad, 2020). On this basis, the study puts forward the core theory of social cognitive theory, ternary interactive determinism.

Bandura's Ternary interaction determinism holds that individual behavior is actually influenced by environment, individual behavior and cognition (Wang, 2021). The three are independent and interact with each other. At the same time, the pairwise relationship between the three is the focus of the research. First of all, cognition and behavior affect each other. Cognition affects behavior choice, and behavior choice also affects individual cognition. Secondly, environment and behavior influence each other. Environment, as the external condition of behavior realization, will affect individual behavior choice. But individuals can also give full play to their own subjective initiative. Dealing with the relationship between oneself and the environment can play a role in adjusting the external environment and make the environment more in line with individual needs. Finally, cognition and environment interact. Individual cognition can be subtly influenced and modified by the environment. The change of the environment will have an impact on the individual's cognition, and the individual can also affect his own behavior through the change of cognition, and then have an impact on the environment.

In the 1980s, Edward Deci and Richard Ryan put forward the theory of self-determination. This theory focuses on intrinsic motivation, emphasizes autonomy, competence, and relatedness in promoting self-motivated behavior (Purwanti & Octavia, 2022). It could be useful in understanding how dean transformational leadership might contribute to lecturers' sense of autonomy and competence, thereby encouraging innovative teaching practices.

Conceptual Framework

Based on the theory of transformational leadership, this study investigates the teaching innovation behavior of lecturers from four dimensions of transformational leadership. Dean Transformational Leadership, based on Burns (1978) and Bass (1985), consists of four dimensions: charisma, vision incentive, intellectual stimulation, and personalized care. Charismatic deans act as role models, vision incentives provide direction and motivation, intellectual stimulation encourages creative thinking, and personalized care fosters individual growth. Together, these dimensions create an environment that nurtures innovation and collaboration.

Lecturer Teaching Innovation includes four components: idea generation, idea promotion, work commitment, and idea realization. These represent the process through which lecturers identify problems, propose and share new ideas, remain committed to implementation, and apply innovative methods in teaching and learning. The framework indicates the relationship between deans' transformational leadership and lecturers' teaching innovation. Transformational leaders inspire and empower lecturers, fostering a supportive academic climate that encourages creativity and continuous improvement. Grounded in Transformational Leadership Theory (Burns, 1978; Bass, 1985) and the Componential Theory of Creativity (Amabile, 1996). The illustration of this study is shown in Figure 1 below.

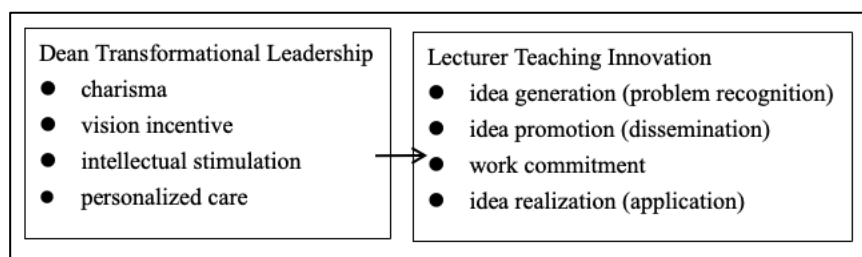


Figure 1: A Conceptual Framework

3. Methodology

This part focuses on study design, sample, instrumentation, validation, reliability, and normality, data collection, pilot studies, and data analysis.

Research Design

Research design is a framework for collecting, measuring, and analyzing raw data (Vidakis, Barianos & Trampas, 2020). This study uses questionnaires to gather data and employs quantitative research methods. In order to fulfill the research objectives outlined in Chapter 1, the questionnaire was revised and refined following a pilot study. A total of 30 respondents were selected from a higher education institution in Hebei to participate in the pilot test. Based on the results, several adjustments were made to the instrument, including the adaptation of items and the removal of ambiguous or redundant words to improve clarity and reliability.

Therefore, this study aims to examine the relationship between deans' transformational leadership and lecturers' teaching innovation in colleges and universities across Hebei Province, China. This chapter also presents the research design, including the population, sampling procedures, research instrument, and statistical methods employed in the study. In this study, the researchers first reviewed and synthesized relevant domestic and international research to establish a theoretical foundation and reference framework. Based on this foundation, they proposed research hypotheses and designed the research plan. The main method used in the research is to obtain data by questionnaire survey, then analyze and test different data by different statistical methods, and discuss and analyze the survey results. Questionnaires are distributed to a large number of subjects at the same time, allowing them to complete the test at their own convenient time. Therefore, this have been given great flexibility for analysis and standardized questions make measurement precise by enforcing uniform definitions on participants.

This study uses descriptive statistical analysis, correlation analysis, regression analysis and other methods to carry out statistical analysis. To determine the relationship between dean transformational leadership and lecturers' teaching innovation.

Research Sampling Technique

This study employed a quantitative sampling strategy to ensure that the selected participants accurately represented the larger population of lecturers in higher education institutions across Hebei Province. The sampling approach was designed to produce reliable and generalizable

findings while minimizing potential bias. The primary purpose of sampling is to obtain a representative subset of the target population, allowing the results to be generalized to the entire group (Mohajan, 2020). Sampling involves selecting a specific group of individuals from a larger population so that the data collected can be used to make valid inferences about the whole. In a sample survey, the information gathered from the respondents serves as the foundation for understanding the overall population's characteristics and behaviors.

According to Krejcie and Morgan (1970), the sample size table indicates that for a population of 3,045 individuals, a minimum of 341 respondents is required to achieve adequate statistical representation. Accordingly, this study targeted at least 341 lecturers from colleges and universities in Hebei Province, China. A simple random sampling method was employed to ensure fairness and representativeness. A total of 61 higher education institutions (HEIs) offering degree programs were included. Within each institution, a random sample of full-time lecturers from various faculties was invited to participate. Respondents were asked to assess both the transformational leadership practices of their deans and their own teaching innovation levels. This method was chosen because it ensures that every individual in the population has an equal and independent chance of selection, thereby reducing sampling bias and enhancing the generalizability of the findings.

Research Instrumentation

Data were collected through a structured questionnaire developed using established instruments from previous studies. Permission to use and adapt the instruments was obtained from the original developers. The questionnaire consisted of three sections: (A) Background of respondents, (B) Transformational leadership, and (C) Teaching innovation.

Part A: Background of Respondents

This section collected demographic information, including gender, years of teaching experience, and academic qualification. These data were used to describe the characteristics of the respondents and explore possible demographic influences on teaching innovation.

Part B: Transformational Leadership Questionnaire

The Transformational Leadership Questionnaire (TLQ) developed by Li Chao-ping and Shi Kan was adapted to measure deans' transformational leadership behaviors. It contained 21 items covering four dimensions: leadership charisma (Items 1–5), vision incentive (Items 6–11), intellectual stimulation (Items 12–17), and personalized care (Items 18–21). Respondents rated each item using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A higher score indicated a greater presence of transformational leadership traits. The TLQ demonstrated satisfactory reliability and validity in previous studies and was found appropriate for the higher education context.

Part C: Teaching Innovation Questionnaire

Teaching innovation was measured using an 18-item scale adapted from previous studies on transformational leadership and teachers' innovative behavior. The instrument assessed four dimensions of teaching innovation: idea generation (Items 1–6), idea promotion (Items 7–12), work commitment (Items 13–18), and idea realization (Items

19–24). Respondents evaluated each statement on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores represented stronger levels of innovative teaching behavior.

Validity and Reliability

Validity refers to the extent to which a test, measurement, or study accurately assesses what it is designed to measure (Sürücü & Maslakci, 2020). From the perspective of content effectiveness, this study covers the dimensions of dean transformational leadership and lecturer teaching innovation. The effectiveness of the tool was obtained through the evaluation of scholars in the field of study. This study will review the relevant literature to ensure that the selected tools are appropriate for the background of higher education lecturers in Hebei Province.

Reliability refers to the consistency, stability or repeatability of measurement or research results. In other words, if the same measurement is repeated, it should yield similar results under consistent conditions (Kennedy, 2022). If you get the same repeated results under the same conditions, then the test will be reliable. This study used statistical methods Cronbach's alpha to assess the internal consistency of scales used to measure dean transformational leadership and instructional innovation. Because it is an indicator of the reliability of the construction. A higher alpha indicates greater internal consistency reliability. Generally, a value of Cronbach's alpha greater than 0.7 is considered acceptable, indicating that the measurement tools have good consistency (Schrepp, 2020).

During the investigation process, ensure that these tests are culturally sensitive and appropriate for China, especially Hebei Province. Interpretations of dean transformational leadership and pedagogical innovation may vary from culture to culture.

Table 1. Reliability Analysis

<u>Sample Size</u>	<u>Items</u>	<u>Cronbach's alpha</u>
353	48	0.952

Pilot study

To test the clarity and comprehensibility of the questionnaire items and to identify any potential issues that might influence participants' responses, a pilot study was conducted prior to the main survey. The pilot study helped estimate the time required for data collection and ensured that the overall research process could be carried out efficiently. A small sample of lecturers was selected from the target population in Hebei Province, China, ensuring diversity in terms of age, gender, and teaching experience. The pilot test aimed to confirm that the questionnaire content was clear, relevant, and contextually appropriate for the educational environment in Hebei. During this stage, the data collection procedure was implemented on a small scale to monitor the duration of the survey and identify any confusion or difficulties experienced by the participants.

The reliability and validity of the instrument were then assessed to determine whether the questionnaire accurately captured the intended data. Based on the pilot results, necessary

revisions and refinements were made to the questionnaire and overall research design to improve clarity and measurement accuracy. The pilot study data were also analyzed to identify potential challenges and risks that could arise during the full implementation. Through this process, the study enhanced the validity, reliability, and feasibility of the main research.

Data analysis

Before conducting inferential analyses, a normality test was performed to ensure that the data met the assumptions required for parametric statistics, such as the Pearson product-moment correlation. The skewness and kurtosis values of each variable were examined to determine the distribution of the data. Acceptable values for skewness range between -2 and $+2$, while kurtosis values between -7 and $+7$ indicate normality. The skewness values for transformational leadership (-0.737) and teaching innovation (-0.683), together with the kurtosis values for transformational leadership (-0.210) and teaching innovation (-0.824), were all within the acceptable range. These results confirm that the data were normally distributed, allowing for further statistical analyses, including Pearson correlation and regression tests. A total of 366 questionnaires were distributed to full-time lecturers from universities and colleges in Hebei Province, China. All questionnaires were returned, yielding a 100% response rate, with 353 valid responses retained for data analysis.

4. Findings and discussion

Demographic profile of respondents

The table demonstrates the analysis of the demographic factors of the respondents that are related to their personal characteristics such as gender, total years of working, education background. Table 2 indicates the results of the data analysis.

Table 2. Background of the Respondents (n=353)

Variable		Frequency	Percent
Gender	male	154	43.6
	female	199	56.4
Teaching age	5years	104	29.5
	6-10 years	138	39.1
	11-20 years	69	19.5
	Less than 20 years	42	11.9
Degree	Junior college	65	18.4
	undergraduate	185	52.4
	master	103	29.2

The respondents demographic profile shows that more female lecturers 199 (56.4%) participated in this study compared to male lecturers 154 (43.6%). Among them, the number of lecturers with 6-10 years of teaching experience is in the majority (39.1%). The largest

number of lecturers are undergraduate graduates (52.4%). The investigators identified that respondents had good teaching experience and had knowledge and experience assessing the leadership qualities of various school deans.

Level of dean transformational leadership practice in Hebei province

Table 3. Mean and Standard Deviation of Transformational Leadership

Variables	Dimension	No.	Mean	Std. deviation
Transformational Leadership	leadership charisma	B 1	3.88	1.154
		B 2	3.90	1.127
		B 3	3.85	1.211
		B 4	3.79	1.213
		B 5	3.86	1.135
	vision motivation	B 6	3.79	1.133
		B 7	3.83	1.188
		B 8	3.79	1.155
		B 9	3.86	1.121
		B 10	3.88	1.132
	intellectual stimulation	B 11	3.76	1.108
		B 12	3.90	1.102
		B 13	4.00	1.075
		B 14	3.87	1.130
		B 15	3.90	1.164
	personalized care	B 16	3.84	1.150
		B 17	3.67	1.242
		B 18	3.61	1.294
		B 19	3.58	1.272
		B 20	3.57	1.332
		B 21	3.61	1.275

Table 3 Mean and Standard Deviation of Transformational Leadership. It includes data on various aspects of transformational leadership, such as charisma, vision motivation, intellectual stimulation, and personalized care. The table lists B1 to B5 as the leadership dimension, with mean values ranging from 3.57 to 4.00, indicating a generally positive perception of leadership charisma. Items B6 to B10 are included under the vision motivation dimension, with similar mean values, suggesting that vision motivation is also rated positively. The dimension of intelligence stimulation, covered by items B11 to B15, shows the average value reflecting the intellectual engagement provided by the leadership. The last dimension of personalized care, including items B16 to B21, has mean values that suggest a focus on individualized attention and support. The last dimension, personalized care (items B16–B21), emphasizes individualized attention and support. From this dimension results, the comparatively modest

mean values suggest that such practices (individual attention and support) may be constrained by Confucian power-distance norms, which shape hierarchical relationships in Chinese academic culture. In such contexts, leaders tend to maintain authority through formal structures rather than through personalized mentoring or emotional support. Moreover, the standard deviations for each item reflect the degree of variability in participants' responses. This information contributes to the broader analysis of transformational leadership and its influence on teaching innovation practices among lecturers in Hebei Province.

Level of lecturers' teaching innovation in Hebei province

Table 4. Mean and Standard Deviation of Teaching Innovation

Variables	Dimension	No.	Mean	SD
Teaching innovation	idea generation	C 1	3.58	1.270
		C 2	3.67	1.257
		C 3	3.65	1.277
		C 4	3.64	1.250
		C 5	3.62	1.272
		C 6	3.69	1.259
	idea promotion	C 7	3.70	1.244
		C 8	3.69	1.267
		C 9	3.69	1.275
		C 10	3.71	1.258
		C 11	3.71	1.213
		C 12	3.70	1.266
	work commitment	C 13	3.74	1.255
		C 14	3.77	1.241
		C 15	3.73	1.240
		C 16	3.72	1.213
		C 17	3.70	1.197
		C 18	3.66	1.296
	idea realization	C 19	3.75	1.205
		C 20	3.72	1.226
		C 21	3.74	1.185
		C 22	3.66	1.271
		C 23	3.70	1.277
		C 24	3.77	1.244

Table 4 presents statistical data on the four dimensions of teaching innovation: idea generation, idea promotion, work commitment, and idea realization. These are represented by items C1 to C24, along with their corresponding mean and standard deviation values. The mean scores, which range from 3.58 to 3.77, indicate a generally positive level of teaching innovation among lecturers in Hebei Province. The standard deviations reflect a moderate variability in responses, suggesting some differences in how innovation is perceived or practiced. Although the scores are relatively high across all dimensions, the slightly lower range in idea generation points to a potential area for enhancement. In light of this, deans could foster greater creativity by supporting risk-taking behaviors. For example, they may introduce targeted initiatives such as innovation grants or internal awards to encourage lecturers to experiment with new teaching methods and solutions. This data is essential for understanding current practices and shaping strategies for further development and institutional support.

Level of Transformational Leadership and Teaching Innovation Practices in Hebei Province

Based on the findings, the descriptive analysis revealed a high level of transformational leadership practices among deans. This suggests that transformational leadership can play a pivotal role in enhancing teaching innovation among lecturers. To support this potential, the Ministry of Education in China may consider introducing professional learning and leadership development programs aimed at equipping academic leaders with the skills and mindset needed to elevate leadership quality across the education system, thereby strengthening teaching innovation at the institutional level. The concept of transformational leadership and its influence on teaching innovation is a critical area in educational leadership research (Al-Husseini, El Beltagi, and Moizer, 2021). Transformational leadership refers to a style that inspires and motivates followers to go beyond expectations by reshaping their values and beliefs. It has been consistently linked to promoting innovation in educational environments (Gonfa, 2019).

In the context of Hebei Province or other educational regions, transformational leaders typically focus on developing a shared vision, inspiring educators and students, and supporting creative teaching practices that improve learning outcomes. These leaders build trust and commitment among faculty, which can influence the relationship between leadership behavior and teaching innovation. Furthermore, transformational leadership contributes significantly to shaping school practices that promote deeper learning, shifting from traditional instruction toward more innovative, student-centered approaches aligned with the demands of a digital and knowledge-driven society. Such leaders foster collaboration among teachers, challenge outdated norms, and encourage the use of teaching strategies that build critical thinking, creativity, and problem-solving skills in students.

The Relationship Between the Dean Transformational Leadership and Lecturers' Teaching Innovation in Hebei Province

To discover the relationship of transformational leadership and teaching innovation, Pearson Product-moment correlation analysis was employed between studied variables. The statistical significance was set at 95% confidence interval level ($p < 0.05$). The correlation analysis is used to describe the strength and direction between two variables with the linear relationship. Table 5 shows the Pearson correlation analysis examined the relationship or association among transformational leadership (as independent variables) towards teaching innovation (as dependent variable). The relationship strength was analysed using Cohen (1988, 1992) and the range for the correlation coefficient of the relationship is explained below (Kraft, 2020).

Table 5. Pearson Correlation Coefficients

Variables	<i>r</i>	<i>p</i>
Transformational Leadership	.652	.000
**. at the 0.01 level (two-tailed), the correlation was significant.		

As stated in table 6 below, the correlational matrix table indicating the correlation between the lecturers' teaching innovation practice which is the dependent variable while dean's transformational leadership as an independent variable.

Table 6. Correlational Matrix

Variables	<i>Y</i>	<i>X</i>
<i>Y</i> (Transformational Leadership)	1	
<i>X</i> (Teaching Innovation)	.652**	1
**, at the 0.01 level (two-tailed), the correlation was significant.		

The above matrix table 6, indicates the correlation between the teaching innovation and dean transformational leadership. Thus showed that there is statistically significantly positive correlation that is strong among dean transformational leadership towards teaching innovation in Hebei province, China. The correlation of dean transformational leadership and teaching innovation has been explained in detail below. The test of Pearson product moment correlation was performed to test the hypothesis in the study.

H1: The dean's transformational leadership is positively correlated with lecturers' teaching innovation.

Pearson product moment correlation analysis was conducted to test the hypothesis. Thus, Pearson correlation was used to determine the relationship of dean transformational leadership and teaching innovation. The four dimensions of dean transformational leadership styles are leadership charisma, vision motivation, intellectual stimulation, personalized care. Based on the results recorded in table 8 coefficient value($r = .652$) was large and significantly positive ($p < 0.00$). Therefore, dean transformational leadership has a stronger relationship towards teaching innovation. It could be concluded that dean transformational leadership is significantly positive and highly related to teaching innovation. Therefore, H1a is accepted. This study indicated that lecturers' teaching innovation was affected by transformational leadership styles.

H1a: There is a significant correlation between the teaching innovation practices of universities lecturers and the dimensions of dean transformational leadership in Hebei, China.

The Pearson correlation analysis results from the table 9 also indicated, a significantly positive and strong relation between dean transformational leadership and lecturers' teaching innovation in Hebei province, China. ($r = .652$, $p < 0.00$). Therefore, H1a is accepted. The result analysis shows that when the lecturers think the dean has a good leadership style and they improve the teaching innovation. It is an indication that transformational leadership strongly related with teaching innovation of lecturers.

5. Implications and conclusions

Implication of the study

From the aspect of educational leadership, the study emphasizes the importance of transformational leadership in the field of education, especially in the context of Chinese higher

education. Research has shown that deans and other academic leaders who exhibit transformational leadership behaviors can significantly promote teaching innovation in lecturers. From the perspective of the teaching practice of lecturers, the research shows that the practice level of dean's transformational leadership is positively correlated with the teaching innovation level of lecturers. It shows when the dean's demonstrate the supportive, clear vision and implemented leadership, it helps enhancing the creativity and effective teaching among lecturers. In line with this, the organizational supports as practice by the dean mediates the relationship between transformational leadership and knowledge-sharing behavior (Chen et al., 2024). The study encourages lecturers to adopt innovative teaching methods and underscores the need for ongoing professional development aligned with transformational leadership principles. It also offers policy insights for leadership development programs, suggesting that supporting and rewarding transformational leadership behaviors can foster teaching innovation and enhance student learning outcomes (Bellibaş, Kılınç & Polatcan, 2021). And this study opens the way for further research on the impact of transformational leadership outside of Hebei, China. While the study focuses on Hebei, China, its implications can be contextualized globally. Educational institutions worldwide can draw insights from the relationship between transformational leadership and teaching innovation to enhance their own practices and adapt strategies to their specific contexts.

It is concluded from this study that the organizational atmosphere that values and promotes the transformative leadership of deans is conducive to promoting teaching innovation. Colleges and universities may benefit from fostering an atmosphere that supports innovation, in which deans have the ability to motivate and motivate lecturers effectively (Averill & Major, 2020). For example, establishing a dynamic incentive mechanism. A combination model of base salary and performance rewards can be adopted. Linking individual interests closely with the long-term development of the university will help stimulate lecturers' innovative spirit in teaching. Ultimately, the study's implications extend to the student learning experience. By fostering teaching innovation through transformational leadership practices, academic institutions can improve the quality of teaching by lecturers. Instructors are encouraged to promote classroom engagement in innovative ways and better prepare students for future challenges.

Conclusion of the Study

The study found a positive relationship between dean transformational leadership and teaching innovation. Lecturers who perceived their deans as transformational leaders were more likely to engage in innovative teaching practices. Specific leadership behaviors (such as leadership charisma, vision motivation, intellectual stimulation, and personalized care) were associated with higher levels of teaching innovation.

The study proves that deans who show transformational leadership quality have significant positive influence on the innovative teaching practice of lecturers. The data show that the influence of dean's leadership charisma and intellectual stimulation have a strong correlation with the improvement of teaching management and innovation. Through data analysis, it is concluded that transformational leadership has more direct influence on lecturers' teaching innovation behavior than indirect channels such as knowledge management.

The results have implications for educational leadership practices, particularly in academic institutions. Deans and other academic leaders should prioritize the development of transformational leadership skills to facilitate teaching innovation and ultimately enhance the quality of education. Finally, the conclusion may suggest potential avenues for future research,

such as exploring the longitudinal effects of dean transformational leadership on teaching innovation or investigating the role of contextual factors in shaping this relationship within different cultural and institutional settings.

In conclusion, this study sheds light on the critical role of dean transformational leadership in fostering teaching innovation among lecturers in Hebei, China. By cultivating a culture of innovation within academic institutions, transformational leaders can inspire faculty members to embrace innovative pedagogical approaches and ultimately enhance the quality of education. The implications of the study extend beyond Hebei to inform educational leadership practices globally, offering valuable insights for promoting teaching innovation and driving educational excellence in higher education settings.

6. Recommendations

Recommendations for practice

Universities should recognize the importance of leadership in fostering innovative teaching environments (Al-Husseini, El Beltagi & Moizer, 2021). Deans and other academic leaders can foster innovation in teaching by modeling transformational leadership behaviors. The implementation of the specific strategy is to organize regular seminars and exchanges between deans. Exchange interviews on transformational leadership practices. Train full-time lecturers in innovative thinking. Open a communication mailbox between the dean and the lecturer. Build a communication bridge for leaders.

In terms of leadership development, school leaders (including deans) should embrace leadership development programs to systematically acquire and internalize effective transformational leadership qualities. Developing transformational leadership skills is essential to changing lecturers' attitudes and increasing their commitment to the profession. The university is committed to promoting transformational leadership by encouraging deans and other academic leaders to exhibit transformational leadership behaviors. Create a campus environment where leaders inspire, motivate and stimulate the creativity of faculty (Ariyani & Zuhaery, 2021). Deans should actively engage in intellectual stimulation that encourages critical thinking, creativity, and innovative teaching practices on the faculty. Deans should enhance personal charisma and vision motivation. Charisma influence and motivational motivation have positive effects on lecturers' teaching career commitment. It is helpful to cultivate the sense of mission and enthusiasm of educators. As a school leader should support the autonomy and creativity of educators (Fradkin-Hayslip, 2021). Transformational leaders should empower lecturers. Instructors are encouraged to use experimental and creative teaching methods.

Recommendations for Future Research

First, future studies should incorporate a cross cultural perspective by conducting similar research in diverse educational systems. This would allow for a comparison of how transformational leadership influences teaching innovation across different cultural and institutional contexts. Additionally, conducting in depth case studies within specific academic institutions in Hebei could uncover contextual factors that shape the relationship between

deans' transformational leadership and lecturers' teaching innovation, providing rich and localized insights.

Second, there is a need for longitudinal research to examine the long term effects of transformational leadership on lecturers' teaching innovation and overall educational outcomes. Such studies would offer a deeper understanding of how leadership practices evolve over time and their sustained impact. Expanding the scope to include other educational roles such as department heads, principals, and administrators would also provide a more comprehensive view of how various leadership positions influence teaching innovation.

Finally, it would be valuable to compare transformational leadership with other leadership styles such as transactional or laissez faire leadership to assess their relative effectiveness in fostering teaching innovation. This comparison could inform more targeted and effective leadership development strategies within higher education institutions.

References

- Alahmad, M. (2020). Strengths and Weaknesses of Cognitive Theory. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 3, 1584–1593. <https://doi.org/10.33258/birci.v3i3.1088>
- Al-Husseini, S., El Beltagi, I., & Moizer, J. (2021). Transformational leadership and innovation: The mediating role of knowledge sharing amongst higher education faculty. *International Journal of Leadership in Education*, 24(5), 670–693. <https://doi.org/10.1080/13603124.2019.1588381>
- Al-Mansoori, R. S., & Koç, M. (2019). Transformational Leadership, Systems, and Intrinsic Motivation Impacts on Innovation in Higher Education Institutes: Faculty Perspectives in Engineering Colleges. *Sustainability*, 11(15), Article 15. <https://doi.org/10.3390/su11154072>
- Alqatawenah, A. S. (2018). Transformational Leadership Style and Its Relationship with Change Management. *Business: Theory and Practice*, 19(0), 17–24. <https://doi.org/10.3846/btp.2018.03>
- Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly*, 15(1), 5–32. <https://doi.org/10.1016/j.leaqua.2003.12.003>
- Ariyani, D. (2021). Principal's Innovation and Entrepreneurial Leadership to Establish a Positive Learning Environment. *European Journal of Educational Research*, 10, 63–74. <https://doi.org/10.12973/eu-jer.10.1.63>
- Ariyani, Nafiah & Hidayati, Sri. (2018). Influence of Transformational Leadership and Work Engagement On Innovative Behavior. *ETIKONOMI*. 17. 10.15408/etk.v17i2.7427.
- Atasoy, R. (2020). The Relationship Between School Principals' Leadership Styles, School Culture and Organizational Change. *International Journal of Progressive Education*, 16(5), 256–274. <https://doi.org/10.29329/ijpe.2020.277.16>
- Averill, R., & Major, J. (2020). *What motivates higher education educators to innovate? Exploring competence, autonomy, and relatedness—and connections with wellbeing*. <https://doi.org/10.25455/wgtn.16657255.v1>
- Bellibaş, M. Ş., Kılınç, A. Ç., & Polatcan, M. (2021). The Moderation Role of Transformational Leadership in the Effect of Instructional Leadership on Teacher Professional Learning and Instructional Practice: An Integrated Leadership Perspective. *Educational Administration Quarterly*, 57(5), 776–814. <https://doi.org/10.1177/0013161X211035079>
- Binnewies, C., & Gromer, M. (2012). Creativity and innovation at work: The role of work characteristics and personal initiative. *Psicothema*, 24, 100–105.
- Chen, L., Chang, Y.-C., & Tian, Q. (2024). The Mediating Role of Perceived Organizational Support in the Relationship Between Transformational Leadership and Knowledge Sharing

- Behavior of University Teachers in Universities. *Sage Open*, 14(4).
<https://doi.org/10.1177/21582440241307756> (Original work published 2024)
- Deshwal, V., & Mohd, A. (2020). A Systematic Review of Various Leadership Theories. *Shanlax International Journal of Commerce*, 8, 38–43.
<https://doi.org/10.34293/commerce.v8i1.916>
- Gonfa, B. D. (2020). Review on Components of Transformational Leadership. *Arabian Journal of Business and Management Review*.
<https://www.semanticscholar.org/paper/Review-on-Components-of-Transformational-Leadership-Gonfa/21698b9aa0a1ed511d9b37f58b0cff632f0c82e7>
- Gupta, P., & Gupta, P. (2025). Transformational Leadership: Inspiring Change and Innovation. *International Journal of Science and Research (IJSR)*, 14, 504–509.
<https://doi.org/10.21275/MR25206180024>
- Ihsani, S., Inderawati, R., & Vianty, M. (2020). The Transformational Leadership Behaviours of School Principals of Vocational High School in Palembang. *Tadbir : Jurnal Studi Manajemen Pendidikan*, 4, 117. <https://doi.org/10.29240/jsmp.v4i1.1203>
- Kennedy, I. (2021). Sample Size Determination in Test-Retest and Cronbach Alpha Reliability Estimates. *Middle East Research Journal of Humanities and Social Sciences*, 1(1), 16–24. <https://doi.org/10.36348/merjhss.2021.v01i01.003>
- Kraft, M. A. (2020). Interpreting Effect Sizes of Education Interventions. *Educational Researcher*, 49(4), 241–253. <https://doi.org/10.3102/0013189X20912798>
- Lee, M. R. (2021). *Leading Virtual Project Teams: Adapting Leadership Theories and Communications Techniques to 21st Century Organizations* (2nd ed.). Auerbach Publications.
<https://doi.org/10.1201/9781003119869>
- Maisyura, M., Aisyah, T., & Ilham, R. N. (2022). Transformational Leadership in Organizational Transformation. *Jurnal Ekonomi*, 11(03), Article 03.
- Mbua, E. M. (2023). School Leader's Transformational and Instructional Leadership Styles and School Effectiveness. *Web of Semantic: Universal Journal on Innovative Education*, 2(1), Article 1.
- Meng, H. (2022). Analysis of the Relationship between Transformational Leadership and Educational Management in Higher Education Based on Deep Learning. *Computational Intelligence and Neuroscience*, 2022, e5287922. <https://doi.org/10.1155/2022/5287922>
- Mohajan, H. (2021). Quantitative Research: A Successful Investigation in Natural and Social Sciences. *Journal of Economic Development, Environment and People*, 9.
<https://doi.org/10.26458/jedep.v9i4.679>
- Purwanti, E., & Octavia, S. (2022). Examining teachers' motivation in conducting teacher professional development: A self-determination theory perspective. *English Language Teaching Educational Journal*, 5(3), Article 3. <https://doi.org/10.12928/eltej.v5i3.8141>

Reza, M. H. (2019). Components of Transformational Leadership Behavior. *EPRA International Journal of Multidisciplinary Research*, 5, 119-124.

Schrepp, M. (2020). *On the Usage of Cronbach's Alpha to Measure Reliability of UX Scales* (p. Vol. 15, Issue 4, August 2020, pp. 247–258). <https://uxpajournal.org/cronbachs-alpha-reliability-ux-scales/>

Smith, G., Williams, L., O'Donnell, C., & McKechnie, J. (2019). A series of n-of-1 studies examining the interrelationships between social cognitive theory constructs and physical activity behaviour within individuals. *Psychology & Health*, 34(3), 255–270. <https://doi.org/10.1080/08870446.2018.1500576>

Sürücü, L., & Maslakci, A. (2020). *Validity and Reliability in Quantitative Research*. 8, 2694–2726. <https://doi.org/10.15295/bmij.v8i3.1540>

Wang, R. (2021). Application of Bandura's Social Learning Theory in the Moral Education of Secondary Vocational College Students. *Journal of Contemporary Educational Research*, 5(8), Article 8. <https://doi.org/10.26689/jcer.v5i8.2455>

Yi, L., Uddin, M. A., Das, A. K., Mahmood, M., & Sohel, S. M. (2019). Do Transformational Leaders Engage Employees in Sustainable Innovative Work Behaviour? Perspective from a Developing Country. *Sustainability*, 11(9), Article 9. <https://doi.org/10.3390/su11092485>

Yunus, L., Abdullah, A., & Jusoh, R. (2019). Relationship between Teachers' Perceptions Towards School Principals' Instructional Leadership Practices and Teachers' Concerns about Teaching and Learning Innovation. *International Journal of Academic Research in Progressive Education and Development*, 8. <https://doi.org/10.6007/IJARPED/v8-i4/6432>

Zainal, M. A., & Mohd Matore, M. E. E. (2021). The Influence of Teachers' Self-Efficacy and School Leaders' Transformational Leadership Practices on Teachers' Innovative Behaviour. *International Journal of Environmental Research and Public Health*, 18, 6423. <https://doi.org/10.3390/ijerph18126423>

Zuraik, A., & Kelly, L. (2018). The role of CEO transformational leadership and innovation climate in exploration and exploitation. *European Journal of Innovation Management*, 22. <https://doi.org/10.1108/EJIM-10-2017-0142>

Tolerance as a Social Phenomenon in the Education of Humanities Students

ABSTRACT

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The purpose of this study is to identify the specific features of how tolerance is perceived by students in humanities disciplines within the educational process. The research addresses four key aspects: (1) the sociological and psychological dimensions of tolerance; (2) the level of understanding and interpretation of tolerance among humanities students; (3) the main barriers that hinder the development of tolerant attitudes; and (4) recommendations for fostering tolerance in educational settings. To achieve these objectives, the study combined theoretical analysis with an empirical investigation. A survey was conducted among 80 humanities students at Jusup Balasagyn Kyrgyz National University (40 women and 40 men, average age 19.4 years). The questionnaire was designed to assess students' understanding of tolerance, emotional regulation, reactions to criticism, and interpersonal trust. Data were collected using Google Forms, while descriptive statistical analysis was used to identify prevailing patterns and key challenges. The findings show that tolerance is essential for intercultural social integration and harmony. Such attitudes are fostered via intercultural competency, critical thinking, and emotional regulation education. If relevant activities are constantly integrated into the learning environment, educational institutions can encourage tolerance. The development of a tolerant worldview among students was influenced by educators who appreciate multiple opinions, highlighting their vital role in this process. The poll found that 15% of respondents had trouble managing their emotions in severe situations and 47.1% couldn't stay cool, emphasizing the need for stress resilience and self-regulation. The majority of students saw tolerance as an external standard rather than an internalized virtue, highlighting the need to cultivate mindful attitudes towards cultural diversity and integrate these principles into personal beliefs. Theoretical study and poll data suggest including intercultural interaction, educator training, and extracurricular activities into education. The findings showed that educational tolerance must be promoted through multicultural competency, emotional regulation, and practical interpersonal skills.

Keywords: socialization, education, intercultural interaction, emotional regulation, extracurricular activity, stress resilience

1. Introduction

The 21st century's increasingly transnational, multicultural, and globalized societies can only achieve and sustain peace when moral, ethical, and cultural principles like tolerance, harmony, mutual understanding, and multiculturalism are upheld. In this situation, tolerance needs to be ingrained in social interactions and used as the cornerstone of public relations campaigns that support harmonious coexistence and growth. The need to recognize and address the multicultural issues that are arising in society has increased due to globalization, increased population mobility, open labor markets, and migration flows. The problems posed by these processes call for the development of multicultural competence, which is based on a system of attitudes, values, motivations, and views and is cultivated at the individual level. As a result, fostering tolerance in learning settings becomes essential to adjusting successfully to a varied society. Tolerance education is now one of the top concerns for the country's educational system due to the increasing number of foreign students studying there. Reevaluating the legal frameworks that specify the goals, duties, and purview of different social institutions is necessary to address the current educational issues. Additionally, a detailed examination of Kyrgyzstan's educational system's current situation is required. Fostering tolerance, pursuing peace, and being able to cohabit peacefully are all made more difficult by the multicultural and multireligious nature of society (Efremov, 2025a). Here, tolerance is shown to be not just a desirable quality but also a prerequisite for the peaceful advancement of society.

Such scholars as Brooks and Weber (2021), Akmagambetova et al. (2023), Gafurova (2020), Hjern et al. (2020), Dong et al. (2024), Efremov (2025b), Spytska (2023a) and others have explored tolerance from sociological, psychological, and pedagogical perspectives, emphasizing its dependence on both institutional factors, such as inclusive education and intercultural engagement, and individual qualities like empathy, emotional regulation, and self-reflection. However, their studies largely overlook how tolerance develops among humanities students, whose academic focus on ethics, communication, and culture makes them uniquely positioned to internalize tolerant values. Empirical research examining how emotional intelligence, self-reflection, and interpersonal trust influence tolerance in university contexts remains limited, particularly within Kyrgyzstan's multilingual and multicultural environment, where promoting tolerance is both an educational and societal priority.

The scope of the study includes a theoretical reflection on tolerance, an examination of the factors influencing its development, an analysis of the barriers to its cultivation, and a survey of humanities students to gather empirical data. The study addresses both the practical and theoretical dimensions of tolerance, aiming to bridge the gap between academic research and educational practice. To achieve this purpose, the following research tasks are formulated:

1. Identify the specific features of how tolerance is perceived by students in humanities disciplines.
2. Analyze the sociological and psychological aspects of tolerance.
3. Assess the level of understanding of tolerance among students in humanities-related disciplines.
4. Provide recommendations for fostering tolerance among students.

By combining theoretical reflection and empirical data, this research contributes to closing the identified gaps. It offers a deeper understanding of the mechanisms that shape tolerant attitudes and provides practical recommendations for educators and policymakers. The findings will support the design of educational programmes that promote intercultural competence,

emotional regulation, and stress resilience, enhancing both academic and personal development in diverse educational environments.

2. Literature Review

The study of tolerance has long been central to sociological, psychological, and educational theory. Scholars have conceptualized tolerance as both an individual disposition and a social norm that enables coexistence and cooperation in pluralistic societies. This section examines theoretical and empirical studies on tolerance, focusing on sociological and psychological perspectives, pedagogical approaches, and persistent barriers to its development. The discussion draws upon and expands sources previously mentioned in the introduction, integrating theoretical reflections and empirical findings into a cohesive analysis.

Liberalization, education, and political tolerance are all intertwined, as seen by the importance that educational programs have in fostering democratic values and societal tolerance. Unless accompanied by focused educational efforts, liberalization procedures do not always result in more tolerance, claim Brooks and Weber (2021). Critical thinking skills and an appreciation of the value of equality are directly enhanced by higher education, which in turn promotes more tolerant views (Rakhimberdinova et al., 2022). Furthermore, Golebiowska (2019) investigated the mechanisms underlying the association between political tolerance and education, finding that the most important elements were information literacy and critical thinking. Notwithstanding these benefits, not enough research has been done on how educational initiatives can best foster the growth of political tolerance.

In the context of Central Asia, Akmagambetova et al. (2023) and Gafurova (2020) emphasized that pedagogical systems must integrate pragmatic, culturally contextualized approaches to cultivate tolerant attitudes among students. Hjerm et al. (2020) developed a multidimensional model of tolerance comprising acceptance, respect, and appreciation of diversity, demonstrating that tolerance is shaped not only by individual moral values but also by broader social institutions and interactional contexts. These insights underscore that tolerance is a socially conditioned construct, influenced by both macro-level (institutional) and micro-level (interpersonal) dynamics. Thus, educational institutions play a crucial role in fostering tolerance (Dong et al., 2024). Studies have demonstrated that incorporating intercultural activities like national holiday celebrations and collaborative academic projects fosters experiential engagement with cultural diversity. However, Stein et al. (2024) pointed out that without sustained institutional commitment, these initiatives run the risk of becoming tokenistic and failing to generate meaningful intercultural understanding. These findings align with broader sociological views that sustained institutional and interpersonal efforts are necessary for tolerance to take root within educational environments.

From a psychological standpoint, tolerance includes emotional self-regulation, empathy, and resilience in navigating differences. Efremov (2025b) identified emotional states, particularly fear responses, as critical determinants of openness to others. Spytska (2023a) and Ternov et al. (2024) further connected tolerance to moral reasoning and identity formation, suggesting that it represents not merely passive acceptance but an active internalization of fairness and respect.

Chen (2021) and Velthuis et al. (2021) emphasized empathy and a positive self-concept as fundamental psychological foundations of tolerance. Lin and Chung (2024) supported these

findings by demonstrating that educators' multicultural beliefs and empathetic engagement significantly predict students' intercultural competence and tolerance. Likewise, Suryani and Muslim (2024) confirmed that teacher empathy acts as a key mediating factor between instructional methods and the development of tolerant mindsets. Collectively, these studies frame tolerance as a cultivated psychological capacity requiring reflection, emotional awareness, and consistent reinforcement through educational practice. The development of emotional intelligence has been identified as central to building tolerance. Empathy-based activities, mindfulness, and self-reflection exercises have proven effective in strengthening students' ability to manage emotions and engage constructively in diverse settings (Constantia et al., 2025). This body of research highlights that tolerance is inseparable from emotional maturity and psychological resilience.

Recent educational studies have explored methods for embedding tolerance into formal and informal learning environments. Ash et al. (2020) introduced anti-racist pedagogical models that aim to transform institutional culture through critical engagement with systemic bias. Vertelyte and Staunæs (2021) proposed the "pedagogy of discomfort", wherein students encounter and reflect upon challenging emotional responses to difference, thereby fostering self-awareness and openness. Both approaches advance tolerance as a transformative educational outcome rather than a passive value. Investigations into religious tolerance and intercultural interaction demonstrate the importance of reevaluating educational approaches to cultivate respectful attitudes towards cultural diversity. Permata Sari and Indartono (2019) identified shortcomings in conventional teaching methods that often fail to account for the diversity of religious beliefs, making it more difficult to nurture respectful perspectives towards individuals from different cultural backgrounds. Manoppo et al. (2019) concluded that tolerance must be developed from an early age, particularly within the context of ongoing digital transformation.

Similarly, Chekal (2022) and Strelnikov and Vytkaľov (2023) advocated for experiential learning formats, such as scenario-based exercises and group projects, as means to develop practical tolerance skills. These methods promote direct engagement with diversity and cultivate interpersonal communication competencies essential for multicultural harmony. Despite these innovations, Tyas and Naibaho (2020) and Al Majali and AlKhaaldi (2020) found that tolerance education often remains declarative rather than experiential, resulting in limited behavioral change. This gap highlights the need for pedagogical frameworks that prioritize emotional involvement and reflective learning, ensuring that tolerance evolves from theoretical knowledge into lived practice.

Tolerance education continues to face multiple structural and psychological barriers. Afriadi (2020) identified the absence of unified methodological frameworks as a central limitation that prevents the institutionalization of tolerance as a consistent educational goal. Cultural isolation and limited exposure to diversity impede students' ability to form tolerant perspectives (Abacioglu et al., 2023). The influence of mass media and social networks, which often perpetuate stereotypes and polarization, exacerbates this problem (Stein et al., 2024). Psychological obstacles such as low empathy, poor self-regulation, and rigid self-concept further hinder tolerance development (Efremov, 2025b). Inadequate teacher training and insufficient emotional preparedness among educators compound these issues. Studies emphasize that teachers who lack intercultural competence may unintentionally reinforce biases or fail to model inclusive behaviour (Lin and Chung, 2024). Addressing these barriers requires systematic training programmes, supportive institutional policies, and curricular designs grounded in both cognitive and emotional development.

Integrating the sociological and psychological perspectives discussed above, this study adopts a dual conceptual framework. From a sociological perspective, tolerance is understood as a social construct sustained through interpersonal interaction, institutional practices, and community norms. From a psychological perspective, it is viewed as a personal disposition developed through empathy, emotional regulation, and reflective learning. Together, these perspectives offer a multidimensional understanding of tolerance as both a collective social process and an individual psychological capacity. This integration informs the present study's approach to examining how humanities students perceive and internalize tolerance in the university environment.

Existing scholarship provides substantial theoretical grounding for understanding the mechanisms of tolerance formation but reveals notable fragmentation across disciplinary boundaries. Sociological research often neglects individual emotional dynamics, while psychological studies may overlook the influence of institutional and cultural factors. Moreover, the regional context of Central Asia remains underrepresented in empirical tolerance studies. The current research addresses these gaps by synthesizing sociological and psychological frameworks and applying them to the experiences of humanities students in Kyrgyzstan. By linking theoretical concepts to practical educational strategies, this study contributes to the advancement of tolerance education as both a scientific field and a tool for fostering intercultural coexistence.

To clarify the structure and focus of the study, a conceptual map was developed to illustrate its theoretical foundation, empirical components, and practical outcomes (Figure 1).

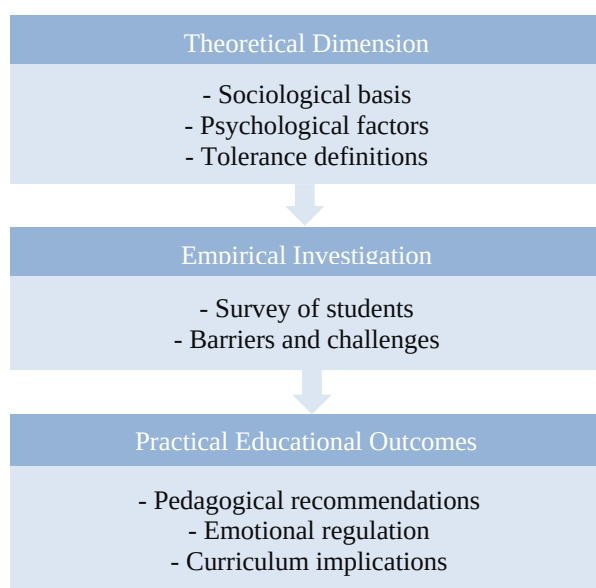


Figure 1: Conceptual map of the study on tolerance education

Source: compiled by the author.

This diagram visually represents the progression from the sociological and psychological theorization of tolerance (theoretical dimension) to the collection and analysis of empirical data through a student survey (empirical investigation), culminating in actionable educational strategies and policy-oriented recommendations (practical educational outcomes). This integrated approach highlights the dual focus of the study: on the one hand, to address gaps in

the academic literature concerning the development of tolerance among humanities students; on the other, to inform the implementation of targeted pedagogical practices that foster intercultural competence and emotional regulation. By presenting the study's components in this structured way, the diagram reinforces the coherence between its objectives, methodology, and intended impact on educational environments.

3. Materials and Methods

At the initial stage of the study, tolerance was defined and its key elements analyzed. These elements include the presence of a value system grounded in respect for the individual, the recognition of rights and freedoms, and the liberty of choice in fundamental life matters. The Declaration of Principles on Tolerance (1995) was considered, and the following influencing factors were explored: socio-psychological and cultural dimensions; the level of cultural awareness, including the role of educational institutions in developing students' intercultural competence and the impact of the social context on the formation of tolerant attitudes; the influence of the social environment and interpersonal interaction on the level of support for tolerance; and the importance of academic and extracurricular activities in cultivating tolerance among students. The role of pedagogical engagement was examined, particularly in terms of modelling tolerant behaviour and creating conditions for discussions around diversity and inclusion.

An analysis of the challenges and barriers encountered during the development of tolerance showed several key issues: the absence of a unified methodological framework for promoting tolerance; the cultural and social isolation of students; insufficient pedagogical training; and low student motivation towards the development of tolerant values.

Participants

As part of the study, a survey was conducted among students at Jusup Balasagyn Kyrgyz National University. A total of 80 students participated in the survey, comprising 40 women (50%) and 40 men (50%). The average age of respondents was 19.4 years. The sample was formed using a non-random, voluntary sampling method, involving students from humanities faculties who expressed willingness to participate. While appropriate for exploratory research, this approach limits generalizability due to potential self-selection bias. Nonetheless, it enabled targeted access to a relevant population for examining tolerance in educational contexts.

Measurements

The study was conducted in accordance with all ethical and legal standards governing studies involving student participants. All respondents were informed of the purpose and objectives of the study and of their right to withdraw at any time. Confidentiality was guaranteed, and the results were used exclusively for academic purposes (Table 1).

Table 1: Questions aimed at assessing the level of tolerance and the factors influencing its development

Question	Answer options
What is tolerance?	Polite and tactful behaviour Understanding and forbearance Acceptance
How do you cope with difficulties?	Unable to deal with difficulties patiently Unable to remain calm in challenging situations Difficult to answer
How do you respond to criticism?	I dislike it It depends on who is criticising or the situation I remain silent
What would you do if a classmate let you down?	I would no longer trust them I would perceive it as a lack of respect I would ignore it
In your opinion, does intolerance exist within your academic group?	Yes No Difficult to answer

Note: The proposed answer options clarify that “Polite and tactful behaviour” refers to external expressions of tolerance manifested through courteous communication and avoidance of offence, “Understanding and forbearance” denote emotional restraint and readiness to endure discomfort in interactions with others, while “Acceptance” implies an internalised recognition of diversity and the conscious inclusion of differing viewpoints and values.

Source: compiled by the author.

Data collection procedure

The survey was conducted in February 2025 and lasted two weeks. It was carried out online using the Google Forms platform. This tool was selected to ensure accessible participation and maintain respondent anonymity.

Data analysis procedure

Following data collection, the results were exported into Microsoft Excel for further processing and analysis. The analysis enabled the identification of key challenges and trends in the development of tolerance among students. The findings were synthesized, allowing for the formulation of practical recommendations aimed at improving educational strategies and the level of tolerance within the academic environment.

The questionnaire was developed based on theoretical constructs identified in the literature related to tolerance, emotional regulation, intercultural competence, and social interaction. Each question was formulated to reflect specific aspects of these constructs: the question “What is tolerance?” assesses cognitive understanding and the degree of internalized values; questions about coping with difficulties and responding to criticism measure emotional regulation and stress resilience; the question regarding a classmate’s unreliability addresses interpersonal trust and respect; and the question about the presence of intolerance in the academic environment helps assess perceptions of intercultural sensitivity and group dynamics. This operationalization enabled the interpretation of respondents’ answers within a multidimensional model of tolerance.

4. Results

Theoretical reflection on tolerance: its sociological and psychological aspects, and the analysis of challenges and barriers to its development

Tolerance has taken on different connotations over time. Respect and acceptance of people regardless of ethnicity, culture, or social background. Tolerance means letting everyone live fully without discrimination or constraints. At the 28th General Conference of UNESCO Member States in 1995, the Declaration of Principles on Tolerance stated that mutual tolerance, solidarity, dialogue, and understanding should guide all individuals, social groups, and political movements. Tolerance was both a concept and a prerequisite for peace and socioeconomic growth.

Tolerance requires respect for the individual, recognition of others' rights and liberties, and the freedom to make important life choices (Spytska, 2023a). This view requires personal accountability and fairness in relationships. Tolerance helps people integrate socially, develop morality, and strengthen relationships (Ternov et al., 2024). It boosts national self-awareness, minimizes negative influences, and reduces emotional suffering. Modern tolerance is different from forbearance, which is tolerating discomfort without complaint. Tolerance means accepting other people's opinions and actions (Zelenin, 2023). It is more than forbearance since it involves acceptance without internal conflict and is a personal trait rather than a conscious deed. Tolerance is important for personal and social life, according to several researches (Chen, 2021; Velthuis et al., 2021; Jain and Pareek, 2019). It helps people overcome cultural barriers and see the world differently. Compromised, mutually understanding, and respectful behaviour is needed because different social groupings have different interests and requirements (Sheryazdanova et al., 2024). The diversity of perspectives, beliefs, and tastes in society often hinders tolerance.

Higher education institutions must aggressively employ varied methods and technologies to improve learning and extracurricular activities (Adylbek kyzy et al., 2023). Extracurricular programs that include national holidays like Nowruz or the Chinese New Year promote cultural participation and awareness. Students learn about Kyrgyz hospitality, holiday meals, national costumes, and more during Nowruz. International students may find this interesting and enriching. Kyrgyz students can learn about Chinese New Year customs, including costumes and other symbols, through extracurricular activities. Humanities extracurriculars foster interest and tolerance, reducing intolerance. Future professionals must learn critical thinking, self-organization, and self-expression to participate respectfully with society without causing conflict (Singson et al., 2024).

Tolerance's role in forming a value-oriented attitude to human existence has made it a vital condition for a harmonious community. The educational process should prioritize tolerance to promote acceptance, respect, and well-roundedness. Many socio-psychological and cultural elements affect tolerance (Efremov, 2025b). It is influenced by social, cultural, educational, and interpersonal factors. Globalization and increased migration flows are shaping cultural awareness and openness to various traditions as people adjust to multicultural contexts. Schools are crucial to student intercultural competence (Shujuan, 2023). Exposure to cultural variations promotes learners' tolerance. Diverse cultural experiences widen perspectives and diminish the tendency to dislike unfamiliar habits and traditions.

Social environment influences tolerance development. How well society promotes tolerance affects how well pupils learn it. Diversity and inclusion policies in schools are crucial. Intercultural events and programs promote respect for people of diverse ethnicities and origins. Another important component is social interaction. Positive student interaction from varied ethnic and social groups promotes tolerance (Burnell et al., 2021; Baidyldaeva, 2022). Communication and teamwork among students increase tolerant viewpoints. Academic and extracurricular activities foster positive dialogue and cooperation, making them crucial. Students learn to accept different perspectives through group projects and discussions. Academic faculty and student mentors matter. Teachers can foster tolerance by modelling inclusive behaviour and leading diversity and inclusion discussions (Wu, 2024). Evidence demonstrates that instructors who respect many ideas and cultures can be role models, encouraging tolerant worldviews (Lin and Chung, 2024; Suryani and Muslim, 2024; Döring et al., 2024).

Psychological aspects of tolerance education help shape people who can recognize and accept social differences. Understanding the psychological mechanisms of tolerance helps establish successful techniques for teaching it to students. Empathy, a positive self-image, and less fear and stereotyping promote tolerance. The development of empathy is essential to tolerance. Understanding and empathizing with others improves understanding and decreases conflict. Structured psychological exercises, training, and active engagement in group discussions and intercultural exchanges promote empathy. These strategies help children understand others, which is key to tolerance. Positive self-image is another important psychological element. Self-worth and self-respect help students appreciate others' differences. Students who feel safe and affirmative about themselves are less likely to react aggressively or defensively to cultural or social diversity. A supportive educational environment where students feel appreciated and can share their views and ideas without judgement is needed to foster this aspect.

Addressing bias and stereotyping is crucial. To eliminate stereotypes, which often lead to prejudice and intolerance, needs conscious and consistent work. One useful method is critical reflection on one's views and their roots. Psychological training to detect and reinterpret prejudices helps pupils see their irrationality and become more accepting. Psychological therapies that reduce stereotyping boost student understanding and tolerance. Emotional regulation also helps increase tolerance. Students must learn to cope with unpleasant emotions in culturally diverse situations and turn them into positive interactions to foster tolerance. Mindfulness, breathing, and relaxation can help you stay calm and objective in difficult situations. Identifying hurdles and obstacles in cultivating tolerance might assist educational institutions shape tolerant attitudes in pupils. Given the complexity of this process, which is influenced by many external and internal factors, researchers believe that such difficulties stem from ineffective pedagogical methods and the characteristics of the social environment and individual students.

One of the biggest obstacles in tolerance education is the lack of a clear methodology. Some educational methods are ineffective. The lack of a common strategy hinders systematic and deliberate tolerance instruction. Therefore, educational curricula may not include enough activities to foster intercultural competence and tolerance in pupils. Cultural and social isolation hinders tolerance. Without exposure to diverse cultures and social groups, kids may develop stereotypical and prejudiced views (Abacioglu et al., 2023). Isolation from cultural diversity also limits pupils' worldview and chance to tolerate cultural differences (Stein et al., 2024; Dong, 2024). Intercultural engagement must be integrated into schooling to avoid reinforcing intolerance. Insufficient teacher qualifications are another issue. Not all educators know how

to encourage tolerance. Teachers may carry biases or assumptions that hinder inclusive and fair learning environments. Professional development programmes for educators in intercultural engagement and tolerance education are needed to overcome this hurdle. Low student motivation to cultivate tolerance is a major concern. Intercultural communication and diversity may seem irrelevant to many students, especially if they don't encounter them regularly. Individual traits and a lack of understanding of tolerance in modern culture may explain this lack of motivation. Addressing this issue requires constructing educational experiences that emphasize tolerance. Case studies, intercultural initiatives, and direct connection with diverse people can help attain this goal.

Public opinion and the media hinder tolerance. Youth are influenced by negative preconceptions and prejudices in mass media and social media. Tolerance is harder to establish when public speech supports unfavorable cultural or social attitudes. Educational institutions must balance this by providing students with factual and objective information that fosters critical thinking and independent opinions. Rural and urban people from different countries and social groupings live within diverse rules, norms, conventions, and traditions. These values are expressed in languages, behaviors, faiths, aesthetics, and social institutions. In Kyrgyzstan, as in other multi-ethnic and multicultural nations, one social group has always had mixed feelings about another. Kyrgyz society needs more active attempts to promote tolerance. Primarily socialized people develop national tolerance consciousness throughout their lives. In addition to the family, education is vital to socialization. The conceptual framework guiding the empirical part of the study is presented in Table 2. This model reflects the assumed causal and correlative relationships among the core constructs.

Table 2: Operationalisation of key constructs and their measurement

Construct	Operational Definition	Measurement Approach	Related Survey Item(s)
Tolerance (general)	A socio-psychological attitude encompassing acceptance, understanding, and respect for diversity.	Multiple-choice definition question	What is tolerance?
Emotional regulation	The ability to manage emotional responses, especially under stress or provocation.	Self-reported behaviour in stressful contexts	How do you cope with difficulties?
Response to criticism	An indicator of openness, self-confidence, and social resilience.	Preferences and reactions to feedback	How do you respond to criticism?
Trust and conflict behaviour	The extent to which individuals perceive and handle violations of mutual expectations.	Attribution of meaning to betrayal	What would you do if a classmate let you down?
Perceived group intolerance	Awareness of interpersonal tensions and perceived discriminatory attitudes in the group.	Perception-based self-report	In your opinion, does intolerance exist within your academic group?

Source: compiled by the author based on Hjerm et al. (2020), Golebiowska (2019), Lin and Chung (2024).

Empirical study on the level of tolerance among humanities students and analysis of the results

University students represent a distinct social group that, in the context of contemporary social transformation, is often particularly vulnerable from economic and social standpoints. Social dissatisfaction among students frequently manifests in protests, many of which are centered around ethnic and migration-related issues. This creates favorable conditions for the spread of various forms of xenophobia. Young people, lacking sufficient life experience and education, may sometimes attribute the causes of their instability and challenges to perceived outsiders – “newcomers” and “migrants”. The first question posed in this study was: “What is tolerance?” (Figure 2).

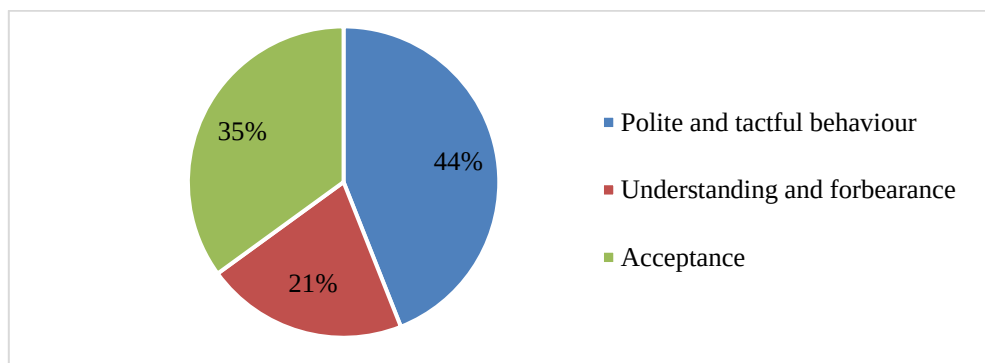


Figure 2: Humanities students' understanding of the concept of tolerance
Source: compiled by the author.

The distribution of responses demonstrated that students predominantly perceive tolerance through the lens of external social norms. This suggests that, for many respondents, tolerance is primarily associated with the observance of formal behavioral codes. A smaller proportion of students associated tolerance with forbearance and understanding, indicating a limited awareness of the deeper dimensions of the concept, particularly in the context of interpersonal and intercultural interactions.

These findings underscore the need for greater emphasis on the internal dimensions of tolerance, including acceptance and respect for cultural differences within the educational process. The development of these aspects may support students in moving beyond mere adherence to formal norms, fostering empathy and deeper understanding, which are especially critical in culturally diverse environments. The survey also indicated that “tolerance” remains only partially understood by humanities students. It is essential to convey that tolerance encompasses not merely passive forbearance but also active acceptance, engagement with differing perspectives, and efforts to comprehend them. Tolerance should be a conscious and meaningful commitment that transcends stereotypes and entails a sense of social responsibility. Understanding tolerance as a value and a personal stance enables students to find individual meaning in each interaction and make deliberate decisions that contribute to the cultivation of tolerant qualities. Responses to the question regarding how students cope with difficulties indicated a low level of stress resilience and a lack of emotional regulation skills among humanities students (Figure 3).

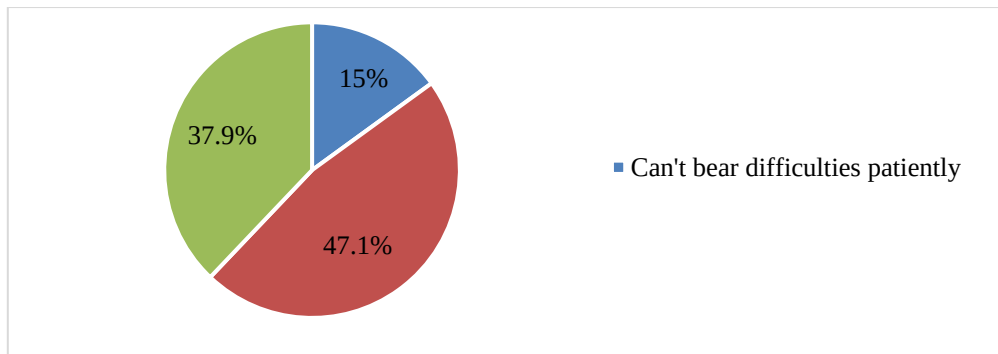


Figure 3: Responses to the question on how students cope with difficulties
Source: compiled by the author.

15% of students reported an inability to endure difficulties with patience, while nearly half indicated they struggle to remain calm in challenging situations. These findings highlight issues in emotional regulation and stress management. Such difficulties may stem from individual upbringing and the lack of structured preparation for managing emotions under pressure. The considerable proportion of students who found it difficult to answer this question further reflects a limited awareness and understanding of their own emotional responses. A possible explanation lies in students' insufficient experience in self-reflection and recognizing their emotional capacities, which constitutes an important indicator. These results suggest the need for incorporating emotional learning components into the educational process to develop resilience and self-regulation skills.

The data indicate a clear demand for enhanced efforts to strengthen emotional regulation and stress management skills among humanities students. The introduction of programmes focused on emotional intelligence and self-regulation strategies would likely increase students' capacity to cope effectively with difficulties. Such developments are crucial for successful adaptation in professional and social environments. The distribution of responses to the question on how students respond to criticism showed that the majority of humanities students tend to avoid conflicts (Figure 4).

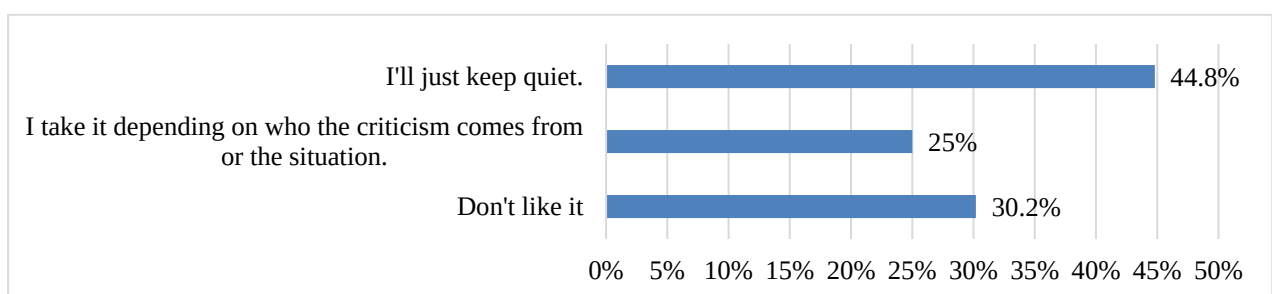


Figure 4: Distribution of responses to the question on how students respond to criticism
Source: compiled by the author.

The results demonstrate a general preference among students for avoiding conflict, reflecting a tendency to maintain peaceful relations and prevent escalation, which may be influenced by a desire to reduce tension and avoid confrontation, particularly within multicultural contexts. While this approach helps foster harmonious interaction, it may also indicate a lack of confidence or difficulty in articulating personal viewpoints during disputes. A second notable group of respondents (25%) stated that their response to criticism depends on the identity of

the critic or the specific context. This suggests a selective perception of criticism and may be linked to the level of trust placed in particular individuals or to the nature of situations where criticism is seen either as constructive or threatening. Such responses point to the important role of interpersonal relationships and context in shaping how criticism is perceived. One-third of students expressed a dislike for receiving criticism. This attitude may reflect a low tolerance for constructive feedback and a lack of skills necessary to view criticism as a tool for personal growth. Such reactions are often associated with low self-esteem and fear of negative judgement, both of which can hinder the development of self-reflection and personal improvement.

These patterns point to continued efforts to cultivate students' ability to process criticism constructively. Developing the capacity to listen to criticism without avoidance or defensiveness is a vital component in forming a mature and tolerant personality. The introduction of communication training, assertiveness development, and self-acceptance workshops could contribute to a more balanced perception of feedback, which, in turn, would support both personal and professional growth. The question regarding students' reactions to a lack of support from classmates indicates a diversity of approaches to interpersonal conflict and trust issues (Figure 5).

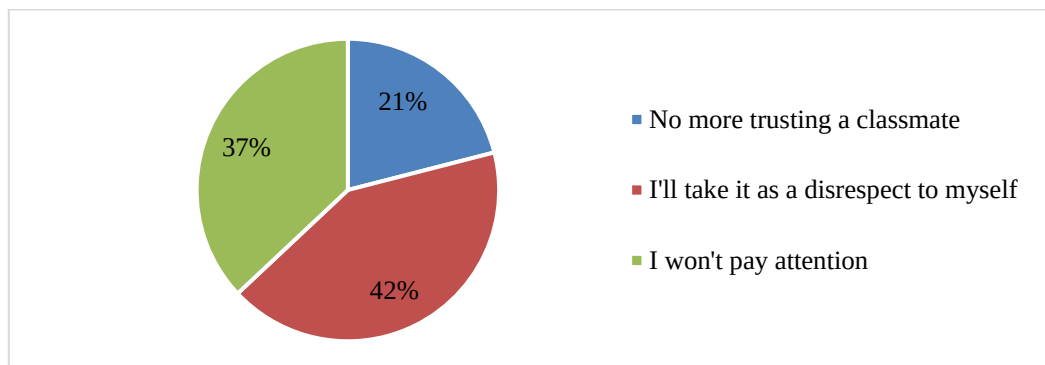


Figure 5: Distribution of responses to the question on students' reactions to the unreliability of a classmate

Source: compiled by the author.

Specifically, one-fifth of respondents indicated that they would lose trust in the classmate. This may reflect the high value placed on reliability and support within the academic environment, in addition to personal vulnerability in situations where trust is compromised. The responses suggest that perceived betrayal in collaborative tasks is interpreted as a violation of a core relational element – mutual respect and support. The majority of students regarded such a situation as a sign of disrespect, highlighting the importance they place on being treated respectfully and on maintaining reciprocal regard within the group. Participation in collective work involves a sense of responsibility from all members, and failure to fulfil one's obligations is seen not only as disregard for the task, but also for the contributions of fellow participants. This mindset appears to be linked to an expectation of fairness and equity within the educational context, where all group members are expected to pursue a shared outcome. Importantly, 37% of students stated that they would simply ignore the situation. This response may be interpreted as a conflict-avoidance strategy, potentially aimed at minimizing emotional distress caused by disappointment and breaches of trust. It could also reflect apathy or a limited sense of the importance of collaborative work for this subgroup of students.

The general tendency towards reduced trust following such experiences might indicate that students begin with a baseline level of trust toward their peers, but when expectations are not met, the resulting disappointment leads to a reluctance to continue engagement. Conflict resolution skills, assertive behaviour, and the principles of tolerance within academic activities could assist students in navigating unreliability while maintaining a healthy group dynamic. The distribution of responses to the question concerning the presence of intolerance within student groups demonstrated a rather concerning picture (Figure 6).

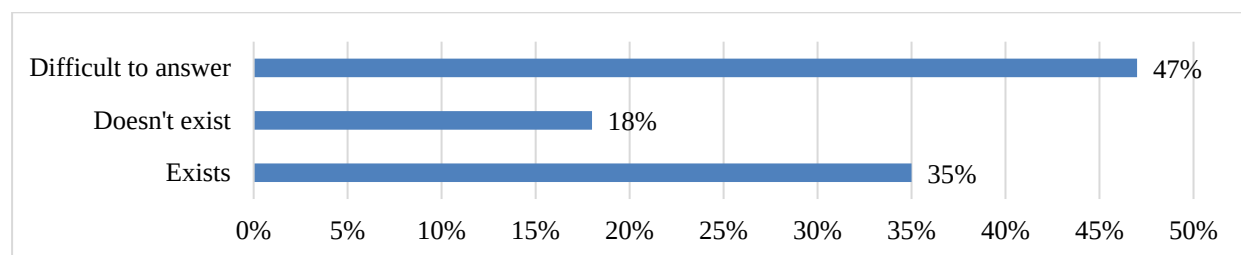


Figure 6: Distribution of responses to the question on the presence of intolerance in student groups

Source: compiled by the author.

More than one-third of students confirmed the existence of intolerance toward others, indicating ongoing issues in interpersonal relations within groups. This outcome may be influenced by factors such as cultural differences, varying levels of academic performance, or students' social backgrounds. The presence of intolerance points to a need for efforts aimed at strengthening mutual respect and improving the overall atmosphere in academic groups. Only 18% of students reported that intolerance was not present within their groups. This relatively low percentage may suggest that a positive atmosphere is uncommon and that students often perceive their environment as fragmented or conflict-prone. In such settings, effective communication and respectful interaction tend to be the exception rather than the norm.

Of particular note is the fact that nearly half of the respondents were unable to answer the question. The high proportion of uncertain responses may indicate that students had not previously considered the issue or lacked a clear understanding of what constitutes intolerance. This ambiguity may also point to a passive perception of conflict situations, in which students are disinclined to analyze or evaluate the behaviour of their peers, thereby hindering recognition and acknowledgement of problems within the group. The results emphasize the need for educational initiatives aimed at increasing students' awareness of the importance of tolerance, alongside the development of skills for analyzing their social environment. An open and supportive setting in which students can engage in discussions around tolerance and practice expressing their viewpoints could represent a vital step towards addressing intolerance and fostering respectful peer relationships.

Table 3 summarizes the key stages of the study, from the research objectives and methods to the findings and their implications for educational practice. It illustrates how the survey and theoretical analysis contribute to understanding tolerance among humanities students and highlights the practical recommendations for fostering tolerance in educational settings.

Table 3: Overview of study objectives, methodology, results, and educational implications

Research Objective	Methods	Findings	Implications
Identify features of how tolerance is perceived by students	Survey of humanities students	Students perceive tolerance as external norm rather than internal value	Need for deeper integration of tolerance into personal beliefs
Analyze sociological and psychological aspects of tolerance	Theoretical analysis, Student survey	Students struggle with emotional regulation and stress resilience	Focus on incorporating emotional regulation and self-regulation training in education
Assess the level of understanding of tolerance	Survey of students, analysis of responses	Limited understanding of tolerance as an internalized value	Develop more robust pedagogical interventions to shift tolerance from external norm to personal value
Provide recommendations for fostering tolerance	Practical recommendations, survey data	Recommendations include intercultural interaction, emotional regulation, and educator training	Implement these recommendations in curricular and extracurricular activities for sustainable tolerance cultivation

Source: compiled by the author.

Practical recommendations for the development of tolerance among humanities students: educational strategies and methods

According to the survey's results, students majoring in the humanities still exhibit inadequate tolerance, especially when it comes to emotional control and stress tolerance. It is imperative to address these inequalities by putting in place a variety of training programs, curriculum interventions, and policy changes meant to promote a more accepting learning environment. First and foremost, intercultural communication and tolerance should be explicitly addressed in curriculum interventions. Modules that concentrate on conflict resolution, emotional control, and empathy-building activities ought to be included in courses. Courses in psychology, communication, and cultural studies can incorporate this kind of material, encouraging students to interact with different viewpoints and develop tolerance via hands-on exercises. Students should be taught the value of tolerance in both their personal and professional life, as well as exposed to global challenges. Through scenario-based activities and real-world case studies, these academic modules should give students the chance to apply what they have learnt rather than just being theoretical.

The professional development of educators is another important factor. Since teachers have a significant influence on students' views towards tolerance, it is imperative that they receive mandated training in multicultural competency, emotional control, and inclusive teaching methods. To help teachers effectively manage diverse classrooms, these training modules may include role-playing, scenario-based learning, and workshops. Teachers should be able to provide an environment where all students are encouraged to politely express their opinions and participate in critical, productive discussions. Teachers set the tone for the class by acting tolerantly themselves, which affects students' attitudes and actions both within and outside of the classroom.

Extracurricular activities are essential for encouraging tolerance among students, in addition to adjustments to the curriculum and professional development. International exchange programs, multicultural events, and group student projects should all be incorporated into the extracurricular activities offered by educational institutions. By giving students firsthand exposure to a range of cultural backgrounds, these programs promote cross-cultural communication and comprehension. A key element of these extracurricular activities should be scenario-based exercises, in which students address actual problems pertaining to tolerance and cultural diversity. In addition to improving academic knowledge, these exercises foster critical thinking, decision-making, and intercultural communication skills.

Furthermore, in order to instill tolerance as a core value in the classroom, educational institutions must change their policies. Policies requiring the inclusion of issues linked to tolerance in all departments' curricula and extracurricular activities should be implemented by institutions. All members of the academic community should be informed of the institution's unambiguous position on diversity and inclusion, which is backed by a zero-tolerance policy for intolerance and prejudice. From formal instruction to student social interactions, such regulations will guarantee that the promotion of tolerance is constant and widespread throughout the educational process.

Institutions should implement frequent evaluations to monitor students' growth in tolerance in order to gauge the success of these programs. Both official tests and informal evaluations like group discussions, peer reviews, and reflective essays may be a part of these assessments. By identifying areas for improvement and modifying teaching tactics accordingly, the data collected from these assessments will assist educators and administrators in maintaining the cultivation of tolerance as a top priority in the school setting.

The results of the poll, which showed that many students have trouble controlling their emotions and view tolerance only as a formal social standard, should be a useful tool for developing focused solutions. Workshops on stress management and emotional intelligence modules, for instance, might be created and added to already-existing humanities curricula. These interventions will assist in transforming tolerance from a theoretical idea to an internalized value by attending to students' practical needs, such as enhancing their capacity to handle difficult circumstances and constructively respond to criticism.

Educational institutions can establish an atmosphere that encourages the growth of tolerance by incorporating tolerance education into the official curriculum and extracurricular activities, offering focused professional development for teachers, implementing institutional policies that place a high priority on diversity and inclusion, and methodically tracking progress. In addition to giving students the tools they need to interact politely in a variety of societies, these initiatives will help them grow as responsible, caring people on both a personal and professional level.

5. Discussion

This study aimed to explore the sociological and psychological dimensions of tolerance, assess the challenges to its development, and examine student perceptions via a survey. The findings confirm that tolerance is a core value that supports both personal and societal growth, facilitating social integration and intercultural engagement. However, the majority of students regarded tolerance primarily as adherence to formal social norms, rather than as an internalized

value. This highlights a significant gap in fostering deeper, more conscious attitudes toward cultural diversity within the educational context.

The importance of tolerance lies not only in forbearance but in actively embracing cultural and social differences, which in turn promotes social harmony and conflict reduction. Within educational settings, tolerance plays a vital role in developing students' interpersonal skills and their ability to engage constructively with others (Gonçalves, 2024). Additionally, intercultural competence helps students form meaningful relationships across cultural boundaries, contributing to their personal and professional development. This study supports the perspective that tolerance education, when systematically embedded within curricula, not only strengthens students' interpersonal relationships but also cultivates national identity based on respect and solidarity (Utomo and Wasino, 2020; Bidenko, 2021).

According to sociology, tolerance builds a foundation for the peaceful coexistence of various social and cultural groups by promoting social integration and lowering tensions. It makes it possible to establish a social framework in which differences are seen as chances for development rather than as reasons for conflict. In order for pupils to view cultural variety as a positive asset, psychological traits like empathy, self-reflection, and emotional control are crucial in forming resilient attitudes of tolerance. Tolerance is valuable because it can help people understand others and actively seek out points of agreement, which lowers the likelihood of conflict and strengthens social cohesion (Spytska, 2023b). Students' ability to connect constructively and fully engage with cultural variety may be limited if the sociological and psychological aspects of tolerance are not given enough consideration. According to the findings of Nasir and Rijal (2021), encouraging moderation through educational programs in Islamic colleges helps students develop tolerant attitudes and fosters respect for cultural differences. As a component of tolerance, moderation promotes the preservation of intercultural communication and the avoidance of conflict (Buribayev and Khamzina, 2025). The study by Sattrup and Knudsen (2024) emphasized the significance of informal educational situations for the development of tolerance. In informal, non-school settings, the authors found that adopting a tolerant approach increases student involvement and cultivates a more positive attitude towards learning. These circumstances foster a more open forum for discussion and idea sharing, which is consistent with research showing how crucial emotional control and empathy are to successfully fostering tolerance.

The development of tolerance is greatly aided by educational programs that promote intercultural competency and critical thinking abilities because they motivate students to actively engage with and respect cultural diversity (Strelnikov and Vytkaľov, 2023). Extracurricular activities, innovative teaching strategies, and scenario-based exercises were found to be beneficial approaches (Chekal, 2022). These techniques foster an atmosphere that encourages candid conversation and positive engagement, assisting students in examining and appreciating diversity. Despite these initiatives, there are still a number of obstacles in the way of fostering tolerance. These include inadequate training for teachers, a lack of a methodical approach, and a dearth of educational resources created especially to foster tolerant views. Such problems can seriously impair the efficacy of tolerance teaching and jeopardize its durability and consistency. Comparing the study by Sirry et al. (2024) shows that both Kyrgyzstan and Indonesia share obstacles and strategies that affect the growth of tolerance. According to the writers, tolerance instruction in Indonesian schools frequently consists solely of declarations that are not put into practice.

Despite their recognition of the need of promoting tolerance, educators usually encounter obstacles pertaining to methodological training and a dearth of pertinent teaching materials. However, there is evidence of an attempt to use interactive and practice-oriented techniques to foster tolerance, which is in line with the wider understanding of the necessity of scenario-based activities and innovative strategies. The notion of tolerance is present in textbooks, although its treatment is formalistic and superficial, according to Alhashmi et al.'s (2020) analysis of Islamic education materials in the United Arab Emirates. Additionally, students who participated in the survey viewed tolerance primarily as adherence to behavioral standards rather than as a deeply ingrained attitude or an intentional acceptance of cultural diversity. This is indicative of a larger lack of a methodical approach to intercultural communication and tolerance education. Together, the examined research highlight the need for innovative methodological materials and thorough teacher preparation in order to successfully apply tolerance education in educational settings.

According to a poll of Kyrgyz students participating in humanities programs, tolerance is still not fully established. Instead of viewing tolerance as an internal value and conscious acceptance of cultural diversity, many students view it largely as formal obedience to behavioral standards, politeness, and tact (Shcherban and Samoilov, 2024). Insufficient readiness for interpersonal communication and emotional self-management was indicated by the significant percentage of respondents who reported issues with emotional regulation, low stress resilience, and insecurity in response to criticism. Students may be better prepared for life and successful participation in a varied society if they develop their abilities in self-reflection, emotional resilience, and constructive interaction (Tiwen, 2023). The survey results and Mahpudz et al. (2020) conclusions were compared, which shed more light on the difficulties in promoting tolerance in educational environments. Their research, which looked at tolerance education as a way to improve social skills, showed that teaching tolerance is not always given priority in current educational programs. Tolerance is still under-represented in curriculum, despite its critical function in fostering empathy, promoting positive discourse, and fostering acceptance of different viewpoints (Vovchenko, 2022). According to the survey results, kids frequently struggle with emotional control and constructive engagement, which may be a sign of a larger flaw in the way tolerance is taught in classrooms. These results underline the necessity of stepping up initiatives to foster tolerance as a basis for social skills and flexibility in ethnic settings.

The suggestions made for improving tolerance among students studying the humanities place a strong emphasis on incorporating a methodical approach into the curriculum. Activities that promote interpersonal and intercultural communication include extracurricular involvement, multicultural events, scenario-based exercises, and innovative teaching strategies. Enhancing students' critical thinking, self-reflection, and emotional control abilities may help them better understand and value diversity and adjust to a variety of situations. In order to promote tolerance, Korostelina (2021) suggested using an identity-based strategy, claiming that traditional approaches frequently overlook students' cultural and individual traits. The model put forth by Korostelina, which emphasizes the interplay of cultural and individual elements through the pragmatic structuring of activities, is consistent with the conclusions made about the necessity of developing an educational environment that supports the growth of intercultural competence. The study by Ning et al. (2020) emphasized the role of educators in forming students' worldview and tolerance. The authors showed that teachers have a significant impact on how pupils develop their tolerant attitudes and epistemic ideas. This research lends credence to the claim that effective tolerance promotion depends heavily on teacher preparation. Future professionals might view tolerance as a crucial component of their professional identity

and incorporate these values into their future work by interacting with capable educators who are aware of diversity concerns.

The studies examined reaffirm the importance of fostering tolerance as a core element of the educational process, aimed at developing a balanced and resilient individual. Although considerable progress has been made in the design of methodologies and programmes, gaps remain in terms of a systematic approach, insufficient teacher qualifications, and limited availability of appropriate educational materials. Future studies and educational strategies should address these shortcomings to ensure the sustainable cultivation of tolerant worldviews and the promotion of social harmony within academic settings.

This study has several limitations. The non-random sampling method and relatively small sample size reduce the generalizability of the findings. Additionally, the absence of inferential statistical analyses limits the ability to confirm the significance of observed trends. Also, limitation of this study lies in the diversity of social conditions and individual characteristics among students, which influence the development and interpretation of tolerance. Future research should include a detailed analysis of the influence of individual and cultural factors on the development of tolerance to gain a clearer understanding of how social environments and personal characteristics shape tolerant attitudes. Such findings would support the adaptation of educational initiatives designed to cultivate tolerance, ensuring they are more effective across diverse educational and social contexts.

6. Conclusions

This study examined the sociological and psychological aspects of tolerance among students of humanities and identified the key mechanisms underlying its development as a fundamental human value. The theoretical framework demonstrated that tolerance goes beyond mere tolerance and encompasses the active acceptance of different points of view, beliefs, and cultural manifestations. Sociological and psychological analyses showed that the cultivation of tolerance depends on social context, emotional regulation, and intercultural interaction. Empirical data revealed several challenges in this process. More than a third of students acknowledged the presence of intolerance in their academic groups, while almost half were unsure of its existence, indicating a lack of awareness of the problem. In addition, 30.2% of respondents expressed discomfort with criticism, and 44% viewed tolerance as simply adhering to social norms. These results indicate a superficial understanding of tolerance and highlight the need for educational approaches that develop deeper emotional and ethical engagement.

The study concludes that fostering tolerance among students in the humanities requires a multidimensional approach that combines cognitive understanding, emotional intelligence, and social engagement. Creating a culturally inclusive educational environment depends on the proactive role of educators and institutions in shaping tolerant behaviour and encouraging open dialogue. An emphasis on empathy, mutual respect, and intercultural awareness can significantly improve students' ability to collaborate across cultural and social boundaries. Ultimately, developing tolerance as a universal human quality based on respect for the rights and dignity of all individuals contributes to the preparation of a new generation of professionals capable of effective communication and cooperation in culturally diverse societies. Strengthening these abilities in educational institutions will not only improve interpersonal relationships, but also promote social cohesion, democratic values and global understanding.

Implications

The results of this study highlight important implications for educational institutions, teachers, students, and policymakers. Many humanities students view tolerance as an external conformity rather than an internal value, pointing to the need to create learning environments that promote reflection, empathy, and emotional self-regulation. Educational institutions should integrate tolerance education into their curricula through specialized courses and activities that develop intercultural competence and emotional intelligence, and teachers should act as role models by applying inclusive and empathetic teaching practices. Students, in turn, should be encouraged to develop emotional and communication skills through intercultural exchanges, group work and reflective exercises, transforming tolerance into a personal and professional value. Policymakers should prioritize tolerance education within higher education strategies, supporting institutional frameworks that promote diversity, civic responsibility and collaboration between universities and society.

References

- Abacioglu, C. S., Epskamp, S., Fischer, A. H., & Volman, M. (2023). Effects of multicultural education on student engagement in low- and high-concentration classrooms: The mediating role of student relationships. *Learning Environments Research*, 26(3), 951–975. <https://doi.org/10.1007/s10984-023-09462-0>
- Adylbek kyzy, G., Nazarbekova, B., & Sultan kyzy, B. (2023). Education of tolerance of students in adolescence at the lesson of Kyrgyz literature. *Bulletin of the Jusup Balasagyn Kyrgyz National University*, 15(2), 139–145. [https://doi.org/10.58649/1694-8033-2023-2\(114\)-139-145](https://doi.org/10.58649/1694-8033-2023-2(114)-139-145)
- Afriadi, B. (2020). A review of tolerance education in the development of children to adulthood. *EDUCATIO: Journal of Education*, 5(1), 27–61. <https://doi.org/10.29138/educatio.v5i1.229>
- Akmagambetova, N., Zhorabekova, A., & Kassymova, G. (2023). Formation of tolerance in teenage students in the modern educational environment via a pragmatic approach. *Yasawi University Bulletin*, 2(128), 367–379. <http://94.141.227.224/index.php/habarshy/article/view/2588>
- Al Majali, S. A., & AlKhaaldi, K. (2020). Values of tolerance in relation to academic achievements, cultures, and gender among UAE universities students. *International Journal of Instruction*, 13(3), 571–586. <https://doi.org/10.29333/iji.2020.13339a>
- Alhashmi, M., Bakali, N., & Baroud, R. (2020). Tolerance in UAE Islamic Education textbooks. *Religions*, 11(8), 377. <https://doi.org/10.3390/rel11080377>
- Ash, A. N., Hill, R., Risdon, S. N., & Jun, A. (2020). Anti-racism in higher education: A model for change. *Race and Pedagogy Journal*, 4(3). <https://core.ac.uk/download/pdf/322981548.pdf>
- Baidyldaeva, A. (2022). Education of tolerance in students of university as a factor of humanization of modern education. *Bulletin of the Jusup Balasagyn Kyrgyz National University*, 14(2), 69–77. <https://balasagynbulletin.com/en/journals/tom-14-2-2022/vospitaniye-tolyerantnosti-u-studentov-vuza-kak-faktor-gumanizatsii-sovryemyennogo-obrazovaniya>
- Bidenko, Y. V. (2021). Tolerance and democracy as key priorities in the system of moral values of european educational space. *Humanities Studios: Pedagogy, Psychology, Philosophy*, 9(1), 66–74. <https://doi.org/10.31548/hspedagog2021.01.066>
- Brooks, C., & Weber, N. (2021). Liberalization, education, and rights and tolerance attitudes. *Social Science Research*, 101, 102620. <https://doi.org/10.1016/j.ssresearch.2021.102620>
- Buribayev, Y., & Khamzina, Z. (2025). Ethical and cultural guidelines in the labyrinth of Kazakhstan's civil service. *International Journal of Public Policy and Administration Research*, 12(1), 48–67. <https://doi.org/10.18488/74.v12i1.4155>

Burnell, A., Pozsgay, V., & Iryna S. Kravets (2021). Corporate Culture in Preschool Organisation Administration: European and Asian Context. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 7(3), 62-70. [https://doi.org/10.52534/msu-pp.7\(3\).2021.62-70](https://doi.org/10.52534/msu-pp.7(3).2021.62-70)

Chekal, L. (2022). Criteria and axiological features of civilization. *Humanities Studios: Pedagogy, Psychology, Philosophy*, 10(3), 192–197. [https://doi.org/10.31548/hspedagog13\(3\).2022.192-197](https://doi.org/10.31548/hspedagog13(3).2022.192-197)

Chen, X. (2021). Tolerance and inclusion. In *The Essentials of Habermas* (pp. 197–218). Cham: Springer. https://doi.org/10.1007/978-3-030-79794-2_7

Constantia, C., Christos, P., & Papademetriou, A. Y. (2025). The Teacher as a Leader in Creating Environmental Awareness. *International Journal of Educational Reform*, 34(3), 579-604. <https://doi.org/10.1177/10567879221139448>

Declaration of principles on tolerance. (1995). <https://unesdoc.unesco.org/ark:/48223/pf0000151830>

Dong, S., Bryant, C., & Liu, L. (2024). Fostering intercultural interactions and outcomes for domestic graduate students through internationalization-at-home efforts. *Social Psychology of Education*, 27(4), 2059–2078. <https://doi.org/10.1007/s11218-024-09902-6>

Döring, A. K., Jones, E., Oeschger, T. P., & Makarova, E. (2024). Giving voice to educators: Primary school teachers explain how they promote values to their pupils. *European Journal of Psychology of Education*, 39, 3607–3631. <https://doi.org/10.1007/s10212-024-00885-8>

Efremov, A. (2025a). The Psychology of Faith and Religious Identity: How Theology Shapes Worldview and Self-Perception. *Pharos Journal of Theology*, 106(3), 1–15. <https://doi.org/10.46222/pharosjot.106.3020>

Efremov, A. (2025b). The Fear Primacy Hypothesis in the Structure of Emotional States: A Systematic Literature Review. *Psychological Reports*. Online first. <https://doi.org/10.1177/00332941241313106>

Gafurova, N. (2020). The main directions of developing tolerance skills of primary school pupils. *European Journal of Research and Reflection in Educational Sciences*, 8(3), 236–239. <https://www.idpublications.org/wp-content/uploads/2021/01/Full-Paper-THE-MAIN-DIRECTIONS-OF-DEVELOPING-TOLERANCE-SKILLS-OF-PRIMARY-SCHOOL-PUPILS.pdf>

Gafurova, N., & Egamberdiyeva, T. (2021). Methodological characteristics of formation of tolerance skill pupils in primary school. *ACADEMICIA an International Multidisciplinary Research Journal*, 11(1), 1623–1628. <https://doi.org/10.5958/2249-7137.2021.00238.x>

Golebiowska, E. A. (2019). The mechanisms behind the relationship between education and political tolerance. *Politics, Groups, and Identities*, 8(5), 937–956. <https://doi.org/10.1080/21565503.2019.1624179>

Gonçalves, J. C. (2024). What Is (Not) Aesthetic Education? *Bakhtiniana*, 19(2), e63561e. <https://doi.org/10.1590/2176-4573e63561>

Hjerm, M., Eger, M. A., Bohman, A., & Connolly, F. F. (2020). A new approach to the study of tolerance: Conceptualizing and measuring acceptance, respect, and appreciation of difference. *Social Indicators Research*, 147(3), 897–919. <https://doi.org/10.1007/s11205-019-02176-y>

Jain, T., & Pareek, C. (2019). Managing Cross-cultural Diversity: Issues and Challenges. *Global Management Review*, 13(2), 23–32. <https://www.sonabusinessschool.com/journal/current-issues/managing-cross-final.pdf>

Korostelina, K. (2021). An identity-based conceptual framework for the assessment of tolerance in education curricula. In B. El Zein & A. Al Jarwan (Eds.), *Paths to a Culture of Tolerance and Peace*. New York: River Publishers. <https://doi.org/10.1201/9781003339045>

Lin, S., & Chung, K. K. H. (2024). Linking teacher empathy to multicultural teaching competence: The mediating role of multicultural beliefs. *Social Psychology of Education*, 27(6), 3573–3595. <https://doi.org/10.1007/s11218-024-09893-4>

Mahpudz, A., Jamaludin, & Palimbong, A. (2020). Tolerance learning to develop students' social skills in the 21st century. In *Proceedings of the International Conference on Social Studies, Globalisation and Technology* (pp. 169–178). Dordrecht: Atlantis Press. <https://doi.org/10.2991/assehr.k.200803.022>

Manoppo, F. K., Janis, Y., & Wuwung, O. (2019). Tolerance education for early childhood in Industry 4.0. In *Proceedings of the 1st Annual International Conference on Social Sciences and Humanities* (pp. 308–311). Dordrecht: Atlantis Press. <https://doi.org/10.2991/aicosh-19.2019.64>

Nasir, M., & Rijal, M. K. (2021). Keeping the middle path: Mainstreaming religious moderation through Islamic higher education institutions in Indonesia. *Indonesian Journal of Islam and Muslim Societies*, 11(2), 213–241. <https://doi.org/10.18326/ijims.v11i2.213-241>

Ning, B., Rind, I. A., & Asad, M. M. (2020). Influence of teacher educators on the development of prospective teachers' personal epistemology and tolerance. *SAGE Open*, 10(1). <https://doi.org/10.1177/2158244020914639>

Permata Sari, A. D., & Indartono, S. (2019). Teaching religious tolerance through social studies education based on multicultural approach. In *Joint proceedings of the International Conference on Social Science and Character Educations and International Conference on Social Studies, Moral, and Character Education* (pp. 214–219). Dordrecht: Atlantis Press. <https://www.atlantis-press.com/proceedings/icossce-icsmc-18/125910002>

Rakhimberdinova, M., Nurekenova, E., Suieubayeva, S., Duarte, Á., & Ordabayeva, M. (2022). Predictors Influencing the Choice of Master's Programs in the Tourism Industry. *Journal of Environmental Management and Tourism*, 13(4), 1161–1177. [https://doi.org/10.14505/jemt.v13.4\(60\).22](https://doi.org/10.14505/jemt.v13.4(60).22)

Sattrup, L., Knudsen, L. E. D. (2024). Teaching with tolerance: Students' surprisingly positive participation in an out-of-school learning environment. In L. E. D. Knudsen, M. Wiberg, K. B. Petersen & L. Haastrup (Eds.), *Teacher Ethics and Teaching Quality in Scandinavian Schools: New Reflections, Future Challenges, and Global Impacts*. London: Routledge. <https://doi.org/10.4324/9781003407775>

Shcherban, T., & Samoilov, O. (2024). Socialisation of student youth in social networks. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 10(2), 9–16. <https://doi.org/10.52534/msu-pp2.2024.09>

Sheryazdanova, G., Nurtazina, R., Byulegenova, B., Serikzhanova, A., & Dzhunusova, A. (2024). Socioeconomic and Political Causes of Youth Radicalization during the January 2022 Events in Kazakhstan. *Global Perspectives*, 5(1), 120495. <https://doi.org/10.1525/gp.2024.120495>

Shujuan, B. (2023). Content and principles of children's intellectual development in the Chinese preschool system. *Professional Education: Methodology, Theory and Technologies*, 9(2). <https://doi.org/10.31470/2415-3729-2023-18-10-26>

Singson, K., Syiem, I. S., & Singson, M. (2024). Intercultural Sensitivity Among University Students in India. *International Journal of Educational Reform*. <https://doi.org/10.1177/10567879241267980>

Sirry, M., Suyanto, B., Sugihartati, R., Tri Kartono, D., & Yani, M. T. (2024). Teachers' perspectives on tolerance education in Indonesian high schools. *British Journal of Religious Education*, 46(4), 505–519. <https://doi.org/10.1080/01416200.2024.2345213>

Spytska, L. (2023a). Criminal Prosecution as a Tool of Political Pressure on Opposition Forces by Authoritarian Regimes: From the Origins to the Present. *Pakistan Journal of Criminology*, 15(2), 259–274. https://www.pjcriminology.com/wp-content/uploads/2023/08/18_Spytska.pdf

Spytska, L. (2023b). The Nature of Sexual Violence: The Criminological Concept of Victimisation. *Pakistan Journal of Criminology*, 15(4), 1–20.

Stein, K. C., Mauldin, C., Marciano, J. E., & Kintz, T. (2024). Culturally responsive-sustaining education and student engagement: A call to integrate two fields for educational change. *Journal of Educational Change*. <https://doi.org/10.1007/s10833-024-09510-3>

Strelnikov, V., & Vytkaľov, V. (2023). Ethno-cultural component development of the activities of specialists in humanitarian specialties in the process of educational practices. *Ukrainian Professional Education*, 7(1), 104–113. <https://doi.org/10.33989/2519-8254.2023.13.289945>

Suryani, A., & Muslim, A. B. (2024). Religious tolerance, intellectual humility, and democratic education. In *Embracing Diversity: Preparing Future Teachers to Foster Religious Tolerance*. (pp. 13–34). Singapore: Springer. https://link.springer.com/chapter/10.1007/978-981-97-1616-6_2

- Ternov, N., Nurtazina, R., & Serikzhanova, A. (2024). The Sociopolitical January 2022 Protests in Kazakhstan's Telegram Channels: Agenda Interception. *Global Perspectives*, 5(1), 120497. <https://doi.org/10.1525/gp.2024.120497>
- Tiwen, H. (2023). Methods and means of developing academic talent of students in universities of the PRC. *Professional Education: Methodology, Theory and Technologies*, 9(2), 228-245. <https://doi.org/10.31470/2415-3729-2023-18-228-245>
- Tyas, E. H., & Naibaho, L. (2020). Building a culture of tolerance since early childhood. *International Journal of Research – GRANTHAALAYAH*, 8(8), 244–249. <https://doi.org/10.29121/granthaalayah.v8.i8.2020.999>
- Utomo, C., & Wasino, W. (2020). An integrated teaching tolerance in learning history of indonesian national movement at higher education. *Journal of Social Studies Education Research*, 11(3), 65–108. <https://www.learntechlib.org/p/217736/>
- Velthuis, E., Verkuyten, M., & Smeekes, A. (2021). The different faces of social tolerance: Conceptualizing and measuring respect and coexistence tolerance. *Social Indicators Research*, 158(3), 1105–1125. <https://doi.org/10.1007/s11205-021-02724-5>
- Vertelyte, M., & Staunæs, D. (2021). From tolerance work to pedagogies of unease: Affective investments in Danish antiracist education. *Nordic Journal of Studies in Educational Policy*, 7(3), 126–135. <https://doi.org/10.1080/20020317.2021.2003006>
- Vovchenko, O. (2022). Emotional and behavioural reactions of high school students with special educational needs (hearing impairments) under stress. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 8(3), 23–32. [https://doi.org/10.52534/msu-pp.8\(2\).2022.23-32](https://doi.org/10.52534/msu-pp.8(2).2022.23-32)
- Wu, T. (2024). Virtual research laboratory in foreign language teaching: Strategies and role. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 10(1), 107-115. <https://doi.org/10.52534/msu-pp1.2024.107>
- Zelenin, V. (2023). Coaching in the development of leadership qualities of heads of Ukrainian business organizations in the conditions of war. *Journal of Law and Sustainable Development*, 11(3), e0817. <https://doi.org/10.55908/SDGS.V11I3.817>

Didactic Effectiveness of Teaching General Sciences with an Entrepreneurial Orientation

ABSTRACT

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The goal is to identify the main directions for improving business education in Uzbekistan. The methodology includes a questionnaire, pedagogical experiment, and statistical analysis to assess the effectiveness of entrepreneurial education in general scientific disciplines, such as mathematics, biology, and geography, in the context of their application in entrepreneurial activity. The study uses quantitative and qualitative methods, in particular, questionnaires, statistical analysis of the obtained data, and comparison of the results of control (CG) and experimental (EG) groups in educational institutions of Uzbekistan. As part of the pedagogical experiment, an entrepreneurial approach to teaching general scientific disciplines is introduced, which included project activities, interactive tasks, and guest lectures of entrepreneurs. The study involves students and students who were divided into CG and EG. The results of the experiment show substantial changes in the level of awareness of the participants of the EG regarding entrepreneurship. They demonstrate higher initiative in creating business ideas and learn the material better compared to the CG. Special attention is paid to the statistical analysis of data reflecting the level of involvement of young people in business activities in Uzbekistan. The data presents enhanced interest among young people in entrepreneurship and an increase in initiatives on the part of educational institutions to prepare students and students to run their own business. The results obtained prove the effectiveness of entrepreneurial education in general scientific disciplines since after the introduction of interactive teaching methods, the level of interest of students in applying knowledge in mathematics, biology, and geography in entrepreneurship increased from 65% to 80%.

Keywords: Entrepreneurial Competence, Innovative Methods, Training Technologies, Practical Orientation, Skill Development

1. Introduction

The didactic effectiveness of teaching general scientific disciplines with an entrepreneurial focus is a crucial component in preparing students for professional activities in the labour market, referring to how well educational practices succeed in conveying knowledge and developing skills. This approach not only imparts essential knowledge but also equips students with practical entrepreneurial skills necessary for thriving in a dynamic economic environment. It is vital to explore how innovative teaching methods and the integration of entrepreneurial orientation into general scientific disciplines can foster the development of key competencies in students. This includes investigating the optimization of educational technologies, developing methodological approaches for the practical application of theoretical knowledge, and understanding the role of interdisciplinary connections in shaping students' entrepreneurial thinking. Further research is needed to assess the effectiveness of various pedagogical models in training specialists with entrepreneurial skills and to analyze the impact of these approaches on the professional activities of graduates. Central to this educational paradigm is the concept of entrepreneurial competence, which encompasses the combination of knowledge, skills, and behaviors that empower individuals to identify opportunities, manage resources effectively, and create value. Ultimately, these competencies lead to the successful establishment and growth of businesses, highlighting the importance of integrating entrepreneurial education into general scientific disciplines to prepare students for the challenges and opportunities of the modern labor market.

The effectiveness of integrating entrepreneurial elements into general scientific disciplines is grounded in the idea that knowledge is most effectively assimilated when students actively apply it to real tasks. Learning through experience, reflection, and collaboration transforms abstract scientific concepts into practical understanding relevant to real economic processes (Shen, 2024). When schools encourage students to make their own decisions, come up with creative solutions to problems, and take responsibility for the results, they not only help them learn more, but they also help them become more independent, adaptable, and confident in their abilities. This combination of intellectual and behavioral development explains why methods such as project-based learning, simulations, and case studies enhance motivation, critical thinking, and confidence in one's entrepreneurial abilities. In this way, the integration of entrepreneurial approaches creates a dynamic learning process where theory evolves into practice, and learning outcomes extend beyond academic knowledge to the formation of applied competencies essential for success in the labor market.

One primary objective is to assess the level of awareness of entrepreneurial competencies among students and teachers. By establishing a baseline for future improvements, this study aims to increase awareness levels by at least 30% over the current baseline within one academic year, as measured by pre- and post-intervention surveys. This objective is crucial for understanding the starting point and effectively measuring progress in entrepreneurial education. Enhancing teacher training programs is another crucial objective. By focusing on professional development in entrepreneurial education and the use of innovative teaching methods, the goal is to train at least 70% of the teaching staff in entrepreneurial pedagogy within two years. This objective aims to observe a 35% improvement in teacher effectiveness ratings from student feedback, ensuring that educators are well-equipped to deliver high-quality entrepreneurial education. Finally, the study seeks to adapt educational programs to current economic conditions and global trends. By incorporating elements of financial literacy, digital competency, and sustainable business practices, the objective is to integrate these elements into 80% of the relevant courses within three years. This adaptation aims to achieve a measurable

30% improvement in student competency assessments in these areas, ensuring that students are well-prepared to meet the demands of the modern business world.

2. Literature Review

Numerous researchers explored this subject, presenting a range of perspectives. For example, B. Alimov et al. (2022) examined the development of professional competence of future teachers of technological sciences, emphasizing the importance of integrating entrepreneurial elements into the educational process. They stressed the need to apply innovative teaching methods to increase the competitiveness of graduates. The authors drew attention to the importance of using practice-oriented approaches that contributed to the development of skills to adapt to the labor market. In particular, U.T. Fayzullaev (2021) analyzed pedagogical technologies that increased the readiness of young people to run small businesses. The author emphasized the need to introduce active teaching methods that allowed students to gain practical skills in the field of entrepreneurship. It was determined that interactive methods that simulated real business processes and contributed to the formation of strategic thinking are effective.

The development of entrepreneurial education programmes for students of hotel, restaurant, and tourism business in post-Soviet countries, in particular, in Uzbekistan, was examined by L. John et al. (2023). The study underlined the importance of adapting educational programmes to new economic conditions, in particular, in the context of globalization and tourism development. They pointed out the need to develop practical skills and entrepreneurial thinking among students to prepare them for real-world business challenges. In addition, M.M. Mirzakarimova (2022) underscored the need to develop entrepreneurial skills among students in English lessons. The researcher noted that learning English provides an opportunity for students not only to improve their language skills but also to gain the knowledge necessary for doing business at the international level. The study has shown that the introduction of entrepreneurial aspects in language disciplines allows students to develop strategic thinking and prepare for real business situations. M.M. Madaminjonovna (2023) focused on the use of innovative methods and tools to develop students' entrepreneurial skills through language integrated learning (CLIL) technologies. It was noted that the integration of technologies into the educational process can substantially increase the effectiveness of teaching and ensure a higher level of assimilation of the material. S. Yegeubayeva et al. (2024) evaluated the effects of copper oxide nanoparticles on toxicity in the organs of domestic rabbits, which is not directly related to entrepreneurial education, but includes important aspects of scientific research in the field of new technologies and their impact on various industries, particularly on environmental issues.

The effectiveness of using Information and communication technologies (ICTs) in teaching general engineering disciplines at universities in Uzbekistan was examined by B.D. Ulugov et al. (2020). The authors noted that the integration of ICTs into the educational process can significantly improve the quality of education, especially in technical and engineering disciplines. The researchers claimed that the use of digital resources contributes to the development of students' independence and improves their ability to think analytically. The importance of training teachers to use ICTs to improve the effectiveness of the educational process was emphasized. The study showed that integrating ICT into learning allows students to master complex technical disciplines more effectively, as well as prepare them to work in a high-tech environment. U.A. Urinov and G.M. Norpolatova (2023) considered the content and

essence of the concept of the case method as an educational technology that allows examining real business situations in depth. They noted that this method is an effective tool for developing students' analytical and critical skills, as it allows them to analyze complex situations and make informed decisions. The use of the case method in training helps students master their knowledge theoretically and gain practical skills necessary for successful business operations. Most prior works focus on isolated courses or small pilot programmes, lacking large-scale empirical evaluation of how entrepreneurial approaches influence both knowledge acquisition and applied competence in general scientific disciplines. Moreover, few studies provide regional evidence from Central Asia, where economic transitions demand adaptive pedagogical models responsive to local labor market conditions. The current study addresses these gaps by testing a structured, year-long intervention across multiple institutions in Uzbekistan. It evaluates not only the didactic outcomes of introducing entrepreneurial methods into science-related subjects but also the degree to which such integration fosters motivation, readiness for self-employment, and collaboration between schools, universities, and the business community. Through this synthesis, the research contributes systematic evidence on the scalability and contextual effectiveness of entrepreneurial pedagogy in a transitional educational environment.

3. Materials and Methods

The study was based on a comprehensive approach to the study of the didactic effectiveness of teaching general scientific disciplines with an entrepreneurial focus. A combination of quantitative and qualitative analysis methods was used to obtain objective results, including questionnaires, statistical analysis, and a pedagogical experiment.

The survey was conducted to determine the attitude of teachers, students, pupils, and entrepreneurs to teaching general scientific disciplines with an entrepreneurial focus. The study involved 75 teachers of general scientific disciplines, 500 students in grades 9-11 and first-year students, as well as 40 entrepreneurs who interact with educational institutions. The survey was conducted in the period from September to December 2024 in three educational institutions of Uzbekistan, namely the secondary school No. 15 in Tashkent, gymnasium No. 3 in Samarkand, and Tashkent State University of Economics (Table 1).

Table 1. Demographic profile of study participants

Category	N	Age range (years)	Gender (M/F %)	Location (Urban/Semi-urban %)	Prior exposure to entrepreneurship (%)
Pupils (Grades 9-11)	250	14-17	48/52	60/40	10
First-year university students	250	18-19	47/53	65/35	15
Teachers of general scientific disciplines	75	25-60	42/58	70/30	25
Entrepreneurs cooperating with institutions	40	28-55	55/45	80/20	100

The sample of respondents was formed purposefully, considering the specifics of the study. Teachers of general scientific disciplines, high school students, first-year students, and entrepreneurs who interacted with educational institutions were involved in the study. To

provide a clearer picture of the sample and support segmentation analysis, a demographic breakdown of the participants is essential. Additionally, the sample included individuals with varying levels of previous entrepreneurial experience, from none to significant exposure, which allowed for a rich analysis of how different backgrounds influence perceptions and outcomes related to entrepreneurial education. (Figure 1).

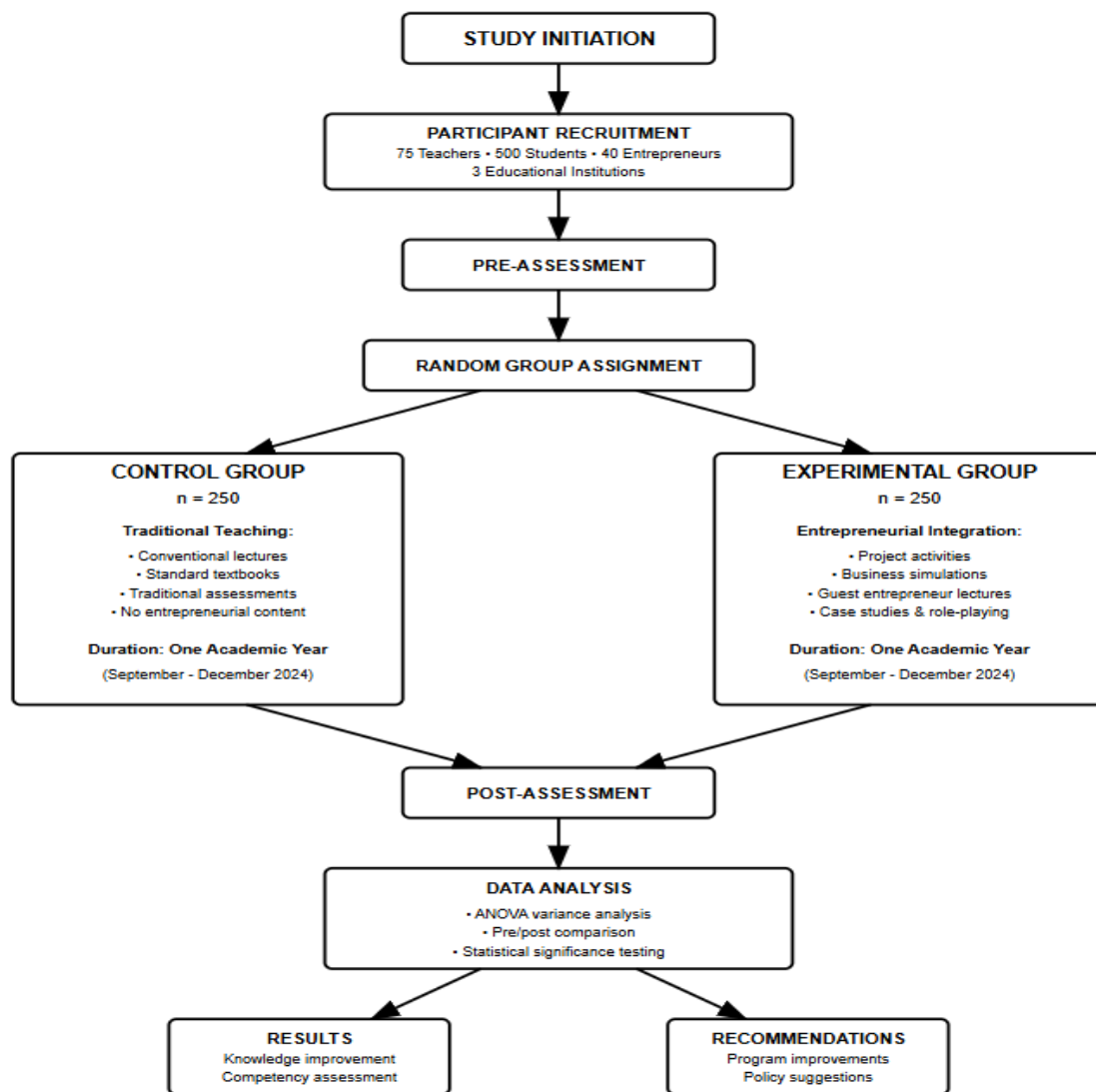


Figure 1. The research process from participant recruitment to data analysis

To minimize potential sampling bias and strengthen the internal validity of comparisons, several control measures were implemented. Participants were matched across the control (CG) and experimental (EG) groups on key baseline characteristics, including age, gender, academic performance, and prior exposure to entrepreneurship. Baseline surveys confirmed that there were no statistically significant differences between the two groups ($p > 0.05$) on these variables before the intervention. Moreover, both groups were drawn from the same institutions to ensure equivalent access to educational resources, teachers, and curricular conditions.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. A study was

approved by National Ethics Commission of the Andijan State Institute of Foreign Languages August 8, 2020, No 1028-A. The authors informed the participants (their parents) about the anonymous and voluntary participation, and the participants (their parents) provided their consent. The Google Forms platform was used for data collection. During the study, the provisions of the Code of Ethics of the American Sociological Association were observed (Asanet.org, 1997). The questionnaire contained questions for pupils and students, teachers, and entrepreneurs.

To assess the reliability of the survey instruments used, a pilot test was conducted, and Cronbach's alpha coefficients were calculated for each scale. All scales demonstrated satisfactory results, with coefficients above 0.7, indicating good internal consistency of the instrument. These results confirm that the surveys possess the necessary reliability for further use in the study. Additionally, validity checks were conducted on the instruments, including their adaptation and translation for the research context within the educational environment of Uzbekistan.

The pedagogical experiment was conducted on the basis of three educational institutions of Uzbekistan, namely secondary school No. 15 in Tashkent, Gymnasium No. 3 in Samarkand, and Tashkent State University of Economics. The study included pupils in grades 9-11, first-year students, and teachers of general scientific disciplines. The study participants were divided into control group (CG) (250 people) and experimental group (EG) (250 people). The CG was trained according to the traditional programme without integrating entrepreneurial elements into general scientific disciplines. The EG introduced an entrepreneurial approach to teaching, which included three main methods, namely project activities, interactive tasks, and guest lectures by entrepreneurs. As part of the project activities, students developed mini-business projects, created business plans, evaluated the profitability of start-ups, and analyzed financial indicators. Interactive tasks included the use of case studies, business simulations, and role-playing games. For example, economic games were held at school No. 15 and other educational institutions, where students imitated the work of companies, made decisions about investment and marketing. Guest lectures by entrepreneurs included master classes on financial literacy, project management, and market trend analysis. The study employed a purposive sampling method, which, while useful for targeting specific groups that are particularly informative about the research questions, does come with limitations. Purposive sampling can limit the generalizability of the findings, as the participants are not randomly selected and may not fully represent the broader population. This method was chosen to ensure that the sample included individuals with direct relevance to the research questions, such as teachers with experience in entrepreneurial education and students exposed to such curricula. However, readers should consider that the insights gained, while deeply informative, may not be fully applicable to other contexts without further validation.

Single-level tests are adequate in this study because the primary focus is on individual-level outcomes (e.g., student knowledge, motivation, and entrepreneurial competencies), and the data do not exhibit significant clustering effects that would require accounting for group-level variance. The sample is relatively homogeneous, and the study aims to assess the direct impact of the intervention on individuals, making single-level tests appropriate for the analysis. Additionally, they provide a straightforward and interpreted approach to exploring the primary research question.

Before starting the experiment, a survey of participants was conducted to assess their initial awareness of entrepreneurship, the level of motivation, and interest in starting their own

business. After completing the experiment, which lasted one academic year, participants were re-interviewed and tested to assess the level of knowledge acquisition and development of entrepreneurial competencies.

In addition to the quantitative methods employed in this study, a qualitative approach was utilized to gain a deeper understanding of the participants' perceptions, experiences, and attitudes toward the integration of entrepreneurial education into general scientific disciplines. Semi-structured interviews and open-ended questions within the surveys were used to collect qualitative data from both students and teachers. The interviews were designed to explore participants' views on the relevance, challenges, and impact of entrepreneurial education in fostering entrepreneurial competencies. The qualitative data were then analyzed using thematic analysis, which allowed for the identification of recurring themes and patterns related to the integration of entrepreneurial approaches in teaching. Specifically, the analysis focused on themes such as the perceived effectiveness of entrepreneurial methods, the barriers to implementation in the educational process, and the participants' motivation and readiness to engage in entrepreneurial activities. This qualitative component complemented the quantitative findings, providing richer insights into the contextual factors influencing the success of entrepreneurial education and contributing to the formulation of more comprehensive recommendations for improving educational practices.

To assess the effectiveness of integrating entrepreneurial education, a statistical analysis, including ANOVA variance analysis, was conducted. The analysis evaluated the number of pupils and students in the Samarkand region who receive entrepreneurial education, the proportion of young people who have implemented their business ideas, and the level of youth employment in small and medium-sized businesses. Special attention was given to gathering data on key sectors of the region's economy, such as agriculture, textile industry, and other significant industries that provide opportunities for business activities. These sectors play a crucial role in the local economy and offer substantial prospects for entrepreneurial ventures, enabling young people to apply the knowledge they have acquired in practical business contexts. The data on youth employment and entrepreneurial activity were analyzed within the context of regional economic trends, revealing both gaps and opportunities for further enhancing entrepreneurial education. Based on the findings, recommendations were formulated to improve the effectiveness of business education, including the introduction of innovative teaching methods, strengthening the connection between educational institutions and the real economy, and developing programs tailored to the specific needs of the labor market in Uzbekistan.

4. Results and Discussion

Level of awareness of pupils, students, and teachers about entrepreneurial competencies

Didactic effectiveness of teaching general scientific disciplines with an entrepreneurial focus is the main aspect of the educational process. This approach helps students gain theoretical knowledge and develop the practical skills necessary for successful business operations. The entrepreneurial direction in general scientific disciplines provides an opportunity to understand how knowledge in subjects such as mathematics, physics, or biology can be applied to solve real-world problems in the business environment. Due to the integration of the entrepreneurial component in the curriculum, students develop entrepreneurial thinking, the ability to innovate and respond to changes in economic conditions (Table 2).

Table 2 Integrating entrepreneurial education in scientific disciplines: Linking theory to practice

Theoretical Components	Practical Components	Intended Outcomes
Mathematics	Business simulations	Critical thinking
Physics	Project activities	Problem-solving skills
Biology	Guest lectures	Innovation and creativity
Chemistry	Internships	Job creation
Entrepreneurial theories		Economic diversification
Pedagogical approaches		Successful entrepreneurial ventures

F. Dochy and A. Wybo (2021) focused on the didactics of L&D learning and development in the context of on-the-job learning. The authors emphasize the importance of adaptive and innovative approaches to education in the professional environment, especially in the context of rapid changes. They explore a variety of methods that support effective training and professional development of workers in a changing work environment and analyze how on-the-job learning theories can be applied to create training programmes that meet the requirements of the labor market. This paper is of great importance for improving pedagogical practices in vocational education, including in the context of entrepreneurial education. S. Fischer et al. (2021) consider the use of flexible learning formats in entrepreneurship education in their study. The authors analyze various approaches to teaching that provide flexibility in the educational process and contribute to the development of critical thinking and entrepreneurial skills in students. The study also concentrates on the advantages of using flexible learning formats over traditional methods, emphasizing the importance of adapting curricula to market needs and changes.

Teaching general scientific fields with an entrepreneurial orientation develops students' entrepreneurial thinking, creativity, and economic adaptability. Integration of the entrepreneurial component into broad scientific disciplines links learnt knowledge to practical business tasks, preparing future professionals for the job market. Math, physics, chemistry, biology, geography, history, etc. are usually considered unrelated to entrepreneurship. In practice, especially with globalization and rapid technological advancement, these sciences have considerable business application potential. For instance, mathematics can assess market patterns, optimize production, and anticipate financial consequences. Chemistry and biology can create breakthrough health and ecology goods. Economic and political geography can help analyze marketplaces and establish commercial strategies in different countries (Oklander et al., 2020). Integrating entrepreneurship education with general science teaches students to apply scientific concepts and theories to entrepreneurial concerns. This enhances understanding and highlights their relevance in the actual world, where economic and social processes, scientific advances, and technologies interact. Students learn basic information, critical thinking, decision-making in tough situations, and teamwork skills that are crucial for future entrepreneurs using this approach.

One of the main aspects of integrating the entrepreneurial component into general scientific disciplines is the use of teaching methods that are focused on the practical activities of students (Titova et al., 2023; Yurtseven et al., 2025). This can include project activities, role-playing games, business simulations, and attracting real entrepreneurs and specialists to the educational process through guest lectures, seminars, and master classes. These methods allow students not

only to gain theoretical knowledge but also to use it to solve real problems that arise in business activities. Project activity is one of the most effective teaching methods that enables students to work on real business tasks, develop skills in planning, management, marketing, finance, and other aspects of entrepreneurial activity. It helps students apply their knowledge in a real business environment while also developing the ability to work in a team, resolve conflicts, find creative solutions, and assess risks (Umnov et al., 2024).

A study by M. Pech et al. (2021) examined students' preferences for teaching methods in entrepreneurship education. The authors analyzed which teaching methods are most effective from the standpoint of students and how their preferences affect the process of learning and mastering entrepreneurial skills. The results show that students prefer practical methods such as case studies, business simulations, and project-based learning that allow them to better understand real-world business processes. This research is of great importance for improving entrepreneurship teaching methods, as accounting for students' preferences allows them to create more effective and motivating curricula. The case study method contributes to the development of analytical thinking, which is consistent with the conclusions of G. Kim et al. (2020). They underscored the importance of case studies in entrepreneurial education, which allows students to examine real-world business situations and make practical decisions that have a real impact on business processes. A special role was played by subject didactics, which, according to the conclusions of H.J. Vollmer (2024), N.Y. Pikulina et al. (2023), and E.O. Pérez-Sánchez et al. (2023), promotes the formation of powerful educational knowledge through an interdisciplinary approach. G.M.B. Velásquez et al. (2022) also reviewed planning educational strategies based on learning styles in their study. They focus on using individual learning styles to improve teaching practices, in particular, through case studies and other methods that consider different ways of students' perception of information.

Business simulations and role-playing games are another method that allows pupils and students to practically apply knowledge from various scientific disciplines to solve business problems. These techniques allow modelling real-world situations in which students can make decisions, analyze the consequences of their actions, and develop strategic planning skills. Guest lectures by entrepreneurs and specialists are an effective way to attract practical experience to the educational process. Entrepreneurs can share their knowledge and experience, talk about real problems and challenges they face, and answer students' questions about the specifics of doing business. Such lectures not only enrich the learning process but also help better understand how theoretical knowledge can be applied in the real world.

The use of business simulations in the educational process has shown its effectiveness, which confirms the conclusions of S. Brylev and N. Levina (2022). The authors investigated the role of business simulations in learning and their impact on students' professional orientation in the context of Science, Technology, Engineering, and Mathematics education (STEM). They showed how simulation models help students better understand real-world business processes, increase motivation to learn, and promote practical entrepreneurship skills. The study is important for examining interactive teaching methods that are actively used in entrepreneurial education. Similarly, A. Gawel et al. (2022) stressed that the use of virtual simulations allows students to better understand business processes and the environmental sustainability of entrepreneurship. Namely, they considered the integration of virtual games into the educational process in business education and noted that such simulations help students develop strategic thinking and decision-making skills in the context of sustainable development. Their research also points to the importance of integrating the latest technologies into training to train next-generation entrepreneurs.

Interactive teaching methods, such as reasoned discussion and simulation tasks, contributed to the development of entrepreneurial competencies, which is in line with a study by G.M. Canoz et al. (2022). These authors investigated the impact of reasoned simulations on the development of entrepreneurial skills among high school students. They established that interactive approaches, in particular, argumentation methods, substantially increase the level of academic achievement and form skills of effective entrepreneurial thinking. Attention to the effectiveness of interactive applications in the educational process makes this approach relevant for educational institutions.

Entrepreneurial education should also teach financial literacy, economics, accounting, taxation, and investment. This information helps prospective entrepreneurs manage their business and comprehend the economic principles that affect it. The integration of entrepreneurial features into broad scientific fields creates new generations of entrepreneurs with academic knowledge and practical business abilities, which could boost economic growth (Nurekenova et al., 2022; Zhou et al., 2024). This solves social and economic issues and fosters economic growth through ideas, technology, and start-ups. Importantly, teaching entrepreneurs in general scientific subjects develops transdisciplinary abilities. Maths and physics assist students build critical thinking skills for business risk assessment. Biology and chemistry can help generate medical and ecological breakthroughs. Geography and economics help navigate market conditions and establish regional business development plans (Bashtannyk et al., 2020; Oklander et al., 2022). In general, the entrepreneurial direction in teaching general scientific disciplines is the main step towards the formation of new generations of entrepreneurs who are ready for the challenges of a globalized world. The implementation of this approach can substantially improve the quality of education and contributes to the development of the country's economy. However, for its successful implementation, it is necessary to create appropriate conditions, including training teachers, updating curricula, and active cooperation with entrepreneurs and the business community. It is also important to use transformational learning in entrepreneurial education, as stated by M.L. Blankesteyn et al. (2024). The authors explored how learning experiences in the face of change and innovation can change students' approach to entrepreneurship. Transformational training promotes critical thinking and flexibility, which are important traits for future entrepreneurs.

The formation of entrepreneurial competencies from an early age is consistent with the conclusions of J. Seikkula-Leino et al. (2023). They investigated how entrepreneurial education can be implemented in preschool education and its impact on the development of early entrepreneurial skills in children. The results of this study point to the importance of developing entrepreneurial thinking from an early age. Web-based courses played a major role, which correlates with the findings of L. Pet'ko et al. (2021). They also examined the effectiveness of online courses in entrepreneurial education and showed how web-based learning models can provide access to the knowledge and resources needed to develop students' entrepreneurial skills. N. Rasulova et al. (2023) analyzed the structural elements of teachers' didactic skills in the educational process, particularly theoretical and methodological approaches. The authors investigated how different teaching methods and principles can affect the quality of education and professional skills of teachers. They stressed the importance of developing teachers' ability to adapt their methods to the needs of students, in particular, in the field of entrepreneurial education. This study is important for developing curricula that promote not only academic but also practical skills in students, especially in an entrepreneurial environment.

A survey was conducted to better understand and evaluate the attitude of teachers, pupils, students, and entrepreneurs to teaching general scientific disciplines with an entrepreneurial focus, which is presented in Table 3-5.

Table 3. Results of a survey on attitudes to teaching general scientific disciplines with an entrepreneurial focus for students

Questions for students	Responses
1. Are you interested in applying your knowledge of mathematics, biology, or geography to business activities?	Yes – 65%; No – 15%; Partially – 20%
2. Have you participated in training projects related to business or entrepreneurship?	Yes – 45%; No – 55%
3. How would you assess the level of integration of entrepreneurial knowledge into your general scientific disciplines?	1 – 10%; 2 – 15%; 3 – 25%; 4 – 30%; 5 – 20%
4. What teaching methods do you find most effective for developing entrepreneurial thinking?	Business games – 25%; Project activity – 30%; Lectures – 20%; Meetings with entrepreneurs – 15%; Other – 10%
5. Are you considering starting your own business after training?	Yes – 50%; No – 30%; Maybe – 20%
6. Do you get enough information about financial literacy and business management at school/university?	Yes – 35%; No – 40%; Partially – 25%
7. Does your educational institution support student/student initiatives in the field of entrepreneurship?	Yes – 60%; No – 30%; I don't know – 10%
8. Are you interested in learning about real cases of successful entrepreneurs as part of the educational process?	Yes – 75%; No – 25%
9. Do you think that entrepreneurial skills will help you in the future, even if you don't plan to start a business?	Yes – 80%; No – 10%; Not sure – 10%
10. What topics in the field of entrepreneurship are you most interested in?	Marketing – 40%; Business financing – 25%; Personnel management – 20%; Business strategies – 15%

Table 4. Results of a survey on attitudes to teaching general scientific disciplines with an entrepreneurial focus for teachers

Questions for teachers	Responses
1. Do you have any experience in teaching general scientific disciplines with an entrepreneurial focus?	Yes – 25%; No – 75%
2. To what extent are you ready to implement entrepreneurial methods in teaching your subject?	1 – 5%; 2 – 10%; 3 – 30%; 4 – 35%; 5 – 20%
3. Have you completed advanced training in business education?	Yes – 30%; No – 70%
4. What difficulties do you think may arise when integrating entrepreneurial elements into general scientific disciplines?	The most common answers: Lack of relevant training materials; insufficient experience of teachers
5. Does your institution have practices of cooperation with entrepreneurs to train students?	Yes – 40%; No – 60%
6. What resources or methods do you think are most effective for teaching entrepreneurial knowledge?	Project training – 50%; Business games – 20%; Lectures of entrepreneurs – 15%; Cases – 10%; Other – 5%
7. Does the administration of your institution support the introduction of entrepreneurial training in general scientific disciplines?	Yes – 50%; No – 30%; Partially – 20%
8. What additional knowledge or skills do you need to effectively implement the entrepreneurial component in teaching?	Business project management – 40%; Financial literacy – 35%; Active learning methods – 25%
9. Do you think entrepreneurial thinking is important for students, even if they don't plan on doing business?	Yes – 90%; No – 10%
10. What changes in the curriculum can make entrepreneurial education more effective?	The most common answers: More practical cases; Implementing business simulations

Table 5. Results of a survey on attitudes to teaching general scientific disciplines with an entrepreneurial focus for entrepreneurs

Questions for entrepreneurs	Responses
1. Do you cooperate with educational institutions to develop entrepreneurial competencies among young people?	Yes – 55%; No – 45%
2. What skills do you consider most important for young professionals?	Critical thinking – 30%; Financial literacy – 40%; Initiative – 20%; Communication – 10%
3. Are you ready to participate in training programmes as a guest lecturer or mentor?	Yes – 60%; No – 30%; Depends on the conditions – 10%
4. How do you assess the level of preparation of graduates for work in the business sector? (Answers on a scale of 1 to 5)	1 – 20%; 2 – 25%; 3 – 30%; 4 – 15%; 5 – 10%

5. Do you think education has a greater impact on business success than practical experience?	Depends on the situation – 70%; Yes – 20%; No – 10%
6. What are the main difficulties that you think young entrepreneurs have when starting a business?	Insufficient education – 35%; Lack of funding – 45%; Lack of practical experience – 20%
7. Do you think that the education system in Uzbekistan sufficiently prepares young people for a real business environment?	Partially – 55%; Yes – 30%; No – 15%
8. Would you be interested in participating in mentoring programmes to support young entrepreneurs?	Yes – 75%; No – 25%
9. Do you find it useful to teach students real business cases?	Yes – 85%; No – 15%
10. What topics do you think should be covered more in entrepreneurial education?	Startup financing – 40%; Marketing – 30%; Risk management – 15%; Strategic planning – 15%

The results of the survey showed a different attitude to teaching general scientific disciplines with an entrepreneurial orientation among students, teachers, and entrepreneurs. Students showed a substantial interest in applying knowledge in subjects such as mathematics, biology, and geography to business activities, specifically, 65% of respondents said that it is interesting for them. However, 45% of entrepreneurs did not participate in business-related training projects, which indicates a lack of active cooperation with educational institutions to develop the entrepreneurial competencies of young people. As for teachers, 75% have no experience in teaching general scientific disciplines with an entrepreneurial focus, which may limit the effectiveness of integrating entrepreneurial knowledge into general scientific courses. In particular, only 30% of teachers are ready to introduce entrepreneurial methods in teaching their subject.

Entrepreneurs, in turn, believe that young professionals need financial literacy skills (40%) and critical thinking (30%), while 55% of entrepreneurs cooperate with educational institutions to develop entrepreneurial competencies among young people. However, there are difficulties associated with the lack of relevant training materials and the insufficient experience of teachers. In view of these results, it can be concluded that although interest in entrepreneurial education is growing among students, there is a need to improve teacher training, update educational materials, and improve cooperation between entrepreneurs and educational institutions to effectively implement entrepreneurial knowledge in the educational process. This indicates the need to expand relevant educational programmes, improve the skills of teachers, and activate cooperation between educational institutions and entrepreneurs. Therefore, a pedagogical experiment was conducted aimed at evaluating the effectiveness of implementing an entrepreneurial approach in teaching general scientific disciplines.

Table 6 presents the results of the inferential statistical analysis comparing the pre- and post-intervention data for the experimental and control groups. It includes the means, standard deviations (SD), test statistics, p-values, and effect sizes for key entrepreneurial competencies, such as knowledge, confidence, attitude, understanding of economic processes, and the usefulness of business projects. The results indicate significant improvements in the

experimental group across all measured variables following the integration of entrepreneurial education into general scientific disciplines.

Table 6. Statistical analysis of pre- and post-intervention comparisons in experimental and control groups

Variable	Control Group (Before Intervention)	Experimental Group (Before Intervention)	Control Group (After Intervention)	Experimental Group (After Intervention)	Test Statistic	p-value	Effect Size (Cohen's d / η^2)
Knowledge of Entrepreneurship	Mean = 3.2 (SD = 0.7)	Mean = 3.5 (SD = 0.8)	Mean = 3.4 (SD = 0.6)	Mean = 4.5 (SD = 0.6)	t(249) = 15.92	p < 0.001	Cohen's d = 0.8 (Large)
Confidence in Starting a Business	Mean = 3.0 (SD = 0.6)	Mean = 3.3 (SD = 0.7)	Mean = 3.2 (SD = 0.6)	Mean = 4.2 (SD = 0.5)	t(249) = 10.57	p < 0.001	Cohen's d = 0.6 (Medium)
Attitude toward Entrepreneurship	Positive = 25%	Positive = 30%	Positive = 35%	Positive = 80%	McNemar's χ^2 (1) = 120.5	p < 0.001	η^2 = 0.6 (Large)
Understanding of Economic Processes	Yes = 25%, Partially = 70%, No = 10%	Yes = 25%, Partially = 65%, No = 10%	Yes = 25%, Partially = 70%, No = 5%	Yes = 85%, Partially = 10%, No = 5%	t(249) = 13.45	p < 0.001	Cohen's d = 1.1 (Large)
Usefulness of Business Projects	Yes = 15%, Partially = 80%, No = 5%	Yes = 15%, Partially = 75%, No = 10%	Yes = 15%, Partially = 80%, No = 5%	Yes = 90%, Partially = 5%, No = 5%	t(249) = 18.02	p < 0.001	Cohen's d = 1.2 (Large)

Entrepreneurial education, when integrated into general scientific disciplines, serves as a catalyst for innovation and economic development (Tiurina et al., 2023; Kozhoshev et al., 2022). In today's rapidly evolving global economy, the fusion of scientific knowledge with entrepreneurial skills equips students with the ability to transform theoretical insights into practical, marketable solutions. This interdisciplinary approach not only enhances students' understanding of scientific principles but also fosters an innovative mindset, crucial for addressing complex real-world challenges.

The integration of entrepreneurial education into scientific curricula encourages students to think critically and creatively, enabling them to identify opportunities and develop novel products and services (Kawiana et al., 2023; Yakupova, 2024). For instance, a strong foundation in scientific disciplines such as biology and chemistry, combined with entrepreneurial training, can lead to breakthroughs in biotechnology and pharmaceuticals. Similarly, knowledge in physics and engineering, when coupled with business acumen, can drive advancements in technology and sustainable energy solutions. These innovations contribute significantly to economic growth by creating new industries, generating employment opportunities, and enhancing competitiveness in the global market.

To ensure the reliability of the survey instruments used in this study, Cronbach's alpha was calculated for each scale. The results showed satisfactory reliability, with Cronbach's alpha coefficients exceeding 0.7 for all scales, indicating good internal consistency. These reliability values confirm the robustness of the instruments, supporting the validity of the findings based

on the survey data. The consistency of the scales further strengthens the reliability of the conclusions drawn from the analysis of the entrepreneurial competencies among the participants.

Moreover, entrepreneurial education promotes a culture of problem-solving and adaptability. Students learn to navigate uncertainties and risks, which are inherent in both scientific research and business ventures. By engaging in project-based learning, business simulations, and real-world case studies, students gain hands-on experience in managing projects, leading teams, and making strategic decisions. These experiences are invaluable in preparing a workforce that can thrive in dynamic economic environments and contribute to the resilience and diversification of the economy.

Incorporating entrepreneurial elements into education also strengthens the collaboration between academic institutions and the business community. Partnerships with local and international businesses provide students with practical insights and exposure to current industry practices. Such collaborations facilitate the transfer of knowledge and technology between academia and industry, further driving innovation and economic development.

The impact of the integration of entrepreneurial elements in general scientific disciplines on the quality of the educational process

Within the framework of the study, interactive methods were used, in particular, project activities, business simulations, and guest lectures of entrepreneurs, which allowed assessing their impact on the level of knowledge, motivation and practical skills of students and pupils. The results of the experiment are presented in Table 7.

Table 7. Results of the control and experimental group survey before and after the introduction of the entrepreneurial approach in training

Question	Control group (before implementation)	Control group (after implementation)	Experimental group (before implementation)	Experimental group (after implementation)
1. Has your knowledge of entrepreneurship improved?	Yes – 30%; Partially – 50%; No – 20%	Yes – 35%; Partially – 50%; No – 15%	Yes – 35%; Partially – 50%; No – 15%	Yes – 85%; Partially – 10%; No – 5%
2. Do you feel confident in your ability to start your own business?	Yes – 40%; Partially – 50% No – 10%	Yes – 45%; Partially – 50%; No – 5%	Yes – 45%; Partially – 45%; No – 10%	Yes – 75%; Partially – 15%; No – 10%
3. Has your attitude to entrepreneurship changed?	Positive – 25%; Neutral – 60%; Negative – 15%	Positive – 30%; Neutral – 60%; Negative – 10%	Positive – 30%; Neutral – 55%; Negative – 15%	Positive – 80%; Neutral – 15%; Negative – 5%
4. Have interactive learning methods helped you better understand economic processes?	Yes – 20%; Partially – 70% No – 10%	Yes – 25%; Partially – 70%; No – 5%	Yes – 25%; Partially – 65%; No – 10%	Yes – 85%; Partially – 10%; No – 5%
5. Was it useful	Yes – 10%;	Yes – 15%;	Yes – 15%;	Yes – 90%;

for you to develop business projects?	Partially – 80%; No – 10%	Partially – 80%; No – 5%	Partially – 75%; No – 10%	Partially – 5%; No – 5%
6. Would you like to gain more practical knowledge about entrepreneurship in the future?	Yes – 35%; Partially – 60%; No – 5%	Yes – 40%; Partially – 55%; No – 5%	Yes – 40%; Partially – 50%; No – 10%	Yes – 85%; Partially – 10%; No – 5%
7. What training methods did you like best?	Lectures – 20%; Practical tasks – 30%; Interactive – 50%	Lectures – 20%; Practical tasks – 30%; Interactive – 50%	Lectures – 25%; Practical tasks – 40%; Interactive – 35%	Lectures – 35%; Practical tasks – 40%; Interactive – 25%
8. Do you plan to apply your knowledge in your professional activities in the future?	Yes – 45%; Partially – 50%; No – 5%	Yes – 50%; Partially – 45%; No – 5%	Yes – 50%; Partially – 45%; No – 5%	Yes – 70%; Partially – 20%; No – 10%
9. Would you like to have more entrepreneurial subjects at your school or university?	Yes – 50%; Partially – 40%; No – 10%	Yes – 55%; Partially – 40%; No – 5%	Yes – 55%; Partially – 35%; No – 10%	Yes – 90%; Partially – 5%; No – 5%

Analysis of the survey results showed a substantial increase in the level of knowledge, motivation and confidence of students of the EG after the introduction of an entrepreneurial approach to training. If before implementation only 35% of students in the EG believed that their knowledge of entrepreneurship was sufficient, then after – this indicator increased to 85%. Confidence in one's ability to start a business has also significantly increased – from 45% to 75%. The positive attitude to entrepreneurship increased from 30% to 80%, which indicates an increase in the level of students' interest in entrepreneurship.

Interactive methods of teaching and developing business projects have proven to be extremely effective. If at the beginning only 25% of students in the EG noted that interactive methods helped them better understand economic processes, then after the introduction of methods, this figure increased to 85%. Similarly, 90% of students in the EG recognized the usefulness of business projects, compared to 15% before implementation. In addition, 85% of students expressed a desire to gain more practical knowledge on entrepreneurship, which indicates the effectiveness of the implemented methods. In general, the results of the study confirm that an entrepreneurial approach to teaching contributes to the formation of students' necessary competencies and increases their interest in entrepreneurial activity.

The study of the didactic effectiveness of teaching general scientific disciplines with an entrepreneurial direction showed that the combination of traditional educational methods with entrepreneurial approaches contributes to the formation of practical skills of students, increasing motivation, and developing critical thinking. Digital technologies have substantially improved the didactic effectiveness of the educational process, which is confirmed by a paper of O. Kuzmenko et al. (2023). They investigated the introduction of STEM-oriented

environments in teaching physics and engineering disciplines and showed how such approaches can improve understanding of complex concepts. Their works emphasize the importance of information technologies in the educational process and the development of competencies that are necessary for effective learning in the context of globalization and digitalization of education. Similar conclusions were achieved by M. Shelukhin et al. (2021), who also investigated the impact of cloud-based learning environments on entrepreneurial education. Their results show that the integration of cloud technologies into the learning process allows for a flexible, personalized environment for students, which increases learning efficiency and access to learning materials, as well as supports the development of entrepreneurial skills through technology. The competence-based approach used in the study demonstrated its effectiveness, confirming the findings of C.W. Liao et al. (2023), who examined the impact of competence-based strategies on high school students' learning. This approach is extremely important for training professionals capable of innovation and adaptation in a changing labor market. G. Martínez-Borreguero et al. (2022) and M. Núñez-Canal et al. (2023) underscored the importance of interactive and practical methods in education, which helps not only improve academic performance but also strengthen pedagogical self-confidence.

These data allow building a sound strategy for the development of entrepreneurial education in a particular region, where there is a higher concentration of young people, economic opportunities for business, and a developed educational infrastructure. The difference between the authors' approaches in the studies under consideration lies in the emphasis on various aspects of entrepreneurial education and its development. In particular, A. Iqbal and A.B. Kazmi (2024) concentrate on the effectiveness of applying didactic teaching methods to improve students' academic performance, without directly considering economic conditions or the development of entrepreneurial education in specific regions. They attach importance to pedagogical techniques that can be useful for improving overall educational performance, which can affect the preparation of young people for entrepreneurship, but without focusing on the specifics of economic opportunities. For example, M.L. Blanckesteijn et al. (2024) explore entrepreneurial education from a transformational learning perspective, focusing on sustainable technological innovation. The approach of the study is more focused on how science and technology can drive entrepreneurial activity and how these areas can contribute to building sustainable businesses. This approach is beneficial for strategies in regions with developed technological infrastructure and high potential for innovation.

In addition, Ł. Brzezicki and R. Rusielik (2020) offer an analysis of the performance of Polish technical universities using mathematical models, in particular, directional distance functions. Their approach is focused on measuring the effectiveness of training activities in higher education institutions, which allows developing strategies for improving the quality of training and integrating entrepreneurial initiatives into the training programme, accounting for regional economic opportunities. Researchers R. Soler Costa et al. (2020) assessed the impact of mobile technologies on future educators' learning, enabling a more innovative approach to entrepreneurial education. Their approach focuses on the use of modern technologies to create programmes that can adapt to the needs of regions with a developed educational infrastructure, allowing them to more effectively teach young people entrepreneurial skills. Thus, the methods of these authors differ in focus: from general pedagogical methods and technological innovations to the analysis of the effectiveness of educational activities in technical universities, which allows creating different strategies for the development of entrepreneurial education, depending on the specifics of the region and available resources.

Recommendations for educational institutions to improve business education programmes

All data was used to make recommendations to improve business education in Uzbekistan. Curricula should be updated to incorporate entrepreneurial themes into general science. This will improve economic comprehension and business use of scientific information. Interdisciplinary courses that mix natural sciences, mathematics, and social sciences with entrepreneurship basics will help students and schoolchildren realize the practical applications of their knowledge. Improving teaching methods helps improve entrepreneurial abilities. Focus on interactive learning approaches such case studies, business simulations, role-playing games, and projects. Practice-oriented techniques motivate students to learn and apply theory. Business games that simulate real market circumstances, allow participants to make decisions, and assess their results will mould entrepreneurial thinking. Involving business representatives in education helps train future entrepreneurs. Collaboration between educational institutions and entrepreneurs will foster practical knowledge, market awareness, and professional advancement. Having successful entrepreneurs give lectures, master classes, and mentoring programs will give students useful guidance. Such events will also help build useful friends and commercial connections.

Institutional support for entrepreneurial education by the state and educational institution administrations is a necessary condition for its effectiveness. Government programmes aimed at stimulating entrepreneurial learning should be developed, including financing educational initiatives, supporting school business clubs, and organizing start-up competitions among pupils and students. The introduction of grant programmes and financing of innovative educational projects will help increase the interest of young people in the field of entrepreneurship. Developing financial literacy should be one of the fundamental aspects of entrepreneurial education. Students should gain knowledge of the basics of financial planning, budgeting, investing, and risk management. Teaching these topics in an accessible form will help future entrepreneurs avoid common mistakes in financial management and effectively manage their own business projects.

Interactive platforms and simulations of financial processes improve material assimilation (Luzan et al., 2022; Kapoor et al., 2025). High-quality entrepreneurship education requires teacher professional development. Teacher trainings, seminars, and educational programs will assist them learn new teaching approaches and international best practices. Teachers should adjust their teaching methods to market and entrepreneurship changes. Cooperation with international professionals and studying abroad will expand knowledge and be applied to local education. Entrepreneurial skills will be better learnt with digital training. Online courses, webinars, and interactive platforms will give students high-quality education regardless of location. Aspiring entrepreneurs who wish to learn and practice can benefit from distance learning. Integrating digital solutions into traditional learning will adapt it to modern students (Sadirbekova et al., 2024; Kutanova & Beksultanov, 2022). Supporting student initiatives and youth entrepreneurship fosters creativity and entrepreneurship.

Educational institutions can build business incubators where students can start businesses, receive coaching, and test their ideas in real life. Contests, hackathons, and project competitions will assist find and launch young entrepreneurs. Creating an entrepreneurial culture is crucial to entrepreneurial education. Educational institutions should promote successful young entrepreneurs, host topical events, and encourage student participation in the business community to foster a good attitude towards entrepreneurship. Popularizing entrepreneurial success stories will inspire young people to establish their own businesses and overcome

preconceptions about their complexity. A business-education relationship will establish an effective entrepreneurial education environment. Joint internships, dual education, and commercial partnerships will develop competitive professionals for the workplace. Students will obtain real-world work experience, apply their knowledge, and improve professional skills through such contact. These ideas will improve entrepreneurial education in Uzbekistan, prepare young people for independent work, and grow the business environment.

Educational institutions are encouraged to actively implement interactive teaching methods, such as business simulations, start-up development, and case studies, to improve entrepreneurial education programmes. For example, students can work on real business projects in collaboration with local entrepreneurs, which will allow them to apply their knowledge in practice. Universities can create business incubators where young people can test their ideas, receive mentoring support, and attract investors. In addition, successful entrepreneurs should be involved in the educational process to conduct guest lectures and master classes. In particular, in the Samarkand region, the model works effectively when representatives of small businesses advise students on financial planning and marketing strategies. The number of practical classes on developing business plans, financial modelling, and risk assessment should be increased. Educational institutions should strengthen cooperation with business structures, involving companies in the organization of internships, namely, students can take short-term programmes in local enterprises, which will increase their readiness to do business after completing their studies.

Thus, creating favorable conditions for entrepreneurship training is an important factor in forming a generation of specialists who can effectively adapt to changing economic conditions. The development of entrepreneurial skills among students not only contributes to their professional training but also increases their ability to implement their business ideas, which is of strategic importance for economic growth (Fedotova et al., 2021; Giyasova et al., 2025). In-depth use of interactive methods, practical exercises, and advanced training of teachers can drastically improve the quality of teaching and training of future entrepreneurs, ensuring their successful career and active participation in the development of the economy (Table 8).

Table 8. Mapping of research objectives to methods and conclusions

Research Objective	Corresponding Methodology	Key Conclusion
Assess awareness of entrepreneurial competencies among students and teachers	Quantitative survey of 75 teachers, 500 students, and 40 entrepreneurs using structured questionnaires (Google Forms)	Students show high interest in entrepreneurship (65%), but 75% of teachers lack experience with entrepreneurial content; training needs are substantial
Analyse the impact of integrating entrepreneurial methods into general scientific disciplines	Pedagogical experiment (control and experimental groups across three institutions); pre- and post-intervention testing	Entrepreneurial methods (project work, simulations, guest lectures) significantly improved knowledge (35-85%), confidence, and motivation
Develop methodological and policy recommendations for improving business education	ANOVA statistical analysis; assessment of employment trends, student business activity, and regional economic opportunities (Samarkand region)	Evidence supports targeted policy actions: curriculum reform, teacher training, entrepreneurship-business partnerships, and expanded digital learning

Although the findings indicate a positive impact of integrating entrepreneurial components into general scientific disciplines, the generalizability of the results is limited by the study's geographical scope. The research was confined to three educational institutions in Uzbekistan, primarily in Tashkent and Samarkand, which may not fully capture regional disparities in infrastructure, teacher preparedness, or economic conditions. Furthermore, the study did not account for socio-economic variables such as family income, urban versus rural background, or previous exposure to entrepreneurship, which could significantly influence both motivation and learning outcomes. Another limitation lies in the short-term nature of the pedagogical experiment. While the one-year intervention revealed substantial improvements in knowledge, motivation, and attitudes, it remains unclear whether these gains are sustained over time or translate into concrete entrepreneurial activity post-graduation. Additionally, the reliance on self-reported data introduces the risk of social desirability bias, particularly in post-intervention responses, which may overestimate the actual level of competency acquisition.

The recommendations for improving entrepreneurial education should be closely tied to the empirical data gathered during the research. The results clearly indicate a strong interest among students in entrepreneurial knowledge, as well as a need for more practical learning formats. Therefore, curriculum development efforts should focus on designing interdisciplinary modules that link scientific knowledge to real-world entrepreneurial tasks, such as market analysis or product innovation. Teacher training emerges as a critical factor, with a significant proportion of respondents noting a lack of pedagogical preparation in delivering entrepreneurial content. It is thus necessary to implement structured, state-supported professional development programmes that equip teachers with the skills and methods required to teach entrepreneurship within scientific contexts. Given the limited collaboration between schools and the business community, efforts should also be made to institutionalize partnerships between educational institutions and local enterprises, allowing students to engage with practitioners through guest lectures, mentoring, and project consultations. The study's results underscore the effectiveness of interactive methods – especially project-based learning, case studies, and business simulations – which should be systematically incorporated into teaching practices. Moreover, financial literacy emerged as a priority for both students and entrepreneurs, highlighting the need to include budgeting, investment, and risk management within the broader framework of entrepreneurial training. The strategic use of digital technologies, such as online simulations and hybrid learning platforms, can further enhance the accessibility and impact of entrepreneurship education, especially in under-resourced settings.

Future research should address the gaps identified in this study by incorporating additional variables and broadening the methodological scope. A key direction would be to integrate socio-economic and demographic indicators into future designs, enabling a more nuanced analysis of how different student backgrounds affect the development of entrepreneurial competencies. Longitudinal research is also needed to track how early exposure to entrepreneurial education influences career choices, business formation, and long-term employment. Comparative studies across various regions or countries could reveal how contextual factors such as policy environments, cultural attitudes, and institutional capacities shape the effectiveness of entrepreneurship education. Additionally, attention should be paid to the institutional context – examining how school governance, funding mechanisms, and leadership styles influence the implementation of entrepreneurial curricula. Gender-specific analyses would also provide valuable insights, especially in light of potential disparities in access to entrepreneurship training and differences in how male and female students engage with entrepreneurial content. By addressing these dimensions, future studies can provide a

more comprehensive and policy-relevant understanding of how to develop effective, inclusive, and scalable entrepreneurial education models.

One limitation of the study is the absence of statistical controls for baseline differences, socio-economic status, teacher experience, and prior exposure to entrepreneurship, which were not accounted for in the analysis. These factors may contribute to the observed differences in outcomes between the experimental and control groups, with socio-economic background and previous entrepreneurial exposure possibly influencing students' readiness to engage with entrepreneurial education, while teacher experience may affect the effectiveness of the intervention. Additionally, the study did not employ multilevel models to account for clustering effects within institutions, nor did it report intraclass correlation (ICC), which would have helped assess the proportion of variance attributable to group differences. Future studies should address these gaps by using multilevel models and incorporating socio-economic covariates to provide a more precise understanding of the factors driving the observed effects. Furthermore, while the study reports positive changes in entrepreneurial knowledge and confidence, the one-year duration of the intervention limits conclusions about long-term impacts on business formation or employment outcomes. Claims about these long-term effects are speculative without longitudinal data, and although the authors partially acknowledge this, it should be emphasized that further research is needed to assess the sustainability and real-world application of the developed competencies. The study also faces several biases, including measurement bias (self-report), sampling bias, lack of randomized assignment, short follow-up period, and missing socio-economic covariates, which should be addressed in future research.

5. Conclusions

The study examined various aspects of entrepreneurial education in Uzbekistan, in particular, the effectiveness of integrating entrepreneurial elements into the teaching of general scientific disciplines. The results obtained confirm the importance of entrepreneurial education in modern conditions for the formation of not only theoretical knowledge but also practical skills among students. One of the main results of the study was the identification of a substantial increase in the interest of pupils and students in entrepreneurial activities. During the experiment, which lasted one academic year, it was determined that the level of knowledge about entrepreneurial activity in the EG increased from 35% to 85%, while in the CG, this indicator increased only from 30% to 35%. Confidence in their ability to start a business among the participants of the EG increased from 45% to 75%, while in the CG, this indicator changed slightly, from 40% to 45%. The positive attitude towards entrepreneurship among the participants of the EG increased from 30% to 80%, and the level of understanding of economic processes increased from 25% to 85% due to interactive training methods. The development of business projects was useful for 90% of the participants in the EG, which greatly exceeded the same indicator in the CG (15%). Additionally, 90% of students and students of the EG had a desire to have more entrepreneurial disciplines in the curriculum, which indicates an increase in interest in this area.

The analysis of regional statistics confirmed that after the introduction of entrepreneurial methods in the educational process in the Samarkand region, the number of young people who are interested in starting their own business has increased. This indicates the effectiveness of adapting educational programmes to modern economic challenges. It was also established that the integration of entrepreneurial education into general scientific disciplines significantly increased the level of employment of young people in small and medium-sized businesses. In

general, the results of the study confirmed that combining theoretical knowledge with practical experience, particularly through interactive teaching methods, substantially improves students' readiness for real business conditions.

References

- Alimov, B., Isaqova, Z., Ikramova, M. X., & Bo'teyev, A. (2022). Didactic shapt-shapoitlapi of pivojlantip of the professional competence of the future teacher of the science of "Technology". *International Journal of Innovations in Engineering Research and Technology*, 9(11), 328-333. <https://doi.org/10.17605/OSF.IO/Y8BF5>
- Bashtannyk, V., Buryk, Z., Kokhan, M., Vlasenko, T., & Skryl, V. (2020). Financial, economic and sustainable development of states within the conditions of industry 4.0. *International Journal of Management*, 11(4), 406-413. <https://doi.org/10.34218/IJM.11.4.2020.040>
- Blankesteyn, M. L., Houtkamp, J., & Bossink, B. A. G. (2024). Towards transformative experiential learning in science-and technology-based entrepreneurship education for sustainable technological innovation. *Journal of Innovation & Knowledge*, 9(3), 100544. <https://doi.org/10.1016/j.jik.2024.100544>
- Brylev, S., & Levina, N. (2022). Using business simulators in the educational process STEM-education of Ukraine as a direction of professional orientation of young people. *Research on Enterprise in Modern Economy*, 2(35), 52-68. <https://doi.org/10.19253/rem.2022.02.004>
- Brzezicki, Ł., & Rusielik, R. 2020. Measurement of efficiency of didactic activities of public universities of technology in Poland: Directional distance function with undesirable output approach. *Business, Management and Education*, 18(1), 73-87. <http://dx.doi.org/10.3846/bme.2020.11982>
- Canoz, G. M., Ucar, S., & Demircioglu, T. (2022). Investigate the effect of argumentation-promoted interactive simulation applications on students' argumentation levels, academic achievements, and entrepreneurship skills in science classes. *Thinking Skills and Creativity*, 45, 101106. <https://doi.org/10.1016/j.tsc.2022.101106>
- Dochy, F., & Wybo, A. (2021). L&D didactics for workplace learning. In: F. Dochy, D. Gijbels, M. Segers, P. Van den Bossche (Eds.), *Theories of Workplace Learning in Changing Times* (pp. 71-100). London: Routledge. <https://doi.org/10.4324/9781003187790>
- Fayzullaev, U. T. (2021). Improving pedagogical technologies for preparing young students for small business. *International Journal of Social Science and Interdisciplinary Research*, 10(12), 1-5. <https://gejournal.net/index.php/IJSSIR/article/view/43>
- Fedotova, I., Shersheniuk, O., Prokopenko, M., Britchenko, I., & Vazov, R. (2021). Management of a viable enterprise on the basis of the approach to management of a «living» organization and the concept of viable systems. In: *Problems and Prospects of Development of the Road Transport Complex: Financing, Management, Innovation, Quality, Safety - Integrated Approach* (pp. 63-80). Kharkiv: PC TECHNOLOGY CENTER. <https://doi.org/10.15587/978-617-7319-45-9.CH5>
- Fischer, S., Rosilius, M., Schmitt, J., & Bräutigam, V. (2021). A brief review of our agile teaching formats in entrepreneurship education. *Sustainability*, 14(1), 251. <https://doi.org/10.3390/su14010251>

- Gawel, A., Strykowski, S., & Madias, K. (2022). Implementing sustainability into virtual simulation games in business higher education. *Education Sciences*, 12(9), 599.
<https://doi.org/10.3390/educsci12090599>
- Giyasova, Z., Guliyeva, S., Azizova, R., Smiech, L., & Nabiyeva, I. (2025). Relationships between human development, economic growth, and environmental condition: The case of South Korea. *Environmental Economics*, 16(2), 73-83.
[https://doi.org/10.21511/ee.16\(2\).2025.06](https://doi.org/10.21511/ee.16(2).2025.06)
- Iqbal, A., & Kazmi, A.B. (2024). Effectiveness of teaching social studies through didactic method for enhancing students' academic performance: A subject-specific perspective. *Journal of Social & Organizational Matters*, 3(2), 43-59.
<http://dx.doi.org/10.56976/jsom.v3i2.71>
- John, L., Robertson, M., Tetley, K., & Seaman, C. E. A. 2023. Entrepreneurship education in post-Soviet states: Developing programmes for hospitality and tourism students in Samarkand. *Journal of Enterprising Communities: People and Places in the Global Economy*, 17(2), 209-220. <http://dx.doi.org/10.1108/JEC-04-2021-0051>
- Kapoor, G., Chahal, A., Sharma, N., Kaur, S., & Hendrik, H. (2025). Electronic-learning: Friend or Foe. *International Journal of Educational Reform*, 34(2), 405-415.
<https://doi.org/10.1177/10567879221140095>
- Kawiana, I. G. P., Rexhepi, B. R., Arsha, I. M. R. M., Swara, N. N. A. A. V., & Yudhistira, P. G. A. (2023). Accelerating values in shaping ethical leadership and it's effect on organisational performance. *Quality - Access to Success*, 24(196), 295-302.
<https://doi.org/10.47750/QAS/24.196.36>
- Kim, G., Kim, D., Lee, W.J., & Joung, S. (2020). The effect of youth entrepreneurship education programs: Two large-scale experimental studies. *SAGE Open*, 10(3).
<https://doi.org/10.1177/2158244020956976>
- Kozhoshev, A. O., Kulueva, C. R., Saiakbaeva, A. A., Nuralieva, C. A., & Akylbekova, N. I. (2022). Issues of the Development of Digital Entrepreneurship in the Regions of Kyrgyzstan. In: A. V. Bogoviz, E.G. Popkova (Eds.), *Digital Technologies and Institutions for Sustainable Development. Advances in Science, Technology and Innovation* (pp. 149-154). Cham: Springer. https://doi.org/10.1007/978-3-031-04289-8_25
- Kutanova, R., & Beksultanov, Zh. (2022). Interactive dynamic models in educational research. *Bulletin of the Jusup Balasagyn Kyrgyz National University*, 14(3), 65-69.
<https://balasagynbulletin.com/en/journals/tom-14-3-2022/intyeraktivnyye-dinamichyeskiye-modyeli-v-pyedagogichyeskikh-isslyedovaniyakh>
- Kuzmenko, O., Dembitska, S., Miastkovska, M., Savchenko, I., & Demianenko, V. (2023). Onto-oriented information systems for teaching physics and technical disciplines by STEM-environment. *International Journal of Engineering Pedagogy*. 13(2), 139-146.
<https://doi.org/10.3991/ijep.v13i2.36245>
- Liao, C.W., Tseng, Y.J., Liao, Y.H., Chen, B.S., Ho, W.S., Wang, I.C., Lin, H.I., & Chen, I.M. (2023). A practical curriculum design and learning effectiveness evaluation of

competence-oriented instruction strategy integration: A case study of Taiwan skills-based senior high school. *Behavioral Sciences*, 13(1), 43. <https://doi.org/10.3390/bs13010043>

Luzan, P., Koshuk, O., Titova, O., & Mosia, I. (2022). The Technology of the Learning Outcomes Test Development. In: *Lecture Notes in Mechanical Engineering* (pp. 687-696). Cham: Springer. https://doi.org/10.1007/978-3-030-91327-4_66

Madaminjonovna, M. M. (2023). Innovative methods and tools for developing students' entrepreneurial skills using CLIL technologies. *International Journal of Human Computing Studies*, 5(3), 15-17. <https://doi.org/10.31149/ijhcs.v5i3.4083>

Martínez-Borreguero, G., Naranjo-Correa, F.L., & Mateos-Núñez, M. (2022). Development of STEM instructional resources for teaching optics to teachers-in-training: Influence on learning and teacher self-efficacy. *Education Sciences*, 12(3), 186. <https://doi.org/10.3390/educsci12030186>

Mirzakarimova, M. M. (2022). The necessity to develop students' entrepreneurial skills in English classes. *Telematique*, 21(1), 7128-7131. <https://www.provinciajournal.com/index.php/telematique/article/view/984>

Núñez-Canal, M., Sanz Ponce, R., Azqueta, A., & Montoro-Fernández, E. (2023). How effective is entrepreneurship education in schools? An empirical study of the new curriculum in Spain. *Education Sciences*, 13(7), 740. <https://doi.org/10.3390/educsci13070740>

Nurekenova, E. S., Rakhimberdinova, M. U., Sholpanbayeva, K. Zh., Apysheva, A. A., & Shaikhanova, N. K. (2022). Assessment of the economic efficiency of industrial enterprise management during the Kazakhstan integration into the EAEU. *Polish Journal of Management Studies*, 26(1), 233-249. <https://doi.org/10.17512/pjms.2022.26.1.15>

Oklander, M., Chaikovska, M., & Shkeda, O. (2022). Framing as a tool of influencer marketing in the management of marketing communications and brand representation. *Economics of Development*, 21(3), 15-26. [https://doi.org/10.57111/econ.21\(3\).2022.15-26](https://doi.org/10.57111/econ.21(3).2022.15-26)

Oklander, M., Chukurna, O., Oklander, T., & Yashkina, O. (2020). Methodical approach to calculating information value in pricing policy in supply chains. *Estudios De Economia Aplicada*, 38(4). <https://doi.org/10.25115/EEA.V38I4.4009>

Pech, M., Rehor, P., & Slabová, M. (2021). Students preferences in teaching methods of entrepreneurship education. *Journal on Efficiency and Responsibility in Education and Science*, 14(2), 66-78. <http://dx.doi.org/10.7160/eriesj.2021.140201>

Pérez-Sánchez, E. O., Chavarro-Miranda, F., & Riano-Cruz, J. D. (2023). Challenge-based learning: A “entrepreneurship-oriented” teaching experience. *Management in Education*, 37(3), 119-126. <https://doi.org/10.1177/0892020620969868>

Pet'ko, L., Popova, L., Kulyk, O., Kardash, L., Ovsiienko, L., Denysiuk, I., & Proskurniak, O. (2021). Web oriented education course design model in the entrepreneurship education system. *International Journal of Entrepreneurship*, 25(6). <https://www.abacademies.org/articles/web-oriented-education-course-design-model-in-the-entrepreneurship-education-system-11151.html>

Pikulina, N. Y., Samoilenko, D. M., Horiashchenko, Y. H., Zhadko, K. S., & Nikitchenko, Y. S. (2023). Professional training of Economics students in higher educational institutions through the development of entrepreneurial climate. *Journal of the University of Zulia*, 12(35), 63-84. <http://dx.doi.org/10.46925/rdluz.35.04>

Rasulova, N., Mukhamedova, N., Djalilova, G., Kariyeva, M., Rajabova, N., & Yarova, S. (2023). Structural elements of didactic skills of educators in the educational process: Theoretical and methodological approaches and principles. In: J. Kokoreva, S. Khasanov, A. Maidyrova, S. Ignateva (Eds.), *EBWFF 2023 – International Scientific Conference Ecological and Biological Well-Being of Flora and Fauna (Part 2)*. Paris: EDP Sciences. <https://doi.org/10.1051/bioconf/20236510008>

Sadirbekova, D., Karabalaeva, G., Nishanbayeva, S., Ospankulov, Y., & Saidakhmetova, L. (2024). Study of professional development barriers in the formation of soft skills at different stages of HEI teachers' career through digital resources. *Ricerche Di Pedagogia E Didattica*, 19(2), 65-80. <https://doi.org/10.6092/issn.1970-2221/19428>

Seikkula-Leino, J., Håkansson Lindqvist, M., Jónsdóttir, S. R., Ólafsdóttir, S. M., & Verma, P. (2023). Developing entrepreneurial society: Have we ignored the opportunities of preschool education? *Education Sciences*, 13(7), 736. <https://doi.org/10.3390/educsci13070736>

Shelukhin, M., Kupriichuk, V., Kyrylko, N., Chupryna, N., & Makedon, V. (2021). Entrepreneurship education with the use of a cloud-oriented educational environment. *International Journal of Entrepreneurship*, 25(6). <https://www.abacademies.org/articles/entrepreneurship-education-with-the-use-of-a-cloudoriented-educational-environment-11980.html>

Shen, L. (2024). Content aspects of translation training programmes at Chinese universities. *Humanities Studios: Pedagogy, Psychology, Philosophy*, 12(2), 183-188. [https://doi.org/10.31548/hspedagog15\(2\).2024.183-188](https://doi.org/10.31548/hspedagog15(2).2024.183-188)

Soler Costa, R., Mauri Medrano, M., Lafarga Ostáriz, P., & Moreno-Guerrero, A. J. (2020). How to teach pre-service teachers to make a didactic program? The collaborative learning associated with mobile devices. *Sustainability*, 12(9), 3755. <https://doi.org/10.3390/su12093755>

Titova, O., Ishchenko, T., Yershova, L., Bazyl, L., & Kruchek, V. (2023). Entrepreneurial Mindset Development in Engineering Students Through a Business Canvas Approach. *Lecture Notes in Mechanical Engineering*, 1, 400-409. https://doi.org/10.1007/978-3-031-32767-4_38

Tiurina, A., Petrunenko, I., Guliyeva, S., Qazizade, E., & Aliyeva, T. (2023). Social responsibility and modern business during the global crisis: threat or opportunity for the Guam member countries. *Journal of Eastern European and Central Asian Research*, 10(2), 201-212. <https://doi.org/10.15549/jecar.v10i2.1276>

Ulugov, B. D., Nurmatov, F., Durmonova, S., Tashmuratova, Sh., Khaliyarov, P., & Saynazov, J. (2020). The effectiveness of the use of ICT in the teaching of general

engineering in universities in Uzbekistan. *European Journal of Molecular & Clinical Medicine*, 7(11), 1302-1314. <https://www.ejmcm.com/archives/volume-7/issue-11/6481>

Umnov, D. G., Kariev, A. D., Teshaboev, A. Y., & Mirzakarimova, M. M. (2024). Formation of financial literacy and consumer culture among older preschoolers. *Prospects for Science and Education*, 6(72), 420-436. <https://doi.org/10.32744/pse.2024.6.26>

Urinov, U. A., & Norpolatova, G. M. (2023). The content and essence of the concept of case-study educational technology. *Intent Research Scientific Journal*, 2(4), 45-53. <https://intentresearch.org/index.php/irsj/article/view/84>

Velásquez, G. M. B., Zambrano, S. J. B., Meza, O. B. R. (2022). Planned educational strategies based on learning styles: Case study PFM pedagogical-didactic induction. *International Research Journal of Management, IT and Social Sciences*, 9(2), 274-280. <https://doi.org/10.21744/irjmis.v9n2.2058>

Vollmer, H. J. (2024). Powerful educational knowledge through subject didactics and general subject didactics. Recent developments in German-speaking countries. In: J. Hordern, J. Muller, D. Zongyi (Eds.), *Towards Powerful Educational Knowledge: Perspectives from Educational Foundations, Curriculum Theory and Didaktik* (pp. 87-104). London: Routledge. <https://doi.org/10.4324/9781032712802>

Yakupova, N. (2024). Formation of entrepreneurial skills of future specialists of initial professional education. *Bulletin of the Jusup Balasagyn Kyrgyz National University*, 16(4), 71-77. [https://doi.org/10.58649/1694-8033-2024-4\(120\)-71-77](https://doi.org/10.58649/1694-8033-2024-4(120)-71-77)

Yegeubayeva, S., Allanazarova, F. K., Kunakbayev, A., Rakhimov, S., Bobomurodova, M., Sherquziyeva, G. F., Omonov, B., Bobojonov, O. K., Mirzakarimova, M., Khayitmuradov, A., Sapaev, I. B., Mirzayeva, M. A., & Komilov, R. M. (2024). The effect of copper oxide nanoparticles on hepatic and renal toxicity in domestic rabbits. *Journal of Nanostructures*, 14(1), 150-155. <https://doi.org/10.22052/JNS.2024.01.015>

Yurtseven, N., Doğan, S., Sayi, A. K., & Çelik, I. (2025). Evaluating the Effectiveness of a Professional Development Program: Changes in Teachers to Improve Teaching Quality. *International Journal of Educational Reform*. <https://doi.org/10.1177/10567879251331215>

Zhou, X., Karabalaeva, G., Wang, S., Ding, Q., & Wang, C. (2024). Prospects and priorities of the cultural aspect in education. *Scientific Herald of Uzhhorod University Series Physics*, 55, 1943-1954. <https://doi.org/10.54919/physics/55.2024.194bi3>

Examining the Role of Academic Self-Efficacy on Achievement and Stress: A Network Analytic Approach

ABSTRACT

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Academic self-efficacy has been found to have a consistent relationship with students' academic achievement and various psychological and educational outcomes. However, practitioners may encounter considerable challenges when designing interventions or support measures for students with diminished academic self-efficacy and suboptimal learning outcomes. One key difficulty arises from the broad scope of academic self-efficacy scales, which encompass a range of academic tasks and activities, both within and beyond the classroom, thereby complicating the identification of behavioral domains for intervention. As a consequence, much of the existing literature has focused on using more generic approaches such as stress reduction and cognitive reappraisal techniques to alleviate mental health concerns and enhance academic self-efficacy and achievement. In order to provide practitioners with more refined behavioral domains as a target for self-efficacy interventions, this study sought to identify efficacy beliefs critical to students' academic achievement and perceived stress, using various network analysis techniques. Data from 439 students were analyzed using psychological networks, network trees, and Bayesian networks. Through a triangulation of data analytic methods, results indicated that efficacy beliefs pertaining to managing time for study and schoolwork and using (associative) learning techniques were the most influential in strengthening efficacy beliefs in other academic domains, as well as in predicting academic achievement and stress. Developing and applying academic self-efficacy scales that explicitly capture learning techniques, coupled with designing self-efficacy interventions and guidelines tailored to a small number of critical behavioral domains, were proposed as practical implications.

Keywords: Academic self-efficacy, academic achievement, stress, network analysis, network trees, Bayesian networks, higher education

1. Introduction

The present study is motivated by the incongruence between a relatively well-established relationship between academic self-efficacy and academic outcomes, a theoretical framework regarding the sources of self-efficacy, and a way practitioners design interventions or guidelines aimed at enhancing students' academic self-efficacy to optimize their success. Meta-analytic studies have demonstrated the relationship between academic self-efficacy and various learning experiences and outcomes across both cross-sectional and longitudinal paradigms (e.g., Multon et al., 1991; Talsma et al., 2018). Thus, if practitioners seek to facilitate learning experiences and outcomes by reinforcing efficacy beliefs in various behavioral domains, they may consider leveraging the four sources of self-efficacy (Bandura, 1977) as foundational mechanisms. However, the breadth of behavioral domains within academic settings may be a challenge in developing a compact and targeted intervention for behavior change. Relying on research using a summative score of academic self-efficacy may obscure the selection of target behaviors. Worse still, different academic self-efficacy measures may contain item content that differs in dimensions and behaviors, rendering it more difficult to pinpoint behaviors most consequential for academic achievement. Hence, this study aimed to exploit the distinctiveness of item content in a measure assessing academic self-efficacy in predicting academic and mental health outcomes, using a network analytic approach. The resulting networks may be able to identify certain behavioral domains that are relatively more important than others, benefiting practitioners in creating more effective self-efficacy interventions/guidelines for university students. In addition, the findings may inform institutional-level strategies in higher education, potentially in developing university-wide policies and programs to enhance students' academic self-efficacy and, consequently, their academic achievement.

Self-efficacy has been defined as a person's expectation to successfully perform a designated behavior, especially in a challenging situation (Bandura, 1977). As a source of behavioral motivation, self-efficacy often determines which actions individuals will take, how much effort they will put in, and how long (or how many times) they will try when encountering obstacles. In the academic realm, self-efficacy across various endeavors has been found to play a pivotal role in shaping students' learning behaviors and academic outcomes (e.g., setting more challenging goals; Wood & Locke, 1987). Different aspects of psychological attributes subsumed under the label of "academic self-efficacy" have been proposed, which can be largely classified into two groups. The first group pertains to efficacy beliefs specific to academic subjects/courses such as mathematics, science, language, and so on (e.g., a belief in solving math problems; Matsui et al., 1990), and the second group pertains to efficacy beliefs regarding academic challenges within and beyond the classroom but not explicitly linked to any particular subjects/courses (e.g., a belief in taking notes or a belief in getting along with roommates; Gore et al., 2005; Zimmerman & Kitsantas, 2007). Although both groups have merit for different purposes and contexts, it seems that psychologists and educators may have trouble translating research into practice when empirical studies use academic self-efficacy measures that are not specific to any subjects/courses. This difficulty may arise from an inability to focus on a single or a small set of academic challenges when designing interventions.

Consider, for instance, the 19-item Self-Efficacy for Learning Form (SELF-A) developed by Zimmerman and Kitsantas (2007) and used in this study. A substantial body of research has observed that academic self-efficacy, as measured by the SELF-A, yielded a positive association with desirable outcomes and a negative association with undesirable outcomes (e.g., Mangus et al., 2021; Saroughi & Kitsantas, 2021). Given these findings, if psychologists and educators seek to design an intervention to enhance students' academic self-efficacy, they will

be struck with varied item content embedded within this measure. Although the SELF-A has an established unidimensional factor structure, its item contents pertain to different academic tasks such as taking notes, preparing for the exam, or even motivating oneself. Of course, psychologists and educators may opt to cover all the academic tasks (as presented in the item content) in their intervention, but this practice may be overly time-consuming and resource-intensive for both practitioners and students, perhaps with a small margin of benefit when comparing to a more targeted intervention.

Alternatively, practitioners may resort to more generic techniques (i.e., not specifically tailored to the enhancement of academic self-efficacy; e.g., Perry et al., 2007). For example, employing an inquiry-based stress reduction approach to induce cognitive reappraisals in a quasi-randomized, control experiment, Krispenz et al. (2019) found that the intervention can increase academic self-efficacy and decrease test anxiety and academic procrastination among university students. With a three-wave data collection, the authors further found that academic self-efficacy can mediate the effect of the intervention on test anxiety but not academic procrastination. Furthermore, Bani et al. (2022) examined whether a cognitive-behavioral counseling intervention can alleviate psychological symptoms (e.g., anxiety and stress) and enhance academic self-efficacy among university students who self-enrolled in counseling services. Overall, the counseling intervention yielded desirable effects on psychological symptoms and academic self-efficacy, especially in a subgroup of students whose psychological symptom scores surpassed clinical thresholds. While these interventions have merit across a broad spectrum of academic and health-related outcomes, they were not designed specifically to boost academic self-efficacy. From a theoretical standpoint, these interventions were based largely on modulating emotional arousal (e.g., through a cognitive reappraisal of academic demands and/or personal resources to decrease stress levels), which has been found to be a less consistent source of self-efficacy (Byars-Winston et al. 2017). It may be unfortunate if self-efficacy interventions neglect performance accomplishments or vicarious experience (arguably more potent sources of self-efficacy) to facilitate behaviors of interest due to the overwhelming number of behaviors for practitioners to focus on. Hence, research that conducts an item-level analysis of academic self-efficacy is needed, with a suitable analytic approach that can extract useful information for designing a more targeted and effective intervention.

2. Literature review

Academic Self-Efficacy in Predicting Students' Outcomes

Self-efficacy has demonstrated a robust positive relationship with academic outcomes in various settings (e.g., elementary schools, high schools, or colleges/universities). A meta-analysis of 39 studies conducted by Multon et al. (1991) yielded a positive association of self-efficacy with academic outcomes ($r = .38$) such as academic tasks, classroom-related measures, and standardized tests. Self-efficacy also had a comparable effect size with measures of persistence-related metrics ($r = .34$) such as time on task, the number of tasks attempted/completed, and the number of academic terms completed. Further substantiating these findings, a study conducted by Robbins et al. (2004) classified psychological and study skill correlates into nine groups and meta-analyzed their associations with cumulative grade point average (GPAX) and academic retention. Academic self-efficacy yielded the largest effect size with GPAX ($r = .37$) and the second largest effect size with academic retention ($r = .24$). Similarly, Honicke and Broadbent (2016) meta-analyzed the relationship between academic self-efficacy and academic performance. Academic performance was conceptualized

through several indicators, including GPAX, subject/course grades, exam scores, and credits obtained. They found that academic self-efficacy and academic performance had a moderate relationship when examined cross-sectionally ($r = .33$). Of note, several mediators and moderators have also been identified in the literature. Prominent mediators included goal-setting, effort regulation, metacognition, academic procrastination, academic self-discipline, deep processing, parental involvement, and conscientiousness, while prominent moderators included emotional intelligence, neuroticism, negative emotions, and time on task. More recently, Talsma et al. (2018) employed a meta-analytic cross-lagged panel analysis to examine the direction of the relationship between academic self-efficacy and academic performance. The results indicated a reciprocal effect between these two attributes, with the effect of academic performance on academic self-efficacy being larger than the reverse, signaling the importance of designing academic tasks that are moderately and incrementally challenging for learners. When further examining the specificity congruence hypothesis (i.e., domain-based versus task-based self-efficacy with task-based performance), the authors found that the cross-lagged effects were stronger in the case of specificity congruence (i.e., task-based self-efficacy and task-based performance), supporting the specificity congruence proposition of self-efficacy (e.g., Pajares & Miller, 1995). As self-efficacy has been theorized to be cultivated through four primary sources: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1977), Byars-Winston et al. (2017) meta-analyzed 61 studies that examined the relationship between these sources and academic self-efficacy. Using a model-based approach (i.e., a regression model), they found that these four sources collectively explained 28% of the variance in academic self-efficacy, with performance accomplishments being the strongest predictor ($\beta = .51$).

Beyond its well-established association with academic performance, academic self-efficacy can have desirable effects on learning experiences and mental health outcomes. For example, more (academic) self-efficacious students reported more favorable learning experiences than less self-efficacious students (Bassi et al., 2007). That is, more self-efficacious students spent more time learning, experienced optimal states (i.e., a balance between challenges and skills) more frequently when performing academic tasks, and valued academic endeavors more strongly. Academic self-efficacy has been observed to positively associate with deep-processing learning strategies and negatively associate with surface-processing learning strategies, even when controlling for achievement goals (Fenollar et al., 2007). In addition to its impact on learning processes, academic self-efficacy has also demonstrated a negative relationship with mental health concerns, cross-sectionally and longitudinally. For instance, Zajacova et al. (2005) found negative, moderate-to-large correlation coefficients between (latent) academic self-efficacy and stress among first-year college students. Also within higher education settings, female and younger students were more likely to exhibit lower levels of academic self-efficacy and higher levels of stress than male and older students (Hitches et al., 2022). In high school settings, the inverse relationship between academic self-efficacy and stress was moderated by student gender, with the effect size being stronger in female students than in male students (Ye et al., 2018). Furthermore, a longitudinal study by Huang et al. (2023) demonstrated that academic self-efficacy mediated the effect of burnout over time. More interestingly, burnout levels of students themselves and their friends can predict changes in the students' academic self-efficacy and, in turn, predict their burnout levels in the next three months. Following Lambert and Newman (2023) and Tay and Jebb (2018), we would like to point out the property and the nature of the gradation of academic self-efficacy. In terms of its property, academic self-efficacy refers to individuals' beliefs in their capability to perform behaviors necessary for accomplishing academic tasks, and in terms of its gradation, it represents the varying strength of these beliefs. Based on self-efficacy theory and empirical

evidence (e.g., Bandura et al., 1996), its primary function is motivational, encouraging students to engage and persist in academic tasks even in the face of obstacles. This motivating function, in turn, underlines a wide range of positive academic performance and mental health.

In terms of factors that potentially affect academic achievement in tertiary education (i.e., postsecondary, college, and undergraduate levels), academic self-efficacy has consistently demonstrated a positive relationship with several indicators of academic performance. A comprehensive review and meta-analysis conducted by Richardson et al. (2012) identified academic self-efficacy as one of three non-intellective psychological attributes that yielded a moderate effect size with GPAX (the other two were grade goal and effort regulation). The correlation coefficients were .36 among cross-sectional studies and .23 among longitudinal studies. A myriad of studies have also demonstrated the desirable impacts of academic self-efficacy in college and university settings. For example, Chemers and Garcia (2001) found that first-year students with high academic self-efficacy were likely to attain superior academic performance through perceiving academic tasks as challenging (rather than threatening) and maintaining high academic expectations. Also among first-year students, academic self-efficacy was positively related to time management and career commitment in cross-sectional analyses (although these relationships were not replicated in longitudinal analyses; Bargmann & Kauffeld, 2023). Moreover, medical students' academic self-efficacy displayed both direct and indirect effects on academic performance, with metacognitive learning strategies and positive affect (i.e., enjoyment, hope, and pride) serving as mediators (Hayat et al., 2020).

In the context of Thai higher education, academic self-efficacy has often been studied with academic procrastination. For example, in a study predicting academic procrastination among undergraduate students (Chatrakamollathas et al., 2022), self-efficacy for self-regulated learning had a negative relationship with academic procrastination, whereas academic self-efficacy (as defined by three dimensions—study, assignment, and social) had no relationship with academic procrastination (when controlling for other personal and contextual variables within a latent variable framework). Moreover, academic self-efficacy has been found to serve as a mediator for the relationship between achievement goal orientations and academic achievement, but this mediating effect was observed only among undergraduate students with passive procrastination, as opposed to those with active procrastination and non-procrastination (Ratsameemonthon et al., 2018). Self-efficacy has also been demonstrated to mediate the relationship between emotional intelligence and academic engagement among Thai undergraduate students (Villegas-Puyod et al., 2021). Despite these findings, an online CBT-based intervention was found to be effective in reducing academic procrastination but not in enhancing academic self-efficacy among undergraduate students (Doowa & Arikatt, 2023). As previously noted, this lack of intervention effectiveness in increasing academic self-efficacy may be attributable to intervention designs that fail to target the sources of self-efficacy or specific behavioral domains central to academic functioning.

The Self-Efficacy for Learning Form

This study investigated the network structure of the SELF-A (Zimmerman & Kitsantas, 2007). Zimmerman and Kitsantas (2007) selected items for a short form of SELF, based on their content that primarily reflects a broad scope of studying and preparing for an exam, resulting in a unidimensional 19-item scale. In their validation study, hierarchical regression analyses revealed that the SELF-A scores significantly predicted college students' quality of homework completion and course grades, above and beyond their SAT scores ($\Delta R^2 = .22$ and $.24$, respectively). The SELF-A has been widely used to assess students' academic self-efficacy

across the globe (e.g., Ahmad et al., 2024; Fenning & May, 2013; King-Sears & Strogilos, 2020; Mangus et al., 2021; Saroughi & Kitsantas, 2021; Stubbs & Maynard, 2017). For example, Fenning and May (2013) applied the SELF-A to freshman college students to examine whether academic self-efficacy can predict various academic and career-related outcomes. Stubbs and Maynard (2017) employed the SELF-A in a study comparing academic self-efficacy and school engagement among students with high, medium, and low levels of family cohesion and adaptability within a Caribbean sample. The item content in the SELF-A is congruent with the self-efficacy concepts originated by Bandura (1977). That is, the item content focuses on efficacy expectations but not outcome expectations. In his own words, efficacy expectations are "the conviction that one can successfully execute the behavior required to produce the outcomes" while outcome expectations are "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p. 193). All items contain the word "can" to signify a person's belief in his/her ability to carry out desired behaviors. Furthermore, in line with Bandura's (2006) recommendations, the item content was written based on specific academic tasks that are likely challenging for students, with a decile-based response format.

A Network Analysis

This study employed three techniques to explore the network structure underlying the SELF-A 19 items and their associations with two criterion variables: perceived stress and academic achievement. These techniques included network analysis (or psychological networks; Isvoranu et al., 2022), network trees (Jones et al., 2020), and Bayesian networks (e.g., Briganti et al., 2023). In essence, network analysis was initially conceptualized by Borsboom and colleagues (Borsboom, Cramer et al., 2011; Borsboom, Epskamp et al., 2011; Cramer et al., 2010) to study the intricate interrelationships among psychopathological symptoms. This technique has since gained attention from scholars and researchers across various fields such as personality psychology (e.g., Christensen et al., 2019) and organizational surveys (Letouche & Wille, 2022), to investigate the relationship between facets or items in psychological measures. The structure of the network (or network topology), as well as network parameters such as node centrality and the shortest path between nodes, is central to the analysis. Then, this technique has been integrated with model-based recursive partitioning (Jones et al., 2020) to explore whether variations in network parameters (e.g., partial correlations between nodes) can be reliably detected with respect to predefined splitting covariates (e.g., students' gender between male and female). Heterogeneity in network parameters results in the whole network being split into two subnetworks, with the splitting conducted hierarchically, starting with the most significant splitting covariate (the most differences in network parameters). Additionally, Bayesian network analysis (Scutari & Denis, 2015) has emerged as a technique for modeling probabilistic dependencies among nodes in the network. The gist of Bayesian network analysis is structure learning and parameter learning. Generally, the structure of the network can be algorithmically learned, the network parameters can then be estimated, and these processes can be derived from data, expert panels, and a combination of both. This study employed Bayesian network analysis, particularly for structure learning, to supplement potential probabilistic causal directions between nodes in the network (please see the Analyses section for further methodological details).

In the realm of academic self-efficacy, to our knowledge, there has been one study using network analysis techniques (Hu et al., 2024). Hu et al. (2024) examined the network structure and network parameters among perceived teacher autonomy support, academic self-efficacy, and learning engagement. Of particular note, the authors found that academic ability self-

efficacy (one dimension of academic self-efficacy) and dedication (one dimension of learning engagement) functioned as bridge nodes, linking perceived teacher autonomy support to other dimensions of learning engagement. In other areas of studies, these network analysis techniques have been combined to explore the interconnections among items and variables. For example, Simonet and Castille (2020) used network analysis (Gaussian graphical models: GGM) and Bayesian networks (directed acyclical graphs: DAG) to investigate the relationship among personality aspects, job characteristics, experienced meaningfulness at work, and work behavior among working employees. The authors can identify the shortest paths from each personality aspect to meaningfulness, signifying potential mediators. Moreover, Bayesian networks can complement the results from network analysis by inferring probable directionality between the variable nodes, suggesting that meaningfulness may mediate the relationship between enthusiasm (one personality aspect) and several job characteristics. Budler and Stiglic (2023) applied network trees to examine potential covariates that may explain differences in the network parameters exhibiting the relationship between physical and mental well-being, parent relations, social support, and school environment among adolescents. A six-node network structure can be split based on an interaction between adolescents' age and gender, suggesting how to subset groups of adolescents when planning policies and interventions to improve their quality of life.

It is challenging to make an educated guess regarding the role of each SELF-A item in the network, as prior research has typically used the SELF-A as a unidimensional construct without examining specific items or subsets (Ahmad et al., 2024; Fenning & May, 2013; King-Sears & Strogilos, 2020; Mangus et al., 2021; Saroughi & Kitsantas, 2021; Stubbs & Maynard, 2017). As latent factors and network structures can, under certain conditions, be statistically equivalent (Van Bork et al., 2021), it is reasonable to infer that items showing strong factor loadings in previous studies may also emerge as central nodes in the network. Hence, drawing on the original validation study (Zimmerman & Kitsantas, 2007), four items with the highest factor loadings may be candidates for central positions in the network: Item 2 ("summarize complex lecture notes"), Item 7 ("associate new concepts with old ones"), Item 12 ("change other priorities to have enough time for studying"), and Item 14 ("motivate oneself for a disliked subject"). Moreover, even though the SELF-A has been treated as unidimensional, an inspection of its item content may suggest a potential for grouping. Five conceptual groups can be proposed based on the behavioral focus of the items: cognitive and meta-cognitive strategies (e.g., summarize complex lecture notes), motivational and self-regulatory control (e.g., motivate oneself for a disliked subject), social management (e.g., find another student to explain the lecture notes), priority and time management (e.g., change other priorities to have enough time for studying), and evaluative and reflective learning (e.g., go back to notes and locate the forgotten information). A meta-analytic study examining non-intellective correlates of academic achievement found that effort regulation played a substantial role (Richardson et al., 2012), highlighting its importance as a modifiable self-regulatory process that has consistently predicted university students' GPAX above and beyond prior performance and cognitive ability. Therefore, it can be proposed that the items reflecting motivational and self-regulatory control (i.e., Items 3, 9, 10, 14, and 15) may potentially exhibit a distinct relationship with academic achievement in the network. If this educated guess holds, educators should focus on fostering students' efficacious beliefs through performance accomplishment strategies, such as providing structured, step-by-step opportunities for students to gradually learn and integrate these motivational and self-regulatory skills into their academic routines.

Accordingly, this study aimed to investigate the network structure of the SELF-A, with and without two criterion variables, to address these research questions:

1. Which domain(s) of academic self-efficacy exert the greatest influence within the SELF-A network? This question is addressed through the interpretation of network centrality indices from network analysis (without the criterion variables).
2. Which domain(s) of academic self-efficacy exhibit the shortest path to the criterion variables, and what is the likely direction of these associations (i.e., from specific SELF-A items to the criterion variables or vice versa)? This question is addressed through the interpretation of bootstrapped partial correlations and shortest path lengths from network analysis, and directional inferences from Bayesian network analysis.
3. Does the structure of the SELF-A network differ as a function of certain covariates (i.e., students' gender, years of study, and an averaged score of the SELF-A)? This question is addressed through split network models from network tree analysis.

Answering these research questions will hold significant implications for psychologists, educators, and practitioners regarding policies and interventions that tackle academic tasks or activities perceived by students as particularly challenging (i.e., low self-efficacy). This study offered a different viewpoint from the study by Hu et al. (2024) in that it emphasized an item-level analysis with two important outcomes in college/university life. From an applied perspective, identifying the behavioral domains wherein efficacy beliefs play a significant role in predicting academic and mental health outcomes will be informative for practitioners to design focused interventions and guidelines aiming at these critical aspects of academic endeavors. Figure 1 displays the research framework with the operationalization of the focal variables. Notably, lines rather than directional arrows were used to depict associations, in order to reflect the study's neutral stance on directionality prior to conducting Bayesian network analysis.

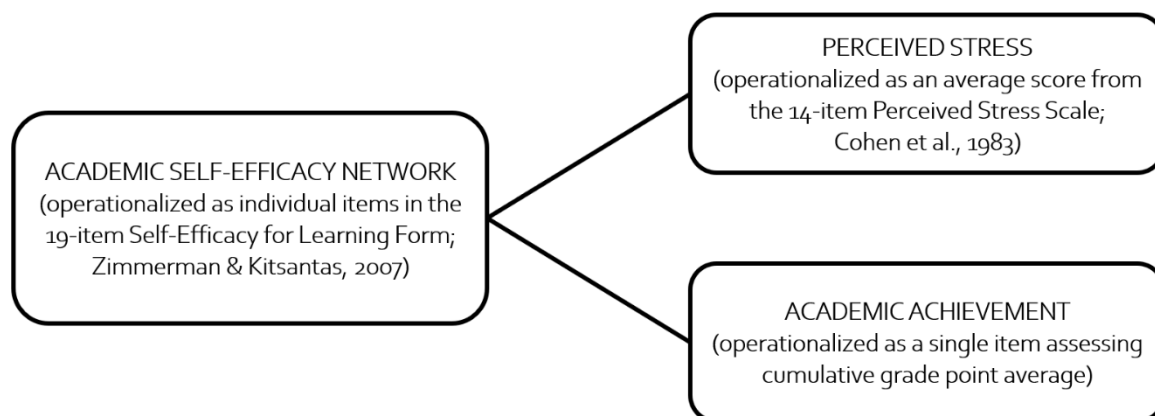


Figure 1: The Research Framework

3. Methods

Procedures and Participants

Utilizing a secondary data analysis approach, this study used a subset of data from the work of Ngamake et al. (2013). With ethical approval granted by the university of the third author in the original study, the original study collected four-wave data, with a two-week interval between the second and eighth weeks of the spring (second) semester, from undergraduate students enrolled in various departments and programs at a large university in Thailand. Students reported demographic information and four psychological predictors (i.e., academic

coping strategies, academic self-efficacy, self-regulation, and achievement goals) during the first wave and reported their stress levels across all four waves. Of the 439 students who participated in the first wave, only 198 students (45.1%) completed all four waves, and the original report used data exclusively from this longitudinal subset. For the present study, the data from the first wave ($N = 439$) were used, with GPAX, academic self-efficacy, and stress as the focal points of the investigation. This data set has not been used in any prior research. Interested readers who would like to access the data set may contact the first author, who can provide it upon reasonable request. The participants comprised 96 male (21.9%), 335 female (76.3%), and 8 transgendered (1.8%) students, with an average age of 20.4 years ($SD = 2.5$ years). The majority were first-year students ($n = 144$; 32.8%) and the breakdown of the GPAX was as follows: 144 students (26.0%) attained a GPAX between 3.60 and 4.00, 136 (31.0%) between 3.20 and 3.59, 115 (26.2%) between 2.80 and 3.19, 52 (11.8%) between 2.40 and 2.79, and 22 (5.0%) below 2.40.

Measures

This study's measures comprised four items and two psychological scales. Three demographic items captured participants' sex, age, and years of study. As a proxy of academic achievement, a single item assessed participants' GPAX using an ordinal response format with five categories: below 2.40, 2.40-2.79, 2.80-3.19, 3.20-3.59, and 3.60-4.00. The two psychological measures were the SELF-A (Zimmerman & Kitsantas, 2007) and the Perceived Stress Scale (PSS; Cohen et al., 1983). Both measures were translated into Thai and subsequently back-translated to ensure semantic equivalence with the original versions.

The Self-efficacy for Learning Form

The SELF-A (Zimmerman & Kitsantas, 2007) contains 19 items measuring students' academic self-efficacy with an emphasis on self-regulated learning. Item examples are "When you miss a class, can you find another student who can explain the lecture notes as clearly as your teacher did?" and "When you find that you had to 'cram' at the last minute for a test, can you begin your test preparation much earlier so you won't need to cram the next time?" We modified the response format from 0-100 with 10-point increments to 0-10 with 1-point increments for practical purposes. Higher scores on the SELF-A indicated greater levels of academic self-efficacy. From its validation study, the SELF-A scores yielded a well-fitting unidimensional factor structure, along with an excellent internal consistency reliability ($\alpha = .97$). Although the summative score of the SELF-A was not central to the present study, the SELF-A scores in the current sample exhibited good internal consistency reliability, with an alpha coefficient of .93 and an omega coefficient of .93. The list of the 19 SELF-A items is provided in Table A1 in the Appendix. To examine whether the SELF-A maintained its unidimensional structure, we conducted a parallel analysis and a confirmatory factor analysis (CFA). The result of the parallel analysis indicated that only the first factor's eigenvalue exceeded the corresponding eigenvalue derived from simulated and resampled datasets, supporting a single-factor solution. Specifically, the first factor's eigenvalue (8.84) was approximately 8.5 times larger than the second factor's eigenvalue (1.04). Moreover, even though the CFA indicated a mediocre fit ($\chi^2[152, N = 439] = 441.3, p < .05, CFI = .926, RMSEA = .066, \text{ and } SRMR = .042$), an inspection of the residual correlation matrix showed that the sources of misfit were scattered rather than concentrated within specific item clusters. Only 4 out of 171 residual correlations had absolute values greater than .10, suggesting that the sources of misfit could not be located exactly and that the SELF-A was unlikely to possess a multidimensional structure. Of note, all

factor loadings were statistically significant, with standardized estimates ranging from .47 to .74.

The Perceived Stress Scale

The PSS (Cohen et al., 1983) contains 14 items (with 7 items reverse-scored) asking respondents to indicate the extent to which they have experienced stress-related feelings and thoughts over the past two weeks. Item examples are "In the last two weeks, how often have you been upset because of something that happened unexpectedly?" and "In the last two weeks, how often have you dealt successfully with irritating life hassles?" (reverse-scored). The response format was 0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often. A composite score was derived by averaging all item responses, accounting for the reverse-scored items, with higher scores denoting greater stress levels. In its original study, the PSS scores had good internal consistency reliability (alphas ranging from .84 to .86 across three independent samples) and had positive associations with the number of life events and the severity of physical symptoms experienced (Cohen et al., 1983). In the context of this study, the PSS scores demonstrated adequate internal consistency reliability, with an alpha coefficient of .71 and an omega coefficient of .73.

Analyses

As there was a small amount of item-level missing data on academic self-efficacy and perceived stress (less than 1%), the expectation-maximization algorithm was used for missing data imputation (Graham, 2009), using the Amelia package within the R environment (Honaker et al., 2011). There were no missing data on academic achievement (operationally assessed via a single-item GPAX) or other demographic variables, except for years of study (e.g., freshman, sophomore, and so on). Therefore, three students who did not report their years of study were excluded from the network tree analysis, where this variable served as a splitting covariate.

Psychological networks were constructed to investigate the structural interrelations among the SELF-A 19 items, with and without criterion variables (perceived stress and academic achievement). For the network without the criterion variables, the primary objective was to identify the most influential item(s), using closeness centrality and expected influence indices. For the network with the criterion variables, the primary objective was to identify the item(s) that have a direct relationship with each criterion, as well as to locate the shortest paths from certain items (i.e., those with the lowest means) to these criteria. Because GPAX comprised five ordered categories, it was treated as an ordinal variable. Accordingly, we computed polychoric correlations between GPAX and the other nodes in the network to obtain a more accurate estimation of associations. We adhered closely to the reporting standards for psychological networks recommended by Burger et al. (2023). The psychological networks were estimated using the ggmModSelect method with a stepwise procedure in the qgraph package (Epskamp et al., 2012). Essentially, the ggmModSelect method estimates a series of networks with varying degrees of regularization (i.e., reducing model complexity by shrinking network edges, with some weak edges being shrunk to exactly zero). Once the edges fixed at zero were determined, each network was then reestimated as partial correlations without regularization, and the network with the lowest Bayesian Information Criterion (BIC) was selected and then refined by adding and subtracting edges in a stepwise fashion until the optimal BIC was obtained. Simulation studies have demonstrated that the ggmModSelect method performed well, especially for centrality estimation and network replicability (Isvoranu &

Epskamp, 2023). For visualization, the network layout was constructed using the Fruchterman-Reingold algorithm, which is a default option in the qgraph package.

Two centrality indices, closeness centrality and expected influence, were emphasized in this study. The closeness centrality signifies the influence of a node on other nodes within a network, such that a change in a node with a high closeness centrality will rapidly spread its impact throughout the entire network. Originally developed for use in mental disorder networks, the expected influence signifies the influence of a node on its local nodes, taking the direction (i.e., positive and negative) of an edge into account, with an aim "to assess the nature and strength of a node's cumulative influence within the network" (Robinaugh et al., 2016, p. 748). There are two types of expected influence: one-step expected influence and two-step expected influence. One-step expected influence captures a node's influence on its immediate neighbors, while two-step expected influence captures a node's influence on its immediate neighbors and their subsequent connections. This study considered both types of expected influence, with closeness centrality computed via the qgraph package (Epskamp et al., 2012) and the two types of expected influence computed via the networktools package (Jones, 2024). To gauge the stability of the centrality indices and the variability of parameter estimates, we employed a bootstrapping technique. That is, a set of 1,000 bootstrapped samples with a decreasing proportion of sample sizes was generated to investigate the stability of the centrality indices (Epskamp et al., 2018) and a separate set of 1,000 bootstrapped samples was generated to calculate a split-0 bootstrapped confidence interval (split-0 BCI; Fried et al., 2022). This bootstrapping technique was implemented via the bootnet package (Epskamp et al., 2018), and more technical details about each bootstrapped sample set were described in the Results section.

To further explore the differences in network structures, we conducted a network tree analysis with an 8-item version of the SELF-A (along with the two criterion variables) as nodes and students' gender, years of study, and an averaged score of the SELF-A as potential splitting covariates. Due to the limited number of students who self-identified as transgendered or were in their fifth year of study, the network trees were analyzed with only male and female students, and the fourth- and fifth-year students were combined into a single category ($n = 431$). These eight items were selected to optimize large-scale screening, using an ant colony optimization algorithm (Leite et al., 2008) to retain items with high factor loadings, as well as measurement invariance across genders (for factor loadings and intercepts), while simultaneously their latent factor had strong predictive utility in relation to these two criterion variables. Using the networktree package (Jones et al., 2020), a partial correlation network was constructed with a model-based recursive partitioning algorithm applied for network splitting. Unfortunately, the networktree function does not currently support polychoric correlations as input data. However, this limitation was unlikely to have a substantial impact on the results, as the discrepancy between Pearson and polychoric correlation coefficients was negligible (averaging only .005, with the largest difference being only .009). The goodness-of-fit measure was computed for split samples, and the splitting covariate and its cut point that yielded the most improved goodness-of-fit measure (returning the smallest p-value) were selected. The splitting process was halted when no further split resulted in a significant improvement in the goodness-of-fit measure.

For the Bayesian network analysis, we focused on structure learning to identify directed relationships between nodes, based on a joint probability distribution among variables (Scutari, 2010). The structure of Bayesian networks relies on the concept of d-separation (Pearl et al., 2016), which asserts that two nodes are statistically independent when controlling for their common causes and intervening variables but not for their common effects (Hayduk et al.,

2003). Hence, in Bayesian networks, if two nodes do not have a directed edge connecting them (in other words, they are "d-separated"), they are either independent or conditionally independent when controlling for other nodes. In contrast, if two nodes have a directed edge, they are dependent; that is, a causal relationship can be statistically assumed but cannot be firmly ascertained, as Bayesian networks identify only admissible or probabilistically inferred causal pathways rather than verified causal mechanisms (interested readers may refer to Briganti et al. [2023] and Darwiche [2010] for further explanation on how directed edges in Bayesian networks can be interpreted as probabilistic inferences of causal relationship within cross-sectional data).

We used the bnlearn package (Scutari, 2010; Scutari & Denis, 2015) for Bayesian network analysis. To confidently identify directed edges within Bayesian networks, a bootstrapping technique (Friedman et al., 2013) was combined with a hill-climbing algorithm (HC). In particular, a certain number of bootstrapped samples (1,000 in this study) were drawn with replacements from the original sample. Data from each bootstrapped sample were subject to the HC to derive a network structure. As a score-based structure learning algorithm, the HC begins with an initial network (typically devoid of edges) and then adds or subtracts an edge, or reverses its direction, one edge at a time, and computes a network score (usually BIC) that reflects the goodness-of-fit between the structure of the network and the dependency of the data (partial correlation in the case of this study, where Gaussian Bayesian network was estimated; Briganti et al., 2023; McNally, 2016). When the network score can no longer be improved, the algorithm returns the final network. However, the HC usually suffers from local dependence, where the resulting network may not have the highest score possible (i.e., local maxima rather than global maxima). This problem can typically be overcome through a restarting process with randomly added/subtracted/reversed edges, but for this study, the bootstrapping technique was used to address the local maxima problem instead. The resulting networks from each bootstrapped sample were averaged to generate a stable network structure. Researchers may set a criterion for retaining edges in the network to get a more robust network structure (McNally, 2016). For this study, an edge that appeared in more than 80% of the bootstrapped samples was retained. A simulation study of the bootstrapping method (Friedman et al., 2013) found that this method is quite conservative in that bootstrapped samples contain a small number of false positive edges, and this number is usually smaller than that of false negative and true positive edges. That is, when there is no relationship between nodes in the "true" network, the bootstrapped networks are less likely to produce a spurious relationship, rendering increased confidence in the detected edges.

The focus of the Bayesian network in this study was on learned network structures, rather than learned parameters. Specifically, our interest lay in examining whether the network structure derived from the Bayesian network corresponded to that derived from the network analysis, rather than in estimating parameters or predicting the magnitude of the criterion variables. Hence, we opted to retain the Gaussian Bayesian network, as opposed to a hybrid Bayesian network (which combines discrete and continuous variables), despite the fact that GPAX was measured on a five-point ordinal scale. This approach has been supported by several lines of evidence: (a) the observed distribution of GPAX did not substantially deviate from normality (skewness = -0.49 and kurtosis = -0.54); (b) as noted earlier, the Pearson correlation coefficients between GPAX and the other variables were comparable to their corresponding polychoric correlation coefficients; and (c) a simulation study (Zhu & Nguyen, 2024) demonstrated that, for network structure learning, treating all variables as continuous and estimating a Gaussian Bayesian network yielded a reliable network configuration. Specifically, Zhu and Nguyen (2024) introduced a "Run it As Gaussian" strategy to estimate a Gaussian Bayesian network

while treating a mixture of continuous and ordinal variables as if they were all continuous. They found that this strategy performed comparably to computationally intensive methods that model the joint distribution of continuous and ordinal variables and outperformed methods that discretize continuous variables (which can lead to information loss).

4. Results

Data from the SELF-A and the two criterion variables were subjected to descriptive analysis. On a scale ranging from 0 to 10, the SELF-A items had averaged scores ranging from 6.17 (Item 3 "motivate oneself to keep good notes from a boring lecture") to 7.65 (Item 9 "keep up with assignments despite having problems with friends and peers"), implying the most and least challenging tasks, respectively. The score distributions from all items were approximately normal, with skewness ranging from -0.67 to -0.23. Inter-item correlation coefficients varied between .25 and .61 with an average inter-item correlation of .43. At the scale level, academic self-efficacy had a mean of 7.13 (SD = 1.42), and perceived stress had a mean of 1.73 (SD = 0.42) on a response scale from 0 to 4. Academic self-efficacy yielded a negative relationship with perceived stress ($r = -.30, p < .01$) and a positive relationship with academic achievement ($r = .17, p < .01$). Perceived stress was not related to academic achievement ($r = -.07, p = .13$), however.

Network Analysis

Partial correlation data from the SELF-A items were subjected to psychological network analysis. As depicted in Figure 2, all the edges in the network demonstrated a positive relationship, supporting the internal structure of the measure. Given that Item 3 had the lowest mean, signifying a very challenging task in the academic realm, identifying other nodes that have a strong connection to this item may be valuable in helping students cope with this academic demand. The four items with the shortest paths to Item 3 were Items 2, 4, 10, and 14, demonstrating the importance of making notes and summaries from lectures (Items 2 and 4), attention and concentration (Item 10), and self-motivation (Item 14). Moreover, when examining the centrality indices (i.e., closeness centrality and expected influence), two items stood out. Illustratively, Item 12 ("change other priorities to have enough time for studying") had the highest closeness centrality and ranked second and third in one-step and two-step expected influence, respectively. Also, Item 17 ("find a way to associate technical details of a concept together that will ensure recall") had the highest one-step and two-step expected influence and ranked second in closeness centrality. To further examine the stability of node centrality (i.e., closeness and one-step expected influence), we bootstrapped 1,000 samples with decreasing sample sizes from 5% to 60% (in 5% increments) and tested for the maximum proportion of sample size that could be dropped such that the 95% confidence interval of the relationship between the original centrality indices and those computed from the resampled subsets remained above .70 (for "stable" node centrality, the proportion of the sample sizes dropped should be at least 25%; Epskamp et al., 2018). We found that closeness centrality was not stable (the proportion of sample size that could be dropped was less than 5%), while one-step expected influence was stable (the proportion of sample size that could be dropped was around 45%). Despite the instability in closeness centrality at the global level, an inspection of node-wise closeness centrality from bootstrapped samples showed that Items 12, 14, 17, and 18 consistently exhibited higher closeness centrality than the other items, even though the ranking of these items fluctuated across resampled subsets (see the Appendix for a supplementary table presenting the closeness centrality and expected influence of each item,

along with three supplementary figures displaying the stability of node-wise closeness centrality and expected influence across the resampled subsets).

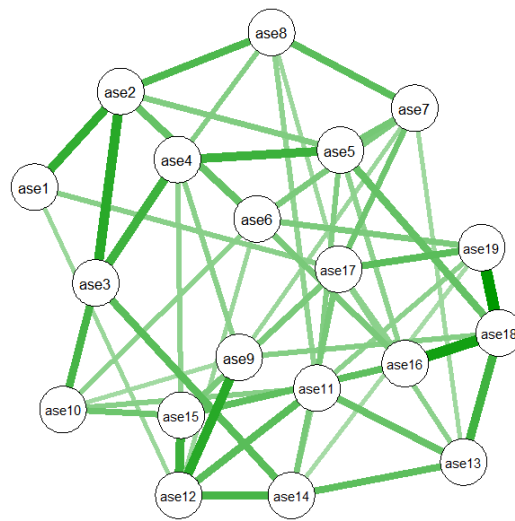


Figure 2: A 19-item ggmModSelect Network

Note: N = 439; EBIC tuning parameter (γ) = 0, leading to BIC model selection.

Next, two criterion variables (i.e., perceived stress and academic achievement) were included in the network. A ggmModSelect network indicated that Item 4 "clarify the confusion of the instructor's lecture" and Item 7 "associate new concepts with old ones" had a direct, negative relationship with perceived stress, and only the latter had a direct, positive relationship with academic achievement (Figure 3). For parameter estimation (i.e., partial correlation), we generated 1,000 bootstrapped samples in order to calculate a split-0 BCI. According to Fried et al. (2022), a split-0 BCI contains two pieces of information: (a) a 95%BCI computed only from bootstrapped samples with a non-zero parameter estimate; and (b) the proportion of the bootstrapped samples with a non-zero parameter estimate. This split-0 BCI is suitable for the ggmModSelect method, where certain edges were fixed (as opposed to regularized) as zero. However, Fried et al. (2022, p. 136) have warned that this split-0 BCI should be interpreted merely as "variability in parameter estimates that is to be expected in the data", rather than in the same way as a typical confidence interval (CI) such that it contains the true parameter value with a predetermined probability (e.g., 95%). As a result of the bootstrapped samples, a negative partial correlation between Item 4 and perceived stress was observed (parameter estimate = $-.13$ and 95% split-0 BCI = $[-.21, -.10]$ with 48.9% of bootstrapped samples having a non-zero coefficient). Item 7 also demonstrated a negative partial correlation with perceived stress (parameter estimate = $-.17$ and 95% split-0 BCI = $[-.23, -.10]$ with 83.4% of bootstrapped samples having a non-zero coefficient) while showing a positive partial correlation with academic achievement (parameter estimate = $.13$ and 95% split-0 BCI = $[.09, .20]$ with 44.5% of bootstrapped samples having a non-zero coefficient). Furthermore, when examining shortest path lengths between nodes, Item 7 had the shortest path to both perceived stress (shortest path length = 5.65) and academic achievement (shortest path length = 7.25) while Item 4 had the next shortest path to perceived stress (shortest path length = 7.33). Moreover, when focusing on the items with relatively low descriptive means (i.e., below 7.0; Items 2, 3, 10, and 14) and their connections to the criterion variables, we found that the shortest paths involved only a few intermediary items (Figure 4). The relationship between Items 3 and 4 seemed to serve as a

bridging edge, linking Items 2, 10, and 14 to perceived stress. For academic achievement, Items 6, 8, and 17 seemed to connect the items with relatively low descriptive means to Item 7 and then advance to academic achievement. This outcome may highlight the roles of learning techniques to summarize and integrate course content into a coherent whole (Items 6 and 17) and studying with peers/classmates (Item 8) on students' academic achievement.

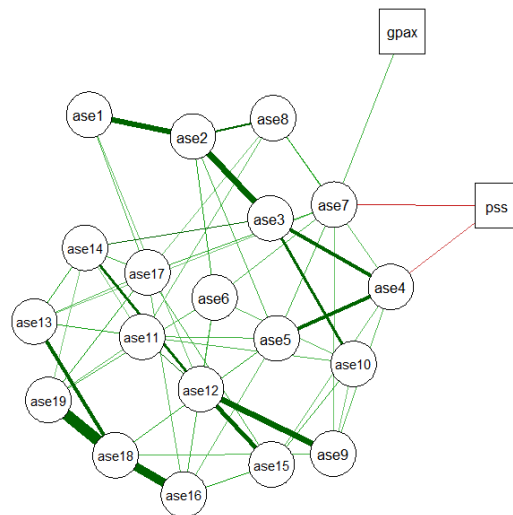


Figure 3: A ggmodSelect Network with the Criterion Variables

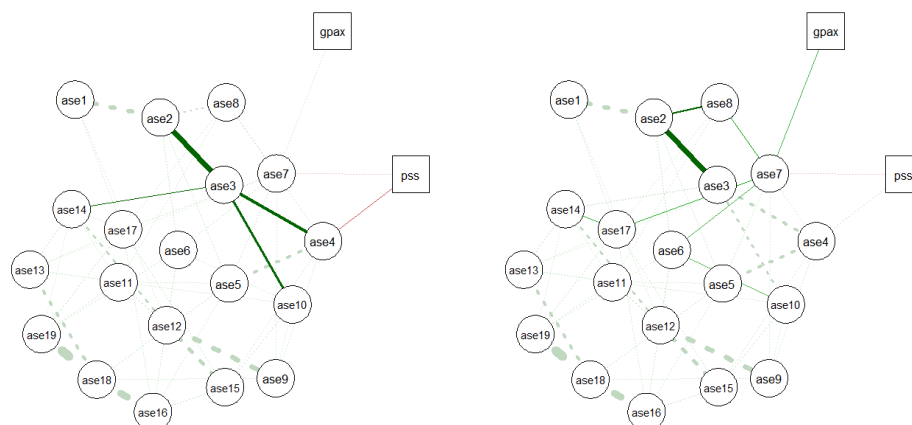


Figure 4: Shortest Paths from Items 2, 3, 10, and 14 to Perceived Stress (Left) and Academic Achievement (Right)

Network Trees

To begin with, the 8-item SELF-A network was analyzed. We found that students' gender was the only significant splitting covariate ($p = .035$). Figure 5 displays juxtaposed networks (left) and a contrasted network (right). With eyeballing, the male network appeared denser and contained some negative relationships between nodes, which were absent in the female network. An inspection of node centrality revealed that, for the male network, Item 18 "go back to notes and locate the forgotten information" had the highest closeness centrality, and Item 12 "change other priorities to have enough time for studying" had the highest one-step expected influence. For the female network, Item 14 "motivate oneself for a disliked subject" had the highest

closeness centrality as well as the highest expected influence. When contrasting a set of partial correlations between the two networks, we can classify the most different edges into three groups. The first group contained the edges between Items 3 and 18 and between Items 13 and 16, where male students yielded a positive relationship while female students yielded a null relationship (partial correlation coefficients with an absolute value less than .10). The second group contained the edges between Items 6 and 16, between Items 13 and 14, and between Items 16 and 17, where female students had a positive relationship, while male students had a null relationship. The third group contained the edges between Items 3 and 13 and between Items 14 and 18, where male students exhibited a negative relationship while female students exhibited a null relationship. Upon incorporating the two criterion variables (i.e., perceived stress and academic achievement) into the 8-item SELF-A network, no splitting covariates yielded a significant result (with the total score of SELF-A yielding the smallest p-value of .11).

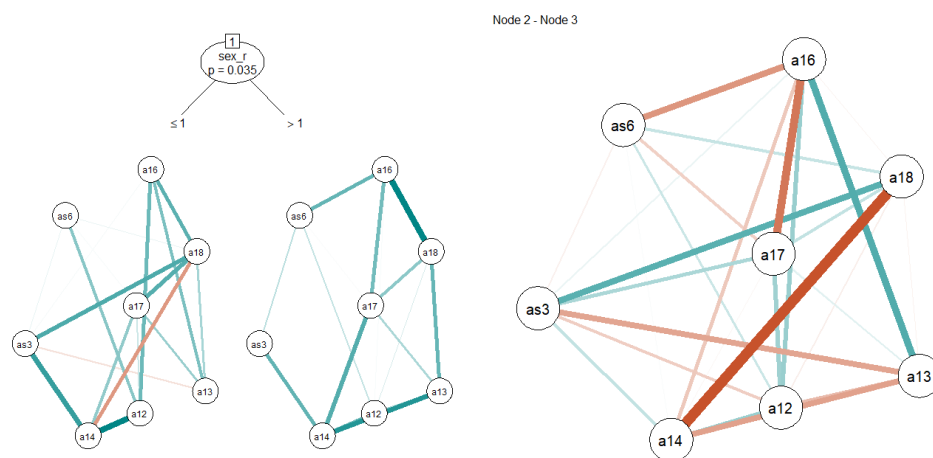


Figure 5: The 8-item SELF-A Network Tree

Note: $n = 431$; partial correlations with only an absolute value of at least .10 were shown. " ≤ 1 " was the male group, and " > 1 " was the female group. As a further note, we also estimated a network tree that included all 19 items of the SELF-A. The resulting networks (both with and without the criterion variables) showed comparable structures, and no statistically significant splits were detected based on the splitting covariates.

A Bayesian Network

To further examine the directionality of the relationship between the SELF-A items and the two criterion variables, a Bayesian network was constructed. No a priori constraints were imposed on the role of the nodes. More specifically, we did not inhibit (or "blacklist") the direction from the two criterion variables to the SELF-A items, allowing for the possibility that perceived stress and/or academic achievement might statistically impact academic self-efficacy. One thousand bootstrapped samples were generated, and structure learning was performed for each sample using the HC. The bootstrapped networks were averaged to create a more robust network structure, in which only edges surpassing a predefined threshold were realized. Applying a threshold of .80 (edges that appeared in at least 800 bootstrapped samples), Figure 6 displays the averaged network, where the thickness of the edges conveyed the degree of confidence in the relationships between nodes (the thicker the edge, the higher the confidence). Four impressions can be discerned from the Bayesian network: (a) Item 7 had a relationship with perceived stress, with the direction more likely flowing from the former to the latter rather than vice versa (i.e., directed probabilistic dependencies; McNally, 2016); (b) academic

achievement had no association with any items; (c) two items (Items 12 and 18) were root nodes, serving as common antecedents to many items; and (d) four items (Items 1, 9, 10, and 13) were terminal nodes. To facilitate understanding and provide a clearer overview of the findings, Table 1 presents a summary linking the research questions, methodological approaches, and key findings with their corresponding implications.

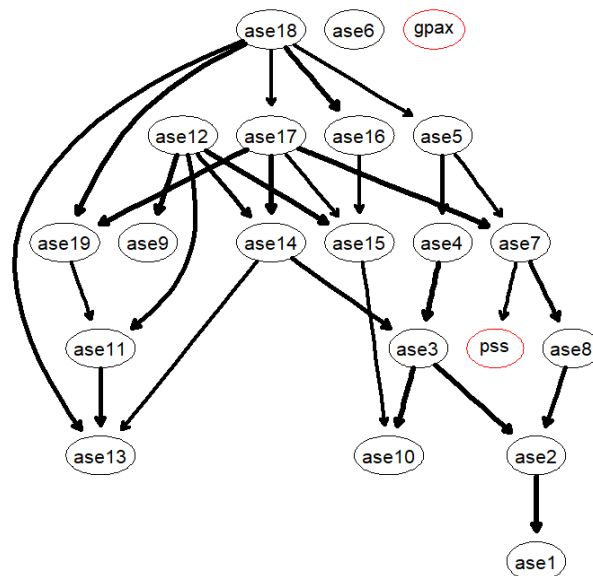


Figure 6: An Averaged Bayesian Network with Threshold = .80

Note: gapx represented academic achievement, and pss represented perceived stress.

Table 1: A Summary of Research Questions, Methodological Approaches, and Research Findings and Implications

Research Questions	Methodological Approaches	Key Findings and Implications
1. Which domain(s) of academic self-efficacy exert the greatest influence within the SELF-A network?	Network analysis with centrality indices	Item 12 ("change other priorities to have enough time for studying") and Item 17 ("find a way to associate technical details of a concept together that will ensure recall") emerged as the most influential nodes. Increasing efficacy beliefs in these domains may effectively strengthen efficacy beliefs in the other domains (the other nodes).
2. Which domain(s) of academic self-efficacy exhibit the shortest path to the criterion variables, and what is the likely direction of these associations?	Network analysis with bootstrapped partial correlations and shortest path lengths, and a Bayesian network with a directed relationship	Item 7 ("associate new concepts with old ones") consistently demonstrated a statistical impact on perceived stress. Increasing efficacy beliefs in this domain, as well as related learning skills, may serve as a protective factor against academic stress.

3. Does the structure of the SELF-A network differ as a function of certain covariates?	Network trees (a combination of network analysis with model-based recursive partitioning)	Only the 8-item SELF-A networks (without criterion variables) varied between genders. The most influential nodes (from the abbreviated version of the SELF-A) may be different between male and female students, underscoring the need for gender-sensitive approaches in intervention.

5. Discussion

The aim of the study was to explore the network structure of the SELF-A both as a standalone instrument and in relation to two criterion variables. In essence, the SELF-A network suggested that Items 12 and 17 were highly influential, meaning that changes in efficacy beliefs related to setting/rearranging priorities to allow more time for studying (Item 12) and associating/integrating details of a concept to enhance recall (Item 17) would be more likely to impact efficacy beliefs in other academic demands. Moreover, Item 7 seemed to associate with both criterion variables while Item 4, though not as consistently, seemed to associate with perceived stress. The impact of Item 7 on perceived stress was further supported by the Bayesian network. Considering the content of these items (Items 4, 7, 12, and 17) into account, it is arguable that efficacy beliefs in behaviors related to time and priority management (Item 12 and, to some extent, Item 4, which taps how students manage their weekly schedules from the phase "before the next class meeting") as well as concept association techniques or strategies (Items 7 and 17) may be of great importance for maintaining or even increasing overall levels of academic self-efficacy. Furthermore, efficacy beliefs in these behavioral domains may help students cope with academic stressors and enhance academic achievement. Beyond their direct implications for academic self-efficacy, it may be generalizable that mastering time management and concept association skills can help students effectively respond to academic demands and succeed in education.

In the context of Bayesian networks applied to psychopathology, McNally (2016) suggested three conditions under which researchers can be more confident in causal inference: (a) when the direction of the relationship between nodes is consistently observed (e.g., by bootstrap sampling); (b) when the relationship is conceptually and practically justifiable; and (c) when no other unmeasured variables could potentially affect the relationship. From 1,000 bootstrapped samples for the Bayesian network, the relationship between Item 7 and perceived stress has been observed 81.7% of the time, and 90.5% of the relationships observed evinced the direction from the former to the latter. This relationship is conceptually and practically reasonable, as students who possess strong efficacy beliefs regarding their learning processes are presumably less susceptible to stress, especially when learning new concepts. Despite the first two conditions being feasible, we could not ascertain the absence of unobserved variables affecting this relationship. For example, it is conceivable that learning skills themselves can be a common cause of both efficacy beliefs and stress, such that students with strong associative learning skills will have strong efficacy beliefs in leveraging these skills and experience low stress. Although a causal association could not be strongly entertained from the network, researchers can obtain an idea to generate a hypothesis from the relationship between Item 7 and perceived stress. Specifically, beliefs regarding one's learning skills and techniques (i.e., concept association or assimilation) may predict stress levels. Furthermore, beyond one's own

beliefs, learning skills and techniques in and of themselves could be a target of interventions to ameliorate mental health difficulties among university students. This proposition has been partly supported by research evidence suggesting a relationship between associative learning techniques and learning performance (e.g., Blunt & Karpicke, 2014), but empirical investigations examining the relationship between learning techniques and mental health outcomes seemed to be lacking (except the work of Hossan and Islam [2019] with a narrow application).

From a theoretical standpoint, students who believe in their ability to use learning techniques or strategies (e.g., generating explanations, predictions, or concept maps; Brod, 2021) are more likely to integrate these techniques/strategies into their study routines. This practice, in turn, may help them achieve academic goals. However, research focusing primarily on self-efficacy in utilizing learning techniques/strategies has been rare. Recently, Greco et al. (2022) developed a scale assessing academic self-efficacy with eight dimensions, two of which tap efficacy beliefs related to learning techniques (i.e., learning strategies and skills for lessons). Although these dimensions yielded a positive relationship with exam outcomes, an in-depth examination of their item content revealed that they may reflect more on preparing for an exam than on applying learning techniques. Closely related, Ruiz-Martín et al. (2024) explored the relationship between learning techniques used by secondary school students and their cognitive and motivational factors. They found a positive association of academic self-efficacy with focusing, high elaboration, and retrieval practice, but not with low elaboration and spaced practice. Moreover, Karr and White (2024) investigated the relationship between academic self-efficacy and cognitive strategy use (e.g., attention and processing speed) in everyday life. Their findings demonstrated a small, positive relationship between academic self-efficacy and cognitive strategy use in both college students experiencing elevated levels of depression and anxiety and a non-clinical control group (correlation coefficients between .14 and .19). As various learning techniques can help students overcome academic demands and improve academic outcomes (e.g., Bisra et al., 2018; Brod, 2021), research on academic self-efficacy should further explore the role of efficacy beliefs in using learning techniques on learning behavior and academic achievement. To date, the relationship between academic self-efficacy and learning techniques has been blurred perhaps due to inconsistencies in item content. To illustrate, the academic self-efficacy scale used in Ruiz-Martín et al.'s study addressed primarily the "ability to successfully complete school tasks and assignments" (Ruiz-Martín et al., 2024, p. 7), rather than the ability to successfully use certain learning techniques. As a consequence, this research procedure led Ruiz-Martín et al. to contend that academic self-efficacy may likely result from prior academic success, and facilitating students in learning and using evidence-based learning techniques would improve their academic performance and, in turn, enhance their academic self-efficacy. While the above contention is reasonable given the authors' research procedure, we believe that refining the item content of academic self-efficacy scales to focus more explicitly on behaviors related to the application of learning techniques (perhaps as a distinct dimension) would provide further insight into the relationship between academic self-efficacy and academic outcomes.

From the perspective of the transactional model of stress and coping (Lazarus & Folkman, 1984), students may perceive academic challenges (as a primary appraisal of demands) and evaluate whether they have adequate learning skills and techniques to cope with such challenges (as a secondary appraisal of resources). Given this framework, it is arguable that well-developed learning skills/techniques can mitigate the negative effects of academic stressors, and students and educators may consider developing these skills/techniques as an adaptive coping mechanism. However, the role of learning skills/techniques as a coping

strategy may often be overlooked in research on how students cope with academic demands. For example, the Academic Coping Strategies Scale (ACSS; Sullivan, 2010) contains 34 items measuring three dimensions of academic coping: approach, avoidance, and social support. Yet, none of its items directly address the concept of improving one's learning skills (the closest is Item 25 "put forth more effort into developing skills to master the problem", but this item does not specify what skills are). In addition, the Coping With Academic Demands Scale (CADS; Suldo et al., 2015) covers a wide range of coping strategies for academic demands, but it lacks a dimension focusing on using appropriate learning techniques to manage students' workload. Given this gap, fostering learning techniques and strategies could be added to academic coping scales, either as discrete items or as a coherent dimension within the family of approach coping. As both a belief in one's ability to use certain learning techniques and the actual ability to employ such techniques can be considered resources in the transactional model and, more broadly, within the stress and coping paradigm, students may benefit from equipping themselves with learning techniques in their toolbox, especially for handling academic demands and reducing stress levels.

In light of associations with the criterion variables, there were inconsistent findings between the undirected (psychological) network and the directed (Bayesian) network. Specifically, the relationships between Item 4 and perceived stress and between Item 7 and academic achievement were present in the psychological network but absent in the Bayesian network. This divergence was not surprising as these two networks relied on different algorithms to estimate their structures, and the 80% threshold in the Bayesian network seemed to be a more conservative criterion for relationship detection. With a bootstrapping technique to simulate the resampling distribution, we found that the relationships between Item 4 and perceived stress and between Item 7 and academic achievement were obtained in fewer than half of the bootstrapped samples (45.9% and 44.0%, respectively). However, among the subsets in which these relationships did emerge, more than four-fifths indicated a directional effect originating from the SELF-A items toward the criterion variables (80.9% and 86.1%, respectively). For comparison, the probability of a path between Item 7 and perceived stress was 83.4%, and in 90.5% of these cases, the direction flowed from the former to the latter. This pattern demonstrated analytic robustness in the estimated path, suggesting that the association between Item 7 and perceived stress remained stable across repeated model estimations. Hence, using a bootstrapping technique can be considered a corrective measure for addressing the uncertainty inherent in network-based estimations of directional relationships. Despite the relative uncertainty surrounding these associations, the roles of concept assimilation (Item 7) and concept clarification (Item 4) could not be overstated. Nevertheless, given that the content of Item 4 contains two additional elements (i.e., the temporal aspect "before the next class meeting" and the social aspect "by comparing notes with a classmate"), we could not determine whether these elements play a significant role in predicting perceived stress, above and beyond concept clarification. If these elements prove to be vital, they may advocate the importance of (efficacy beliefs in) time management (Bargmann & Kauffeld, 2023) as well as peer support (Hoferichter et al., 2022) in reducing students' stress levels, but a definitive conclusion could not be assumed at this stage.

In terms of building up students' academic self-efficacy, the role of priority and time management could not be overlooked. In hindsight, it may not be surprising that Item 12 ("change other priorities to have enough time for studying") was very influential in the SELF-A network as students who were good at (confident in) their priority/time management would be more likely to adapt effectively to academic challenges, leading to their confidence in other related tasks. This notion aligns with research suggesting that academic self-efficacy may

mediate the relationship between time management behavior and stress among college students (Galindo-Domínguez & Bezanilla, 2021). Moreover, Bargmann and Kauffeld (2023) found that academic self-efficacy had positive relationships with time management and commitment to study, but a three-wave longitudinal analysis failed to find a mediating role of time management in the relationship between academic self-efficacy and commitment to study. The importance of priority/time management may be pronounced when students are required to engage in self-regulation on a weekly basis, as suggested via the content of Item 4 ("before the next class meeting"). Besides directly promoting time management skills, educators may consider structuring their courses in a way that compels students to manage their schedules right at the beginning of the semester with increasing difficulty (more workload) along the way. Small achievements in managing their time may promote a sense of efficacy beliefs in this task and help students cope with more challenging tasks throughout the semester.

Gender differences have been observed in various aspects of academic self-efficacy research. A meta-analytic study examining the mean differences in academic self-efficacy between male and female students revealed a small effect size ($g = 0.08$) favoring male students in terms of overall (as opposed to domain-specific) academic self-efficacy (Huang, 2013). When disaggregated by subject areas, the analysis revealed that male students had higher academic self-efficacy in the mathematics and computer domains, while female students had higher academic self-efficacy in the language arts domain. Furthermore, gender has been found to moderate the negative relationship between academic self-efficacy and stress in the context of learning mathematics, where the relationship was stronger (more negative) among female students (Ye et al., 2018). Although this study was limited by using the 8-item version of the SELF-A, it added to the literature by pinpointing the potential for gender-based differentiation in academic domains that may be impactful to students' self-efficacy systems. That is, while Item 18 ("go back to notes and locate the forgotten information") and Item 12 ("change other priorities to have enough time for studying") were central to the male network, the female network appeared to be most influenced by Item 14 ("motivate oneself for a disliked subject"). Somewhat interestingly, it has been suggested a potential trade-off between efficacy beliefs in different academic domains in the male network, wherein higher levels of self-efficacy in one domain (e.g., Item 14) corresponded with lower levels in another domain (e.g., Item 18) when controlling for other nodes. This pattern was not observed in the female network. Nevertheless, these gender-related differences described above should be treated as speculative, because no significant difference was observed when incorporating the two criterion variables into the network, and a stricter approach for network comparison (van Borkulo et al., 2023) should be adopted in future studies. It is important to note that these network comparisons were conducted using the abbreviated, 8-item version of the SELF-A. The other items were excluded following the process of validating an ultra-short, invariant version of the SELF-A for large-scale administration. It can be argued that, for item-level network comparisons to yield a result not contaminated by differential item parameters, the comparisons should be conducted using items from an invariant measurement model. When all 19 items of the SELF-A were included, no statistically distinct split networks were observed, indicating that (a) the overall network structure remained largely consistent across the levels of the splitting covariates, or (b) potential non-invariance in certain items may have attenuated observable differences.

Practical Implications

From a practical standpoint, we revisited the constraints imposed by different item content across academic self-efficacy scales. Within the scope of the SELF-A, two behavioral domains emerged as particularly important: managing time and priority, and using associative learning

techniques. Therefore, to enhance academic self-efficacy and, in turn, promote academic achievement and mental health, interventions or guidelines focusing on these two behavioral domains seemed to be warranted. As suggested by Byars-Winston et al. (2017), performance accomplishments have been the most potent source of self-efficacy, and practitioners may design interventions to help students learn how to manage their time and schedule and how to use associative (and other) learning techniques, especially when studying new concepts. Warner and French (2020) have cataloged techniques to facilitate performance accomplishments such as graded mastery experiences and preparation for setbacks. In this vein, students may be encouraged to plan their study schedules on a weekly basis at the outset of the semester, when the workload is easily managed and adjustments are easily done if plans deviate. Likewise, they may be encouraged to gradually associate new concepts with pre-existing knowledge (also at the outset of the semester, when the material is not too much) and periodically use retrieval practice to assist recognition and recall. When deliberately incorporated into course syllabi or curricula, these mastery experiences can be largely self-administered by students with minimal assistance from psychologists and educators. Alternatively, a targeted intervention designed to promote time management and associative learning skills may be particularly useful for students who require additional support. It is important to note that the primary targets of these interventions/guidelines are behavioral outcomes such as rearranging and following schedules, as well as mapping and recalling concepts, whereas academic performance (e.g., test scores) and mental health outcomes should be considered secondary effects or by-products. Somewhat surprisingly, the importance of time management observed in this study has been congruent with research trends in Thailand, where academic procrastination has increasingly been recognized as a critical issue affecting students' academic functioning (Chatrakamollathas et al., 2022; Ratsameemonthon et al., 2018). Considering this convergence, it is plausible that within the Thai educational context, time management, whether it be conceptualized as a skill or as an aspect of self-efficacious beliefs, plays a pivotal role in shaping students' academic success. Accordingly, schools and universities may need to place great emphasis on developing students' time management competence and confidence, possibly by integrating these elements into co-curricular initiatives or extra-curricular programs.

To reiterate, in an ideal scenario with unlimited time and resources, practitioners could cover all behavioral domains from academic self-efficacy scales when designing an intervention. However, within the scope of the present study, some behavioral domains were more important in enhancing academic self-efficacy and predicting related outcomes than others. Practitioners seeking to expand the behavioral domains may consider adding self-motivating strategies (for a disliked subject), as this aspect appeared central to the female network. Among male students, domains related to time management and self-feedback (or self-evaluation and self-assessment) may be critical in their academic self-efficacy network. Other behaviors may be taking and summarizing notes, as well as studying with peers/classmates, because Item 6 ("condense notes down") and Item 8 ("be an effective study partner") were positioned in the shortest paths between the items with low means and academic achievement. Research has demonstrated that summarizing helped students catch and recall important propositions from a lecture more effectively than passive listening (Einstein et al., 1985). Further, peer-learning exercises have been identified as an effective learning technique in certain contexts (e.g., marketing education; Lastner et al., 2021). Although this study did not observe that the academic self-efficacy network differed based on students' years of study, cumulative research has indicated that students' academic self-efficacy tends to increase when they gain more experience in university (Bartimote-Aufflick et al., 2016). Hence, interventions and guidelines aimed at fostering academic self-efficacy may be best applied to first-year students at the start of university life.

Bartimote-Aufflick et al. (2016) also offered some pedagogical strategies to enhance academic self-efficacy; some of which may be aligned with the findings of this study such as using an appropriate amount of hints when applying a concept mapping technique (particularly with new topics) and providing "early low-risk opportunities" to complete small tasks (p. 1930, emphasis added).

At the university level, research has shown that institutional factors and campus environments can enhance students' academic self-efficacy and academic achievement (e.g., Cromley et al., 2016). For example, Museus et al. (2022) found that culturally supportive campus environments (e.g., humanized educational environments and cultural validation) were positively related to an increase in students' academic self-efficacy. Additionally, a review by Cromley et al. (2016) identified a range of institutional approaches to boosting academic achievement and retention among undergraduate students in STEM disciplines. An example of these approaches was the establishment of learning centers offering supplemental instructional programs designed to help students improve their learning and time management skills. In light of this study's findings, it may be advisable for the university or departmental administrative team to provide these activities (either mandatory or optional) to help students build confidence in applying these essential skills. These institutional policies may even be particularly advantageous in the context of Thai higher education, where such activities have been underprovided or overlooked (if not neglected altogether, it has been assumed that students have already acquired these skills from high schools). Perhaps these behavioral domains (learning and time management skills) have been found to be vital in this study because not all students are able to develop these skills by themselves, and those who already possess such skills are better equipped to manage academic demands.

Limitations and Future Directions

The approach of this study was exploratory, leveraging secondary data analysis to scrutinize the role of academic self-efficacy item content in predicting academic achievement and stress. Although a rigorous model selection method and a conservative criterion were used, we did not intend to establish a directed, causal relationship between academic self-efficacy and the criterion variables. Hence, the importance of efficacy beliefs in concept association and time/priority management, as well as their causal direction to academic achievement and stress, needs to be further examined using more robust methods, such as panel or time-series network analyses (Epskamp, 2020) or dynamic Bayesian networks (Needham et al., 2007), which explicitly model probabilistic dependencies over time with longitudinal data. Although learning strategies (e.g., Dunlosky et al., 2013) and time/priority management (e.g., Wolters & Brady, 2021) have been identified as common challenges among students across diverse educational contexts, the generalizability of the present findings should be empirically examined in other cultures and contexts, ideally with a more gender-balanced sample. Moreover, even though the item content in the SELF-A is broadly applicable to learning activities in higher education, there exist other academic self-efficacy scales that capture some interesting tasks in campus life. For example, in addition to the learning strategies and skills for lessons dimensions, the academic self-efficacy scale developed by Greco et al. (2022) contains other intriguing dimensions such as planning academic activities and working in groups. Furthermore, Luo et al. (2021) developed a 12-item scale measuring students' self-efficacy in STEM (science, technology, engineering, and mathematics) activities, with an emphasis on research and problem-solving. Also, a college self-efficacy inventory developed by Gore et al. (2005) taps three primary activities: class, social, and roommate. Although getting along with roommates may not be a universal experience among students (not all reside

in dormitories), it is hard to deny that interpersonal conflicts with roommates can be a barrier for students to concentrate on studying or keeping up with schoolwork. Hence, an item-level analysis of efficacy beliefs in a diverse array of academic tasks and activities will contribute to a better understanding of the multifaceted role of academic self-efficacy in student success. Lastly, while Bandura et al. (1996) mentioned the idea that practitioners should attend to other facets of self-efficacy revolving around children's school experiences, this perspective can be extended to university students. For example, students' social self-efficacy (e.g., building and maintaining peer relationships) and self-regulatory self-efficacy (e.g., resisting peer pressure) or even parental academic self-efficacy (e.g., supporting and motivating students to continue higher education) may be important in fostering students to reach their full potential. Investigating the interplay between self-efficacy and behavior in multiple domains in higher education settings will ultimately benefit students, educators, psychologists, and institutional policymakers.

Conclusion

As a concluding remark, academic self-efficacy can be viewed as a multifunctional psychological construct that has been extensively investigated in relation to various academic outcomes such as achievement and engagement. However, research specifically targeting the behavioral manifestations of academic self-efficacy has been limited, as most studies have treated the construct as an aggregate variable rather than analyzing item-level responses that reveal the behaviors and strategies underlying students' efficacious beliefs in their learning processes. As a consequence, researchers and practitioners face limitations in translating existing research findings into effective interventions or guidelines for enhancing students' academic self-efficacy and related outcomes. It would be difficult to identify which specific behaviors or strategies within academic self-efficacy scales should be prioritized when designing such interventions/guidelines. Therefore, this study sought to address this gap by conducting a triangulation of item-level network analyses to identify the most critical behavioral aspects of academic self-efficacy that occupy influential positions within the network and serve as significant predictors of academic achievement and perceived stress. The overall findings revealed that behavioral aspects related to time/priority management, as well as technical detail association, were the most central components within the academic self-efficacy network, and that concept association strategies were reliable predictors of perceived stress. This knowledge can assist researchers and practitioners in developing targeted interventions to enhance academic self-efficacy and its desirable outcomes. In particular, it provides a basis for designing brief, resource-efficient interventions that focus on the most influential domains of academic self-efficacy. As performance accomplishments have been theorized and consistently demonstrated to be the most powerful source of self-efficacy (Bandura, 1977; Byars-Winston et al., 2017), interventions that encourage students to achieve small, incremental successes in managing their time and applying concept association strategies may be particularly effective. Such gradual, mastery-oriented practices would represent a more focused and evidence-aligned approach to strengthening students' academic self-efficacy compared to a broad or undifferentiated approach.

References

- Ahmad, M., Shukri, N., Adzlee, N., Baharuddin, I., Rajali, A., Zulkifeli, N., & Noorjamal, N. (2024). The association between academic performance, self-efficacy and parenting style among Malaysian undergraduate dental students. *Education in Medicine Journal*, 16, 49-61.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307–337). Greenwich, CT: Information Age Publishing.
- Bandura, A., Barbaranelli, C., Caprara, G., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development*, 67, 1206-1222.
- Bani, M., Zorzi, F., Corrias, D., & Strepparava, M. (2022). Reducing psychological distress and improving student well-being and academic self-efficacy: The effectiveness of a cognitive university counselling service for clinical and non-clinical situations. *British Journal of Guidance and Counselling*, 50, 757-767.
- Bargmann, C., & Kauffeld, S. (2023). The interplay of time management and academic self-efficacy and their influence on pre-service teachers' commitment in the first year in higher education. *Higher Education*, 86, 1507-1525.
- Bartimote-Aufflick, K., Bridgeman, A., Walker, R., Sharma, M., & Smith, L. (2016). The study, evaluation, and improvement of university student self-efficacy. *Studies in Higher Education*, 41, 1918-1942.
- Bassi, M., Steca, P., Fave, A., & Caprara, G. (2007). Academic self-efficacy beliefs and quality of experience in learning. *Journal of Youth and Adolescence*, 36, 301-312.
- Bisra, K., Liu, Q., Nesbit, J., Salimi, F., & Winne, P. (2018). Inducing self-explanation: A meta-analysis. *Educational Psychology Review*, 30, 703-725.
- Blunt, J. R., & Karpicke, J. D. (2014). Learning with retrieval-based concept mapping. *Journal of Educational Psychology*, 106, 849-858.
- Borsboom, D., Cramer, A., Schmittmann, V., Epskamp, S., & Waldorp, L. (2011). The small world of psychopathology. *PloS one*, 6, e27407.
- Borsboom, D., Epskamp, S., Kievit, R., Cramer, A., & Schmittmann, V. (2011). Transdiagnostic networks: Commentary on Nolen-Hoeksema and Watkins (2011). *Perspectives on Psychological Science*, 6, 610-614.
- Briganti, G., Scutari, M., & McNally, R. (2023). A tutorial on Bayesian networks for psychopathology researchers. *Psychological Methods*, 28, 947-961.
- Brod, G. (2021). Generative learning: Which strategies for what age? *Educational Psychology Review*, 33, 1295-1318.

- Budler, L., & Stiglic, G. (2023). Age, quality of life and mental well-being in adolescent population: A network model tree analysis. *Scientific Reports*, 13, 17667.
- Burger, J., Isvoranu, A., Lunansky, G., Haslbeck, J., Epskamp, S., Hoekstra, R., Fried, E., Borsboom, D., & Blanken, T. (2023). Reporting standards for psychological network analyses in cross-sectional data. *Psychological Methods*, 28, 806-824.
- Byars-Winston, A., Diestelmann, J., Savoy, J., & Hoyt, W. (2017). Unique effects and moderators of effects of sources on self-efficacy: A model-based meta-analysis. *Journal of Counseling Psychology*, 64, 645-658.
- Chatrakamollathas, S., Moha, K., & Choochom, O. (2022). Academic procrastination behavior among college undergraduates: Structural equation modeling (SEM). *Kasetsart Journal of Social Sciences*, 43, 223-230.
- Chemers, M., Hu, L., & Garcia, B. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology*, 93, 55-64.
- Christensen, A. P., Cotter, K. N., & Silvia, P. J. (2019). Reopening openness to experience: A network analysis of four openness to experience inventories. *Journal of Personality Assessment*, 101, 574-588.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385-396.
- Cramer, A., Waldorp, L., Mass, H., & Borsboom, D. (2010). Comorbidity: A network perspective. *Behavioral and Brain Sciences*, 33, 137-193.
- Cromley, J., Perez, T., & Kaplan, A. (2016). Undergraduate STEM achievement and retention: Cognitive, motivational, and institutional factors and solutions. *Policy Insights from the Behavioral and Brain Sciences*, 3, 4-11.
- Darwiche, A. (2010). Bayesian networks. *Communications of the ACM*, 53, 80-90.
- Doowa, P., & Arikatt, R. (2023). Improving Thai university student's academic procrastination and self-efficacy through online CBT-based intervention. *Phranakhon Rajabhat Research Journal (Humanities and Social Sciences)*, 18, 216-233.
- Dunlosky, J., Rawson, K., Marsh, E., Nathan, M., & Willingham, D. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest*, 14, 4-58.
- Einstein, G., Morris, J., & Smith, S. (1985). Note-taking, individual differences, and memory for lecture information. *Journal of Educational Psychology*, 77, 522-532.
- Epskamp, S. (2020). Psychometric network models from time-series and panel data. *Psychometrika*, 85, 206-231.

Epskamp, S., Cramer, A., Waldorp, L., Schmittmann, V., & Borsboom, D. (2012). *qgraph*: Network visualizations of relationships in psychometric data. *Journal of Statistical Software*, 48, 1-18.

Epskamp, S., Borsboom, D., & Fried, E. (2018). Estimating psychological networks and their accuracy: A tutorial paper. *Behavior Research Methods*, 50, 195-212.

Fenning, B. E., & May, L. N. (2013). "Where there is a will, there is an A": Examining the roles of self-efficacy and self-concept in college students' current educational attainment and career planning. *Social Psychology of Education*, 16, 635-650.

Fenollar, P., Román, S., & Cuestas, P. (2007). University students' academic performance: An integrative conceptual framework and empirical analysis. *British Journal of Educational Psychology*, 77, 873-891.

Fried, E., Epskamp, S., Veenman, M., & van Borkulo, C. (2022). Network stability, comparison, and replicability. In Isvoranu, A., Epskamp, S., Waldorp, L., & Borsboom, D. (Eds.), *Network psychometrics with R: A guide for behavioral and social scientists* (pp. 133-153). New York, NY: Routledge.

Friedman, N., Goldszmidt, M., & Wyner, A. (2013). *Data analysis with Bayesian networks: A bootstrap approach*. arXiv:1301.6695.

Galindo-Domínguez, H., & Bezanilla, M. (2021). Promoting time management and self-efficacy through digital competence in university students: A mediational model. *Contemporary Educational Technology*, 13, ep294.

Gore, P. A., Leuwerke, W. C., & Turley, S. E. (2005). A psychometric study of the College Self-Efficacy Inventory. *Journal of College Student Retention*, 7, 227-244.

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, 60, 549-576.

Greco, A., Annovazzi, C., Palena, N., Camussi, E., Rossi, G., & Steca, P. (2022). Self-efficacy beliefs of university students: Examining factor validity and measurement invariance of the new academic self-efficacy scale. *Frontiers in Psychology*, 12, 498824.

Hayat, A., Shateri, K., Amini, M., & Shokrpour, N. (2020). Relationships between academic self-efficacy, learning-related emotions, and metacognitive learning strategies with academic performance in medical students: A structural equation mode. *BMC Medical Education*, 20, 76.

Hayduk, L., Cummings, G., Stratkotter, R., Nimmo, M., Grygoryev, K., Dosman, D., Gillespie, M., Pazderka-Robinson, H., & Boadu, K. (2003). Pearl's d-separation: One more step into causal thinking. *Structural Equation Modeling*, 10, 289-311.

Hitches, E., Woodcock, S., & Ehrich, J. (2022). Building self-efficacy without letting stress knock it down: Stress and academic self-efficacy of university students. *International Journal of Educational Research Open*, 3, 100124.

- Hoferichter, F., Kulakow, S., & Raufelder, D. (2022). How teacher and classmate support relate to students' stress and academic achievement. *Frontiers in Psychology, 13*, 992497.
- Honaker, J., King, G., & Blackwell, M. (2011). Amelia II: A program for missing data. *Journal of Statistical Software, 45*, 1-47.
- Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review, 17*, 63-84.
- Hossan, M., & Islam, N. (2019). Improving students' learning and performance using mock tests in engineering classes. *Proceedings of the ASME 2019 International Mechanical Engineering Congress and Exposition. Volume 5: Engineering Education*, V005T07A007. Salt Lake City, Utah, USA.
- Hu, Z., Shan, N., & Jiao, R. (2024). The relationships between perceived teacher autonomy support, academic self-efficacy and learning engagement among primary school students: A network analysis. *European Journal of Psychology of Education, 39*, 503-516.
- Huang, C. (2013). Gender differences in academic self-efficacy: A meta-analysis. *European Journal of Psychology of Education, 28*, 1-35.
- Huang, J., Zhou, L., Zhu, D., Liu, W., & Lei, J. (2023). Changes in academic self-efficacy and value and crossover of burnout among adolescent students: A two-wave longitudinal study. *Journal of Youth and Adolescence, 52*, 1405-1416.
- Isvoranu, A., & Epskamp, S. (2023). Which estimation method to choose in network psychometrics? Deriving guidelines for applied researchers. *Psychological Methods, 28*, 925-946.
- Isvoranu, A., Epskamp, S., Waldorp, L., & Borsboom, D. (2022). *Network psychometrics with R: A guide for behavioral and social scientists*. New York, NY: Routledge.
- Jones, P. (2024). *Package 'networktools' version 1.5.2*. DOI: 10.32614/CRAN.package.networktools.
- Jones, P., Mair, P., Simon, T., & Zeileis, A. (2020). Network trees: A method for recursively partitioning covariance structures. *Psychometrika, 85*, 926-945.
- Karr, J. E., & White A. E. (2024). Academic self-efficacy and cognitive strategy use in college students with and without depression and anxiety. *Journal of American College Health, 72*, 1387-1393.
- King-Sears, M., & Strogilos, V. (2020). An exploratory study of self-efficacy, school belongingness, and co-teaching perspectives from middle school students and teachers in a mathematics co-taught classroom. *International Journal of Inclusive Education, 24*, 162-180.
- Krispenz, A., Gort, C., Schülke, L., & Dickhäuser, O. (2019). How to reduce test anxiety and academic procrastination through inquiry of cognitive appraisals: A pilot study investigating the role of academic self-efficacy. *Frontiers in Psychology, 10*, 1917.

- Lambert, L. S., & Newman, D. A. (2023). Construct development and validation in three practical steps: Recommendations for reviewers, editors, and authors. *Organizational Research Methods*, 26, 574-607.
- Lastner, M., Delpechitre, D., Goad, E., & Andzulis, J. (2021). Thank you for being a friend: A peer-learning approach to marketing education. *Journal of Marketing Education*, 43, 216-232.
- Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.
- Leite, W., Huang, I., & Marcoulides, G. (2008). Item selection for the development of short forms of scales using an ant colony optimization algorithm. *Multivariate Behavioral Research*, 43, 411-431.
- Letouche, S., & Wille, B. (2022). Connecting the dots: Exploring psychological network analysis as a tool for analyzing organizational survey data. *Frontiers in Psychology*, 13, 838093.
- Luo, T., So, W., Li, W., & Yao, J. (2021). The development and validation of a survey for evaluating primary students' self-efficacy in STEM activities. *Journal of Science Education and Technology*, 30, 408-419.
- Mangus, L., Somers, C., Yoon, J., Partridge, T., & Pernice, F. (2021). Examination of college student achievement within an ecological framework. *Journal of Adult and Continuing Education*, 27, 231-247.
- Matsui, T., Matsui, K., & Ohnishi, R. (1990). Mechanisms underlying math self-efficacy learning of college students. *Journal of Vocational Behavior*, 37, 225-238.
- McNally, R. J. (2016). Can network analysis transform psychopathology? *Behaviour Research and Therapy*, 86, 95-104.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: a meta-analytic investigation. *Journal of Counseling Psychology*, 38, 30-38.
- Museus, S., Williams, M., & Lourdes, A. (2022). Analyzing the relationship between campus environments and academic self-efficacy in college. *Journal of Student Affairs Research and Practice*, 59, 487-501.
- Needham, C. J., Bradford, J. R., Bulpitt, A. J., & Westhead, D. R. (2007). A primer on learning Bayesian networks for computational biology. *PLoS Computational Biology*, 3, 1409-1416.
- Ngamake, S., Raveepatarakul, J., & Walch, S. (2013). *A longitudinal study of relationships among stress, academic skills, and academic performance* [unpublished manuscript]. Faculty of Psychology, Chulalongkorn University, Thailand.
- Pajares, F., & Miller, M. (1995). Mathematics self-efficacy and mathematics performances: The need for specificity of assessment. *Journal of Counseling Psychology*, 42, 190-198.

Pearl, J., Glymour, M., & Jewell, N. (2016). *Causal inference in statistics: A primer*. West Sussex, UK: Wiley.

Perry, J. C., DeWine, D. B., Duffy, R. D., & Vance, K. S. (2007). The academic self-efficacy of urban youth: A mixed-methods study of a school-to-work program. *Journal of Career Development, 34*, 103-126.

Ratsameemonthon, L., Ho, R., Tuicomepee, A., & Blauw, J. (2018). Influence of achievement goals and academic self-efficacy on academic achievement of Thai undergraduate students: Across non procrastinators and procrastinators. *Electronic Journal of Research in Educational Psychology, 16*, 243-271.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*, 353-387.

Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130*, 261-288.

Robinaugh, D. J., Millner, A. J., & McNally, R. J. (2016). Identifying highly influential nodes in the complicated grief network. *Journal of Abnormal Psychology, 125*, 747-757.

Ruiz-Martín, H., Blanco, F., & Ferrero, M. (2024). Which learning techniques supported by cognitive research do students use at secondary school? Prevalence and associations with students' beliefs and achievement. *Cognitive Research: Principles and Implications, 9*, 44.

Saroughi, M., & Kitsantas, A. (2021). Examining relationships among contextual, motivational and wellbeing variables of immigrant language-minority college students. *Innovative Higher Education, 46*, 1-19.

Scutari, M. (2010). Learning Bayesian networks with the *bnlearn* R package. *Journal of Statistical Software, 35*, 1-22.

Scutari, M., & Denis, J. (2015). *Bayesian network: With examples in R*. Boca Raton, FL: CRC Press.

Simonet, D. V., & Castille, C. M. (2020). The search for meaningful work: A network analysis of personality and the job characteristics model. *Personality and Individual Differences, 152*, 109569.

Stubbs, N. S., & Maynard, D. B. (2017). Academic self-efficacy, school engagement and family functioning, among postsecondary students in the Caribbean. *Journal of Child and Family Studies, 26*, 792-799.

Suldo, S., Dedrick, R., Shaunessy-Dedrick, E., Fefer, S., & Ferron, J. (2015). Development and initial validation of the Coping With Academic Demands Scale: How students in accelerated high school curricula cope with school-related stressors. *Journal of Psychoeducational Assessment, 33*, 357-374.

Sullivan, J. R. (2010). Preliminary psychometric data for the *Academic Coping Strategies Scale*. *Assessment for Effective Intervention*, 35, 114-127.

Talsma, K., Schütz, B., Schwarzer, R., & Norris, K. (2018). I believe, therefore I achieve (and vice versa): A meta-analytic cross-lagged panel analysis of self-efficacy and academic performance. *Learning and Individual Differences*, 61, 136-150.

Tay, L., & Jebb, A. (2018). Establishing construct continua in construct validation: The process of continuum specification. *Advances in Methods and Practices in Psychological Science*, 1, 375-388.

Van Borkulo, C., van Bork, R., Boschloo, L., Kossakowski, J., Tio, P., Schoevers, R., Borsboom, D., & Waldorp, L. (2023). Comparing network structures on three aspects: A permutation test. *Psychological Methods*, 28, 1273-1285.

Van Bork, R., Rhemtulla, M., Waldorp, L., Kruis, J., Rezvanifar, S., & Borsboom, D. (2021). Latent variable models and networks: Statistical equivalence and testability. *Multivariate Behavioral Research*, 56, 175-198.

Villegas-Puyod, J., Phungsoonthorn, T., Sitthipo, P., & Aunyawong, W. (2021). The contribution of emotional intelligence to academic engagement of undergraduate students in Thailand: The mediating role of self-efficacy. *Interdisciplinary Research Review*, 16, 30-37.

Warner, L. M., & French, D. P. (2020). Self-efficacy interventions. In M. Hagger, L. Cameron, K. Hamilton, N. Hankonen, & T. Lintinen (Eds.), *The handbook of behavior change* (pp. 461-478). New York, NY: Cambridge.

Wolters, C. A., & Brady, A. C. (2021). College students' time management: A self-regulated learning perspective. *Educational Psychology Review*, 33, 1319-1351.

Wood, R. E., & Locke, E. A. (1987). The relation of self-efficacy and grade goals to academic performance. *Educational and Psychological Measurement*, 47, 1013-1024.

Ye, L., Posada, A., & Liu, Y. (2018). The moderating effects of gender on the relationship between academic stress and academic self-efficacy. *International Journal of Stress Management*, 25, S56-S61.

Zajacova, A., Lynch, S., & Espenshade, T. (2005). Self-efficacy, stress, and academic success in college. *Research in Higher Education*, 46, 677-706.

Zimmerman, B., & Kitsantas, A. (2007). Reliability and validity of Self-Efficacy for Learning Form (SELF) scores of college students. *Journal of Psychology*, 215, 157-163.

Zhu, W., & Nguyen, N. (2024). Continuity approximation in hybrid Bayesian networks structure learning. *Statistics and Computing*, 34, 213.

APPENDIX

Table A1: Closeness Centrality and Expected Influence Indices

The SELF-A Items	Closeness Centrality	Expected Influence	
		One-step	Two-step
1. When you miss a class, can you find another student who can explain the lecture notes as clearly as your teacher did?	.00488	0.500	1.051
2. When your teacher's lecture is very complex, can you write an effective summary of your original notes before the next class?	.00561	1.031	1.854
3. When a lecture is especially boring, can you motivate yourself to keep good notes?	.00564	0.891	1.707
4. When you had trouble understanding your instructor's lecture, can you clarify the confusion before the next class meeting by comparing notes with a classmate?	.00555	0.870	1.638
5. When you have trouble studying your class notes because they are incomplete or confusing, can you revise and rewrite them clearly after every lecture?	.00574	1.001	1.976
6. When you are taking a course covering a huge amount of material, can you condense your notes down to just the essential facts?	.00547	0.900	1.743
7. When you are trying to understand a new topic, can you associate new concepts with old ones sufficiently well to remember them?	.00533	0.912	1.759
8. When another student asks you to study together for a course in which you are experiencing difficulty, can you be an effective study partner?	.00499	0.795	1.588
9. When problems with friends and peers conflict with schoolwork, can you keep up with your assignments?	.00540	0.765	1.529
10. When you feel moody or restless during studying, can you focus your attention well enough to finish your assigned work?	.00527	0.773	1.468
11. When you find yourself getting increasingly behind in a new course, can you increase your study time sufficiently to catch up?	.00557	1.032	1.985
12. When you discover that your homework assignments for the semester are much longer than expected, can you change your other priorities to have enough time for studying?	.00590	1.132	2.105
13. When you have trouble recalling an abstract concept, can you think of a good example that will help you remember it on the test?	.00538	0.841	1.729
14. When you have to take a test in a school subject you dislike, can you find a way to motivate yourself to earn a good grade?	.00570	0.971	1.944
15. When you are feeling depressed about a forthcoming test, can you find a way to motivate yourself to do well?	.00561	0.878	1.741
16. When your last test results were poor, can you figure out potential questions before the next test that will improve your score greatly?	.00536	0.890	1.806

17. When you are struggling to remember technical details of a concept for a test, can you find a way to associate them together that will ensure recall?	.00577	1.202	2.215
18. When you think you did poorly on a test you just finished, can you go back to your notes and locate all the information you had forgotten?	.00565	1.129	2.125
19. When you find that you had to "cram" at the last minute for a test, can you begin your test preparation much earlier so you won't need to cram the next time?	.00553	0.887	1.839

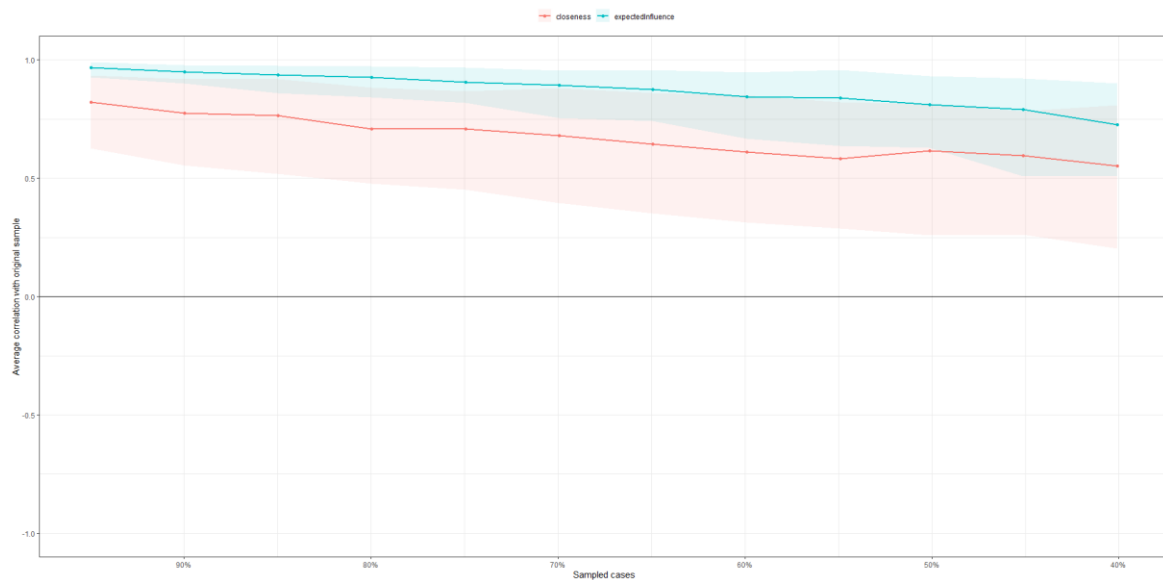


Figure A1: Centrality Index Stability

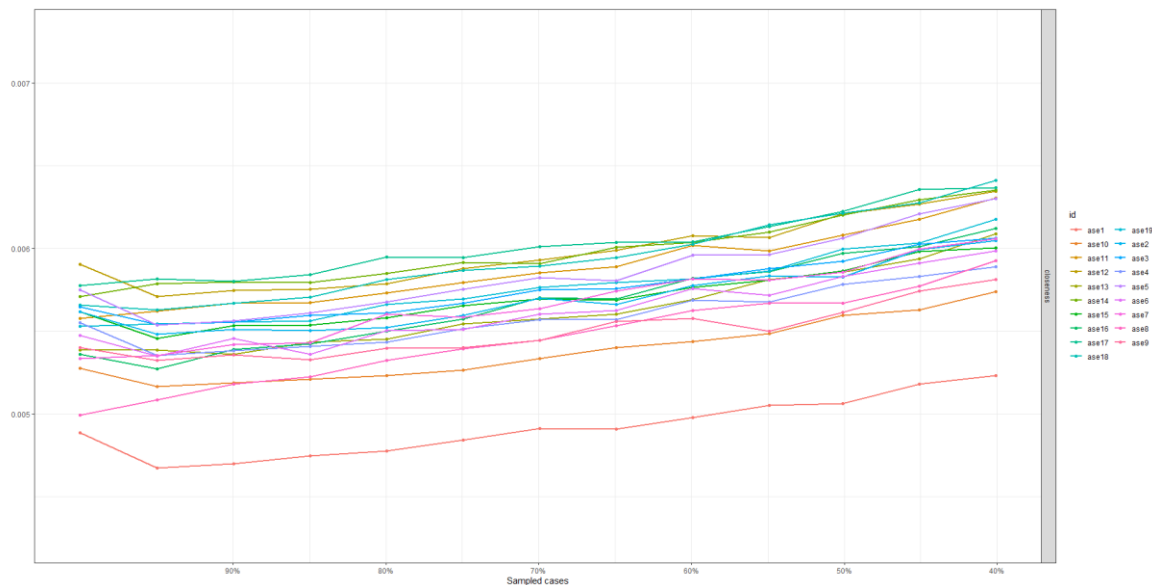


Figure A2: Node-wise Closeness Centrality Stability

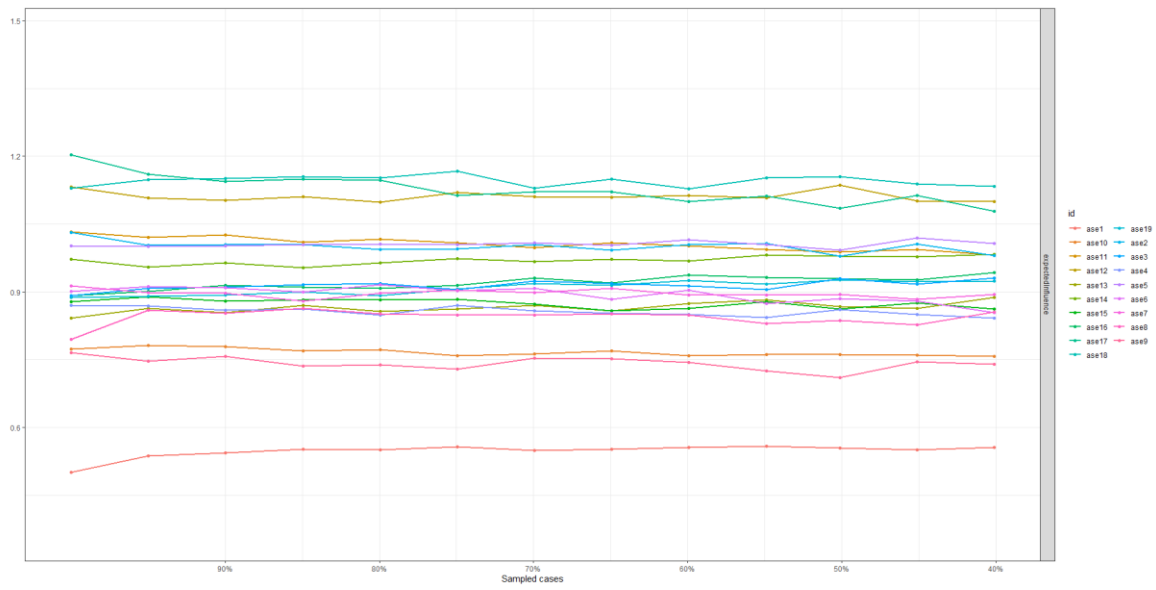


Figure A3: Node-wise Expected Influence Centrality Stability

Professional Guidance by Mentors for Teacher Trainee Students: An Attribute or Capacitation

ABSTRACT

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For an effective and viable teaching and learning environment, as well as quality academic attainment among learners, teacher education programs must be implemented to shape the entire curriculum and the future of the education system. Encompassed in these programs, one of the pivotal components is the consideration of mentorship. Therefore, this study aims to provide insights into the implications of mentorship in teacher education. This paper examines the notion of mentors' professional guidance, whether regarded as an attribute or a form of capacitation for teacher-trainee students. This study investigates mentorship dynamics by examining teacher trainee efficacy in relation to professional development. A comprehensive analysis of the qualitative approach entrenched in Participatory Action Research (PAR) was administered. Semi-structured interviews served as a data-gathering tool, where five mentor teachers were purposely selected to share their life experiences. This group of university teachers was allocated to mentor teacher trainees in diverse schools during their Work Integrated Learning (WIL) sessions. The interview process took longer than anticipated, taking on new dimensions that did not primarily capture the interviewers' thoughts. This led to posing follow-up questions to gain a deeper understanding of the investigated problem. Ethical considerations were primarily addressed, which enabled positive collaborations between interviewers and interviewees. This empirical paper uncovered two primary findings: (i) advancement of practical skills significantly increased through mentorship capacitation, and (ii) cultivation of professional identity among teacher-trainee students. With the revealed implications of the study findings, the study concludes and recommends that there is a dire need to optimize mentorship programs as a means of enhancing teacher education outcomes, thus reshaping the future of education.

Keywords: Capacitation, Mentorship, Professional guidance, Teacher retention, Teacher trainee students

1. Introduction

As a point of departure, this paper highlights the critical variables encompassed within the study title. In the educational sphere, a mentor is defined as an experienced and knowledgeable individual who facilitates the personal, academic, or professional development of a mentee. This activity is carried out in the form of guidance, support, and a positive influence, leading to fostered achievements in the mentee's educational journey (Shanks et al, 2022). To achieve this quality trait, an attribute is at the core of the entire process. During the mentor-mentee process, attributes are considered as those qualities or characteristics possessed by both the mentors and mentees. Such qualities tend to have a significant influence on how effective and successful relationships become. Motivational dimensions are therefore facilitated by these qualities, which are intended to foster productive interactions that allow for mutual growth (Goodwin, 2022). Additionally, at the core of the mentorship programme is capacitation, which refers to the process of enhancing an individual's or a group's skills, knowledge, and competencies, thereby empowering them to perform tasks effectively and meaningfully within their respective contexts. This fosters both personal and professional growth (Cree-Green, 2020).

Hence, a worldwide perspective suggests that programs for teacher education development have given significant consideration to the vital role of mentorship in supporting student teachers. Studies have identified several mentorship practices that have been proven effective, as denoted by Albakri et al (2021). In these studies, it is highlighted that there is a need to investigate the underlying perspectives and practices that encompass teacher-trainee students and their respective mentors (Brown et al., 2020). Among these viewpoints, other factors for consideration could be mentorship practices that are effective in facilitating and advancing practical skills for capacity-building purposes (Geesa et al., 2022). Upon considering the beneficial mentorship approaches in depth, an informed design implementation can lead to a positive outcome, enhancing practical skills.

2. Literature Review

Attribute and Capacitation as Critical Aspects of the Mentoring Ecosystem

In the realm of professional guidance for teacher trainees, it is imperative to understand the critical interplay between mentor attributes and skill development, particularly within the mentoring practices applied in teacher education programs. The term "attributes" encompasses the inherent qualities and strengths that mentors possess, while "capacitation" refers to the structured training and development processes that empower trainee teachers to acquire the essential competencies for effective teaching (Viera, 2021). It is essential to assert that recognizing the vital link between these two elements is fundamental for preparing teacher trainees for success in their professional journeys.

Mentors bring invaluable attributes such as extensive experience, comprehensive pedagogical knowledge, and strong interpersonal skills that significantly shape the mentoring relationship. Research overwhelmingly demonstrates that experienced mentors do not merely provide instructional support; they also offer crucial emotional encouragement, which is instrumental in enhancing self-efficacy and confidence among their mentees. Therefore, it is clear that the quality of mentorship can be a decisive factor in a trainee's development.

Conversely, capacitation cannot be overlooked. It encompasses the structured processes and strategic initiatives necessary to equip trainee teachers with the skills essential for professional success. Mentoring programs must include targeted training sessions designed to cultivate reflective teaching practices and enhance pedagogical competence (Zhang, Basham & Yang, 2020). For example, studies convincingly indicate that regular coaching sessions aligned with a capacitation framework lead to significant improvements in teaching effectiveness among trainees. These sessions are not only beneficial but also essential for fostering the reflective practices that underpin personal and professional growth, a point strongly supported by extensive research into effective teacher development programs.

Henceforth, the implementation of well-structured mentoring programs serves as a critical mechanism for bridging the gap between theoretical knowledge and practical application. It is not enough for trainee teachers to merely possess theoretical understanding; they must be equipped to translate that knowledge into impactful classroom strategies. In this context, both mentor attributes and capacitation are not merely desirable but are, in fact, indispensable for the effective preparation of the next generation of educators. Thus, we must advocate for a comprehensive approach that fully integrates these components to ensure the success of our teachers and, ultimately, the students they serve.

Teacher trainee developmental trajectories

For this paper to address the research problems centred around the identification of key factors impacting the effectiveness of mentoring relationships between teacher mentors and their trainees, this investigation seeks to examine how the mentor attributes profile the developmental trajectories of teacher trainees, as outlined by Deng et al (2022). Attributes in question are diverse and not limited to professionalism, communication skills, and emotional intelligence. Furthermore, this paper aims to explore the extent to which structured capacitation, in the form of formal training programs, affects the quality of the mentor-mentee relationship and enhances competencies (Astrove & Kraimer, 2022). In accordance, this paper identifies actionable objectives that may include developing a framework to assess the key attributes of mentors that lead to successful mentoring outcomes, as well as evaluating effective capacitation methods for an enhanced professional ethic among teacher trainees.

It is needless to mention, as outlined by Dos Santos (2021), that closely considering mentor training logistics can help to unwind limited mentorship skills. To develop such initiatives, a wide range of competence development is required, which may include teacher training frameworks that encompass deep knowledge of subject content paired with instructional techniques, lesson planning dynamics, and classroom management procedures (Aderibigbe, 2016). For the validation of Teaching Practice approaches to help and support teacher-trainee students, a sense of professional identity could be instilled, as this is the pride and worthiness of the teaching profession (McConnell et al., 2021).

Be that as it may, there remain some concerns about whether to view mentorship as an attribute or capacitation. Embarking on writing this piece is an attempt to address this argument through a scrutiny of the mentor roles in providing the so-called teacher trainees with proficient guidance (Aarts et al., 2020). To shed light on the probable altered teacher education mentorship, the existing literature has been examined, along with the theory underpinning this inquiry, to help address the underlying problem (Beagle, 2020).

Professional distinctiveness

Consequent to the claims above, Han (2023) proposes that to underscore how reflective practice can be implemented to cultivate professional distinctiveness within a group of teacher-trainee students, there is a significant need for motivation strategies to be put in place. One cited example is when this cohort of teacher trainees is inspired to reflect on aspects such as classroom interactions and experiences with teaching pedagogies, and this exercise is a consistent and normal practice (McConnell et al., 2019). These propositions are supported by Ellis et al. (2020), who argue that engaging in programs that facilitate mentorship can help sustain and deepen the understanding of teacher-trainee students' professional roles, ultimately leading to refined teaching practices that align with emerging teacher identities.

Although mentorship is one of the most critical elements of teacher education programs, it is worth noting that a crucial aspect of this exercise is providing professional and holistic growth to beginner or novice teachers through necessary guidance and support (Matsko et al., 2020). Nonetheless, Fuller (2022) asserts that for mentorship programs to be considered viable, it depends entirely on the program's nature and context. As research reveals that some authors (Farhadiba & Wulyani, 2020) assess mentorship with its static attributes in line with teacher experience, other scholars argue that for mentorship to be considered capacious and functional, its support should be conceptualized in a manner centered around intentional development.

Indeed, in any scholarly discourse, whether it involves research, scientific logistics, or educational diversity, it is common for scholars to hold perspectives and opinions that vary from one another (Byars-Winston & Butz, 2021). Regarding some probable counterarguments, the Government of Ghana (2020) claims that mentorship programs are less effective when expected to cultivate the professional identity of teacher-trainee students. Additionally, there is some inconsistency in mentorship relationships, which hinders the advancement of practical skills, influenced by factors such as mentor-mentee compatibility and the availability of relevant mentors (Carmi & Tamir, 2021).

Critiques by some scholars

Subsequently, some scholars seem to critique the efficacy of attracting teacher-trainee students for public outreach programs. Tuma et al. (2021) argue that some initiatives intended for mentorship purposes may, at times, divert attention from the fundamental focus on preparing novice teachers, thereby deprofessionalizing and politicizing the teaching profession. This typically occurs in educational contexts that are inherently controversial. Therefore, this becomes a wake-up call for teacher mentees as they engage in scholarly discourse, prompting them to take close consideration of the diverse, underlying intricacies (Vessey et al., 2021). With, this paper identified a gap. Although some studies have been conducted on mentorship for teacher trainee students, this paper notes that, even with the implementation of teacher education programmes, there is a failure to bridge the gaps between practical application and abstract knowledge. This failure, therefore, results in a disconnection or division when equating theories of learning with real-world teaching experiences (Canipe & Gunckel, 2020).

Theoretical Framework

For this inquiry, it was deemed necessary to embed a theoretical framework as a means to provide valuable insights when discussing mentorship versus teacher education programs, as these impacts progress the practical skills of teacher-trainees. The Reflective Practice Theory, as outlined by Schön (1991), underpins this investigation, emphasizing the necessity of engaging in actions aimed at improving experiences through professional practice, particularly within the educational sphere, as it is closely intertwined with professional development. The Reflective Practice Theory proposes reflective practice, wherein teacher-trainee students are given opportunities to reflect on their own teaching experiences after engaging in self-introspection. Upon mentor feedback, mentees, in this case, student teachers, are then exposed to redefining teaching approaches that they have been implementing. This exercise, if consistently practiced, helps advance practical skills.

Concurrently, Schön (1991) highlights two varying reflection modes: reflection-in-action and reflection-on-action. In cases where professionals address existing challenges by applying knowledge from previous experiences, this mode is referred to as reflection-in-action. In parallel, reflection-on-action occurs when there is a critical analysis of existing experiences and their consequences. Therefore, teachers, as professionals, are sometimes confronted with complex circumstances without clear ways of addressing them (Nokkala et al., 2021). Some expertise is therefore required as a prerequisite to address such compound and multifaceted challenges. This is one of the reasons why teachers need to align themselves as lifelong learners, in order to upskill and adapt to recent and emerging changes in the education sector. Furthermore, when practicing the reflection strategy, teacher-trainee students can be empowered to become capable innovators, thereby enhancing their teaching practice.



Figure 1: The Concept of Reflective Practice (Schön, 1991)

Figure 1 above emphasizes that for an improved educational experience, it is critical to learn and work collaboratively with others, as this leads to enhanced professional ethics, which are essential for lifelong scholarly development.

Educational Implications

With its philosophical underpinnings, Reflective Practice Theory (Schön, 1991) has significant educational implications for teacher education, particularly in contrast to professional development. When reflective practice is incorporated into programs for teacher education, the anticipated benefits are that teachers at the pre-service level attain metacognitive competencies, along with advanced critical thinking skills, that can augment the currently applied teaching pedagogies. By incorporating such developmental initiatives, classroom settings are likely to be transformed into research-oriented environments as teachers reflect on their teaching strategies and experiences, thereby redefining their instructional approaches.

In addition, Orland-Barak and Wang (2021) argue that both novice and experienced teachers require exposure to programs offering coaching and mentorship. Sharing teaching experiences between mentors and mentees is a worthwhile juncture, as those less informed have opportunities to learn from previous productive experiences. Actually, the root cause of ratifying such issues is when an individual teacher can be truthful in critically examining their strategies, and then opting for alternatives (Marciano et al, 2019). Furthermore, for mentors to provide structured feedback, guidance, and supervision, those considered novices become enlightened about pedagogy and enhanced classroom effectiveness (Templeton, 2022). As this paper draws on this underpinning framework, the underlying objective is to gain a deeper understanding of the complexities of mentorship.

3. Method

The Research Approach

For this inquiry, a qualitative research approach was employed (Creswell, 2013). The research design implemented was Participatory action research (PAR). For the author to have employed this type of qualitative research design, the primary motive was to facilitate collaboration between me, the investigator, and the study participants. This strategy revealed some underlying social implications that are likely to bring about social change embedded within mentorship in teacher education. As this study is participatory in its approach, a democratic endeavour concerning social justice was ensured, as participants' interaction encouraged diverse perspectives to be heard. When the principle of equality is functionally observed, stakeholders involved in research display a keenness to evoke that optimistic social change, as they are the ones at the core of the studied challenge, thereby generating suggestions to address the matter at hand.

Data Collection Instruments

Semi-structured interviews were employed as the interview protocol for this study, which aimed to explore how the attributes of mentors and the capacitation processes affect relationships between teacher trainees. To maintain research rigour, the questions in the interview schedule were aligned with the research objectives (Gubrium, 2012). This set of questions was structured to construct inquiry-based conversations that proved to inspire extensive responses. Additionally, this paper deemed it necessary to undergo a pilot process for the instrument, which was conducted to assess question clarity and appropriateness.

A Pilot Study

As piloting was conducted, preliminary interviews were administered to a small sample of teacher trainees and mentors (Gubrium, 2012). This strategy proved crucial, as it significantly assisted in refining the questions for the actual investigation. Lastly, as the interview protocol was refined, it was executed during the main data collection to elicit detailed insights regarding the mentor roles, attributes, and capacitation.

All the questions posed aimed to explore mentors' perspectives on the relationship between mentorship and the enhancement of practical teaching skills, as well as professional identity for the teacher trainees. Below is a set of questions that were contained in the interview schedule:

1. What role does reflective practice within the mentorship experience play in shaping the professional identity of teacher trainees?
2. In what ways does the mentorship process facilitate the transfer of theoretical knowledge into practical teaching skills?
3. How do mentor teachers' mentoring styles contribute to the development of practical skills among teacher trainees during their teaching practice?

Preparatory Stages for Semi-structured Interviews

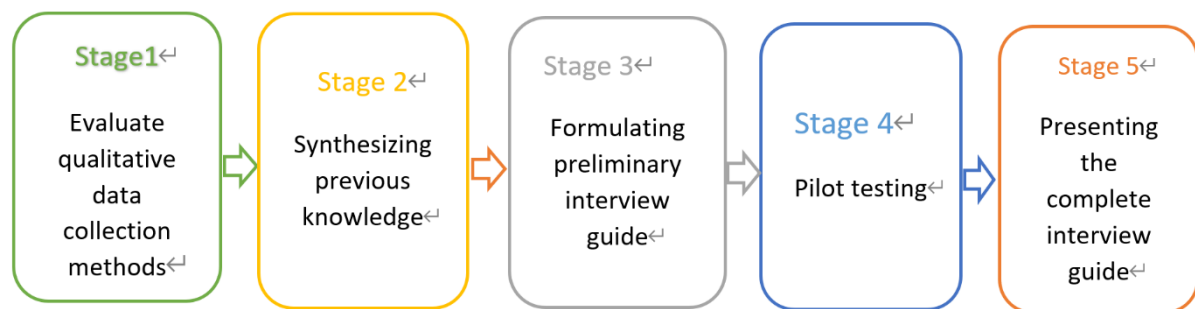


Figure 2: Preparatory Stages for Semi-structured Interviews (George, 2023)

The diagram above summarizes the steps taken prior to administering the actual interview procedures. As semi-structured interviews were used as data collection tools, a process was conducted to explore the mentorship roles embedded in teacher education programs. Collaborations between the interviewees and the interviewer were robust to some extent, as they posed follow-up questions not primarily contained in the interview schedule (Adams, 2015). The types of questions posed had an element of open-endedness, thereby leading to open-ended responses from the participants (Patton, 2002). With the non-eruption of new responses, it was evident that a point of saturation had been reached, as no further new patterns, similarities, or dissimilarities were acknowledged.

Participant Selection

As data informants, five mentor teachers were considered as relevant participants for this inquiry. Qualitative investigations, by their nature, prioritize depth over breadth in order to gain a deeper understanding of a circumstance (Kvale & Brinkman, 2008). For this inquiry, the intention to identify 5 mentor teachers was of the same rationale. For this small sample, this study aimed for an in-depth exploration and rich data on the complexities of mentorship relationships, as measured against the professional dynamics encountered by mentors who

professionally guide teacher trainee students. To outline the criteria for participant selection, it is worth mentioning that mentors were preferred based on several factors of significance, including, and not limited to, experience level considering the minimum number of five years of mentoring experience; and diversity of expertise, as the study participants emanated from various teaching disciplines, thus leading to a wide variety of mentorship styles and perspectives. To embark on this selection strategy, the primary objective was to ensure a viable reflection of a comprehensive understanding of the impact of mentorship on teacher trainees' professional development (Bamberg et al., 2021).

These five participants were purposely selected for this sampling strategy, as it ensures that life realities are not skewed, thereby allowing for consideration of diverse perspectives (Patton, 2015). During the interview sessions, this participant cohort was awarded opportunities to unwind their real-life experiences extracted from their involvement in mentoring teacher trainees for the past couple of years when embarking on WIL, commonly termed Teaching Practice, for their specific field of teacher education. This is a consistent process where student teachers visit various schools across varying provinces and diverse home-student backgrounds to exhibit teaching and learning pedagogies.

This study justifies its selection of a small sample size, reflecting the qualitative nature of the research. Unlike quantitative studies, which aim to generalize findings across larger demographics, this investigation delves into the intricate tapestry of individual experiences, motivations, and perceptions of teacher trainees. Research in qualitative methodology suggests that even small samples comprising five or more participants can provide sufficient depth and saturation of data, as evidenced by the recurring key themes that emerged from participant responses.

In this context, the small sample size proved invaluable in facilitating a comprehensive exploration of the rich mentoring experiences and diverse perspectives of the teacher trainees involved. Furthermore, it is essential to recognize that mentorship experiences are often profoundly influenced by individual backgrounds and specific contextual factors. Consequently, insights derived from a well-chosen, smaller sample can uncover important nuances that larger-scale studies may miss. Thus, the strategic use of a purposeful sampling method in this research not only enriched the data collected but also provided profound, contextualized insights that are anticipated to make a significant contribution to the field of educational mentoring (Kvale & Brinkman, 2008).

Data analysis

To analyze the data, thematic analysis was employed. This type of analysis is well known for its advantage of underscoring identification, analysis, and translation of patterns of meaning within qualitative data (Creswell, 2013). This type of analysis was conducted by following the necessary steps.

Firstly, as a foundational step, I embarked on familiarising myself with the contents of the gathered data. As I read and re-read my field notes, I ensured that I highlighted both the key points and interesting segments (Denzin & Lincoln, 2018). Secondly, now that I was familiar with the contents, I began to code the data in a systematic manner. During this process, responses from participants were sorted according to their relations and similarities.

Thereafter, as the 3rd stage, codes were collated into potential themes through the process of grouping together all those codes that seemed to be related to each other (Creswell, 2013).

Patterns caused by related responses then led to the formation of themes about how mentorship experience impacted teacher-trainee development. As the process of data sorting was carried out, with commonalities identified, some notable differences were observed in participant responses. These emergent dimensions helped the researcher explore and discover different perspectives, which are considered in this paper as a tentative investigation for future studies. The last step was to name each identified theme, as conveyed by the essence of the data, thereby considering it as the study's findings.

Throughout the research process, the researcher maintained a reflexivity journal, which was used to record personal reflections on preconceptions and participant responses. This strategy facilitated a continuous examination of how the gathered facts might influence interpretation. Additionally, this helped guard against any possible influence on the research findings, which is considered one of the vital reflective practices in qualitative research (Willig & Stainton-Rogers, 2017). Additionally, the study participants were given opportunities to review the findings as outcomes of the interviewer-interviewee interactions. This feedback served as a wake-up call to uncover blind spots and challenge assumptions, ultimately leading to an enhancement of data analysis credibility.

4. Results and Discussion

The findings of this study indeed seem to underwrite some insights into mentorship for teacher education. Primarily, the study findings, based on the analyzed data, reveal that mentorship is not just a stand-alone process; instead, it serves as a dynamic contributor or catalyst with vital roles in inspiring professional development and enhancing teacher trainee efficiency. This study juxtaposed two findings: the advancement of practical skills was significantly enhanced through mentorship, as well as the cultivation of a professional identity among teacher-trainee students.

Advancement of Practical Skills Through Mentorship Capacitation

Concerning augmented practical skills, Participant P1 argued:

Upon understanding that these student teachers come from diverse home backgrounds, this highlights to me that their learning preferences as teacher trainees vary and are parallel. As their mentor, I always strive to address specific areas for skill development. Applying this strategy is solely done to modify my mentorship so that individual needs are catered to.

Accordingly, P2 commented:

Applying personalized approaches during mentorship sessions has proven to optimize mentorship efficiency and enhance practical skills. With the feedback mechanisms I apply for the teacher-trainee students I mentor, communication between the two parties, mentors and mentees, is conducted in a manner that cultivates effective mentorship dynamics. This practice has proven conducive to upskilling teacher trainees, leading to their holistic development.

With diverse opinions on this finding, P3 disputes:

Mentorship, when efficiently facilitated, not only facilitates the acquisition of didactic knowledge and skills but also promotes a sense of professional identity, strength, and resilience among the cohort of teacher trainees.

In line with the claims above, P4 alludes:

Retention strategies to support novice teachers who have recently entered the teaching profession are enhanced by increasing mentorship levels. When these novice teachers have acquired the necessary teaching skills, the broader education system ultimately benefits, as such worthwhile skills are imparted to students, not only to enhance their academic performance but also to shape them into valuable and functional human beings.

Concludingly, P5 also proclaimed:

Through mentorship roles implemented for teacher trainee students, their practical skills are seen to be sharpening, and this seems to foster a sense of competence and improved professional traits, as the teaching profession demands. In addition to that, mentorship programs, when implemented efficiently, progress to a strengthened theoretical foundation as theory and practice are integrated to bridge the gap between real-world teaching experiences and academic knowledge.

Cultivation of Professional Identity Among Teacher-Trainee Students

With arguments centred around the cultivation of professional identity, P3 commented:

In my opinion, it has proven to be a vital juncture that provides teacher-trainee students with a platform to introspect and self-reflect on their teaching pedagogies, which helps to augment their professional identities. This is a remedial process that helps unwind hesitations and self-deprecating thoughts that hinder motivation in novices from pursuing their intended careers as lifelong learners.

On the very same accord, P1 signifies:

What I have noticed across all the teacher trainee students I have mentored over the past couple of years is that, as they reflect on their values and beliefs, professional challenges are examined in one way or another. This goes without saying that such reflections are indicators of setbacks encountered. As this hinders educational growth, teacher-trainee students are vulnerable; therefore, perseverance needs to be planted in them to foster resilience, thereby leading to a strengthened recognition of professional distinctiveness.

In line with the latter participants, P4 declares:

I have since observed how teacher-trainee students feel honoured and proud to learn that, as mentors, we consider their existence in the teaching domain. It is therefore important to ensure that these novice teachers get connected to the broader educational community sphere. This is effective when teacher trainees get exposure to collaborative partnerships and professional associations. As they collaborate with seasoned teachers, they get acquainted with a wide range of diverse learning and teaching philosophies. Such an enriched professional identity expands professional networks and fosters self-recognition and intrinsic motivation in emerging teachers.

With the claims that emerged as findings of this investigation, one can deduce that when mentorship programs are prioritized and considered crucial aspects of enhancing professional development, they can lead to teacher education institutions designing programs that are redefined for holistic, functional, and effective throughput achievements (Templeton, 2021). Designing such programs requires policymakers to consider aspects that contribute to the ongoing improvement of teacher trainees' practical skills, as well as the provision of ongoing support coupled with professional development opportunities (Porter & Thompson, 2022).

The empirical evidence that emerged as findings of this inquiry indicates an enhancement of reflective practice between teacher trainees and mentors. As these two incumbents reflect on their own successes, challenges, and experiences, it has been proven that this introspection intensifies the application of theoretical knowledge through the development of practical skills employed in real-world educational contexts (Canipe & Gunckel, 2020). Through open

collaborations between mentors and mentees, as noted by Tamir (2020), learning communities are then fostered. For educational institutions to implement programs on mentorship, this involves the exchange of skills and practical knowledge, as well as fostering positive collaborative learning environments.

Additionally, for the findings to delve deeply into the essence of professional development and lifelong learning, teacher-trainee students' professional identity is established and becomes an ongoing and sustainable activity (Amedeker, 2018). When that sense of curiosity and obligation has been instilled within mentor-mentee recipients, all affected parties begin to develop the sagacity of navigating challenges, adaptability, and an intellect that embraces innovation, with the ultimate objective of achieving heightened throughput rates throughout their careers (Hoque et al., 2023). Consequently, for effective and efficient mentorship standards, a cultivated professional identity for teacher trainee students becomes embedded within an all-inclusive imperative for future teachers (Alsarawi & Sukonthaman, 2021). For teacher trainees to become well-grounded, their professional identities are affirmed, enabling them to become successful, career-oriented professionals.

Attributes can manifest through feedback mechanisms, where mentors offer insights that help trainee teachers refine their instructional strategies, thereby enhancing pedagogical practices. The partnership between mentors and mentees is crucial, as effective mentoring hinges on establishing trust and an open line of communication (Bonner, Wong, Pedwell & Rowland, 2019). Attributes such as empathy, clear communication, and the ability to provide constructive criticism are foundational in fostering a supportive learning environment that enables growth and learning.

Moreover, integrating research rigor into mentorship practices is essential for ensuring that the feedback and strategies being employed are evidence-based and effective. Systematic evaluations and studies on mentoring outcomes can provide insights into which approaches yield the best results for trainee teachers. This can help refine mentoring practices, informing mentors about effective instructional strategies and enabling them to support their mentees more efficiently.

Capacitation involves creating a supportive infrastructure for mentoring relationships, which entails establishing clear guidelines and providing mentors with training and resources to enhance their effectiveness. This is particularly important in contexts where apprentice teachers often feel ill-prepared for the challenges they encounter during their teaching practice. The establishment of competencies based on effective mentorship models can significantly influence the professional growth of the trainee, as research highlights the necessity of guidelines that incorporate best practices in mentorship within teacher education frameworks. Consequently, capacity-building approaches aim to foster an environment where reflective practices are normalized, allowing teacher trainees to critically analyze their experiences and continuously improve their teaching methodologies. Incorporating research rigor strengthens the framework of these practices, ensuring that the methods employed are relevant and impactful. As such, the alignment between attributes and capacitation within teacher mentoring programs, combined with a commitment to research-driven approaches, is considered a holistic strategy to professional development.

These study findings align with the theory that underpins this investigation. The Reflective Practice Theory, as alluded to by Schön (1991), emphasizes the importance of collaboration in philosophical practice and dialogue. This theorist proposes interacting with others within the

same or similar field of work, such as supervisors, mentors, and peers, as measured by unguided individual perceptions. As the affected recipients engage in dialogue, they are exposed to diverse perspectives and challenging assumptions that lead to the construction of new and emergent knowledge within educational communities (Bastian & Marks, 2017). In simple terms, this concept is commonly referred to as information sharing within academia. As such, leaders and managers invest a huge amount of effort in maintaining a fostered reflective practice culture within educational institutions. This can be demonstrated through academic events, such as professional dialogues, and this strategy is well-recognized for its extended collaboration initiatives. When information is shared, it becomes easier for school communities to identify areas for improvement and those that require continued upgrades in standards. Such an institution, having risen to those extreme heights, is tantamount to being recognized as a professionalized and organized learning sphere (Macquarie University, 2022).

5. Conclusion

This paper conducted an in-depth analysis of mentorship for teacher education programmes, identifying some capabilities that are transformative in nature, intended to cultivate professional identity and advanced practical skills in teacher-trainee students. This paper has since brought to the fore how dynamic and attributed the capacitation process is. Another important aspect highlighted by the findings of this paper is the validation of teacher-trainee students as they explore the complexities of the teaching profession. For teacher trainee students to be awarded personalized support that is integrated with theory and practice, such mentorship programs have been proven to advance efficacy, competence, and a sense of professional identity within teacher roles.

Recommendations

Therefore, the findings of this paper serve as a valuable resource for teacher education and policymakers, offering recommendations to enhance mentorship programs that can promote professional growth and expand opportunities for teacher trainees in real-world teaching frameworks. Mentor training programs, therefore, need to prioritize the development of these soft skills, including operative communication skills and emotional intelligence, as these were perceived by mentor teachers as crucial attributes that would foster an effective mentoring relationship. These professional development workshops can be integrated into teacher education curricula. This has an underlying advantage in that such skill enhancement would encourage mentors to support their trainees; additionally, the same skills would help build that sense of confidence, as trainees would feel more valued and understood. Self-confidence is equated with efficacy in teaching.

Furthermore, for holistic and unwavering teacher support development mechanisms, there is a need to diagnose the contextual and cultural factors that impede professional development identity within the sphere of teacher training. Additionally, another critical factor for consideration is the provision of mentorship experiences designed to promote cultural competence, along with awareness of diverse student and community needs.

Future studies

Future studies could investigate addressing the impact of long-term and sustainable mentorship capacitation versus teacher-trainee professional development. Accordingly, another study

could investigate the benefits of mentorship programs for those who have had the opportunity to participate, measure the attributed benefits, and examine the educational implications achieved. Such findings would help sustain and nurture a lifelong learning culture within the education sector. Additionally, future studies could focus on conducting longitudinal research that tracks teacher trainees over several years. This strategy can provide valuable insights into the long-term impact of mentorship on teaching effectiveness, professional identity, and career satisfaction. Henceforth, this paper suggests that such studies could reveal how initial mentorship experiences shape the decision-making processes of augmented teachers' pedagogies.

Limitations

For starters, a substantial limitation of this study is the relatively small sample size of five mentor teachers, which may not allow for the generalization of the study findings. In the context of feasibility and research rigor, the small sample size of five participants may seem limiting in its ability to generalize findings across broader populations. However, it can still yield valuable insights into the specific relationships and dynamics inherent in mentorship for teacher trainees. With this understanding, a small sample size can be sufficient if the selected individuals provide rich and diverse perspectives that contribute meaningfully to the exploration of the research question while maintaining the integrity of the research process. Furthermore, the study's narrow focus, which did not provide sufficient ground to capture diverse perspectives as experienced in the educational landscape, was confined to a specific geographical region. Additionally, assessing long-term impacts and trends associated with mentorship is limited by the study's cross-sectional design.

References

- Aarts, R., Kools, Q., & Schildwacht, R. (2020). Providing a good start. Concerns of beginning secondary school teachers and support provided. *European Journal of Teacher Education*, 43(2), 277-295. <https://doi.org/10.1080/02619768.2019.1693992>
- Adams, W.C. (2015). Conducting semi-structured interviews. In J. Wholey, H. Harty, & K. Newcomer (Eds.), *Handbook of practical program evaluation* (pp. 492–505). San Francisco: Jossey-Bass.
- Aderibigbe, S., Colucci-Gra, L., & Gray, D. S. (2016). Conceptions and expectations of mentoring relationships in a teacher education reform context. *Mentoring & Tutoring: Partnership in Learning*, 24(1), 8-29 | <https://doi.org/10.1080/13611267.2016.1163636>
- Albakri, S. M. A., Ismail, N., Hartono, R., Tahir, M. H. M., Abdullah, M. S. H., Sarudin, A., & Zulkepli, N. (2021). Mentoring practice during practicum: The perspectives of Malaysian pre-service English language teachers. *Studies in English Language and Education*, 8(2), 642-655. <https://doi.org/10.24815/siele.v8i2.19282>
- Alsarawi, A., & Sukonthaman, R. (2021). Preservice teachers' attitudes, knowledge, and self-efficacy of inclusive teaching practices. *International Journal of Disability, Development and Education*, 68(1), 1-9. <https://doi.org/10.1080/1034912X.2021.1922992>
- Amedeker, M.K. (2018). Caring relationships in the environment of changing teacher professional development. *African Journal of Educational Studies in Mathematics and Sciences*, 14, 185–198. doi:<https://dx.doi.org/10.4314/ajesms.v14i1.15>
- Astrove, S. L. & Kraimer, M. L. (2022). What and how do mentors learn? The role of relationship quality and mentoring self-efficacy in mentor learning. *Personnel Psychology*. ;75(2):485-513.
- Bamberg, M., Demuth, M., & Watzlawick, M. (Eds.). (2021). *The Cambridge handbook of identity*. Cambridge University Press.
- Bastian, K. C., & Marks, J. T. (2017). Connecting teacher preparation to teacher induction. *American Educational Research Journal*, 54(2), 360–394. <https://doi.org/10.3102/0002831217690517>
- Beagle, T. (2020). *Informal Mentoring Strategies Training for California Mentors*. California State University, San Marcos
- Bonner, H. J., Wong, K. S., Pedwell, R. H., & Rowland, S. L. (2019). A short-term peer mentor/mentee activity develops Bachelor of Science students' career management skills. *Mentoring & Tutoring: Partnership in Learning*, 27(5), 509–530. <https://doi.org/10.1080/13611267.2019.1675849>.
- Brown, R. D., Geesa, R. L., & McConnell, K. R. (2020). Creating, implementing, and redefining a conceptual framework for mentoring pathways for education doctorate students. *Higher Learning Research Communications*, 10(2), 20–37. <https://doi.org/10.18870/hlrc.v10i2.1188>

Byars-Winston, A., & Butz, A. R. (2021). Measuring research mentors' cultural diversity awareness for race/ethnicity in stem: Validity evidence for a new scale. *CBE—Life Sciences Education*, 20(2), 1-11. <https://doi.org/10.1187/cbe.19-06-0127>

Canipe, M. M., & Gunckel, K. L. (2020). Imagination, brokers, and boundary objects: Interrupting the mentor preservice teacher hierarchy when negotiating meanings. *Journal of Teacher Education*, 71(1), 80e93. <https://doi.org/10.1177/0022487119840660>

Carmi, T., & Tamir, E. (2021). Who Learns to Teach? Student-Teachers as Change Agents, Mentor-Teachers as Learners. *European Journal of Teacher Education*, 46(4), 654–670. <https://doi.org/10.1080/02619768.2021.1975677>

Cree-Green, M., Carreau, A. M., Davis, S. M., Frohnert, B. I., Kaar, J. L., Ma, N. S., Nokoff, N. J., Reusch, J. E., Simon, S. L., & Nadeau, K. J. (2020). Peer mentoring for professional and personal growth in academic medicine. *Journal of Investigative Medicine*; 68(6), 1128-34.

Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Deng, C. & Gulseren, D. B. (2022). Turner N. How to match mentors and protégés for successful mentorship programs: a review of the evidence and recommendations for practitioners. *Leadership & Organization Development Journal*, 43(3), 386-403.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). *The Sage handbook of qualitative research* (5th ed.). Thousand Oaks, CA: Sage.

Dos Santos, L. M. (2021). Self-efficacy and career decision of pre-service secondary school teachers: a phenomenological analysis. *International Journal of Instruction*, 14(1), 521-536. <https://doi.org/10.29333/iji.2021.14131a>

Ellis, N. J., Alonzo, D., & Nguyen, H. T. M. (2020). Elements of a quality pre-service teacher mentor: A literature review. *Teaching and Teacher Education*, 92, Article 103072. <https://doi.org/10.1016/j.tate.2020.103072>

Farhadiba , D., & Nunuk Wulyani, A. (2020). Investigating Preservice Teachers' Efficacy Level and Factors Influencing It. *KnE Social Sciences*, 4(4), 40–49. <https://doi.org/10.18502/kss.v4i4.6464>

Fuller, K. (2022). *Feminist perspectives on contemporary educational leadership*. London: Routledge.

Geesa, R. L., McConnell, K. R., & Brown, R. D. (2022). Mentorship for doctor of education candidates: Exploring sustainability, networking, and expected outcomes within a mentoring program. *Journal of Research on Leadership Education*, 17(3), 291–309. doi:10.1177/19427751211013853

George, T. (2023). *Semi-Structured Interview | Definition, Guide & Examples*. Scribbr. Retrieved 24 June 2025, from <https://www.scribbr.com/methodology/semi-structured-interview/>

Goodwin, T. G., Laning, M. A., & Reynolds, L. M. (2022). Comradery and connection: A study of cross-cultural mentoring experiences. *The Journal of Academic Librarianship*, 48(6):102596.

Government of Ghana. (2020). Teaching practice mentor handbook. Retrieved February 5, 2024, from <https://t-tel.org/download/teaching-practice-handbook-for-mentors/>

Gubrium, J. F., Holstein, J. A., Marvasti, A. B., & McKinney, K. D. (Eds.). (2012). *Sage handbook of interview research. The complexity of the craft* (2nd ed.). London, UK: Sage.

Han, X. (2023). Associations between the helpfulness of teacher induction programs, teacher self-efficacy, and anticipated first-year teacher retention. *Frontiers in Psychology*, 14. <http://doi.org/10.3389/fpsyg.2023.1088111>

Hoque, K. E., Wang, X., Qi, Y., & Norzan, N. (2023). The factors associated with teachers' job satisfaction and their impacts on students' achievement: a review (2010–2021). *Humanities and Social Sciences Communications*, 10(1), 1-7. <https://doi.org/10.1057/s41599-023-01645-7>

Kvale, S., & Brinkman, S. (2008). *Interviews: Learning the craft of qualitative research interviewing* (2nd ed.). Thousand Oaks, CA: Sage.

Matsko, K. K., Ronfeldt, M., Nolan, H. G., Klugman, J., Reiningger, M., & Brockman, S. L. (2020). Cooperating teacher as model and coach: What leads to student teachers' perceptions of preparedness? *Journal of Teacher Education*, 71(1), 41e62. <https://doi.org/10.1177/0022487118791992>

Macquarie University. (2022). Tertiary supervisors. Retrieved September 16, 2022, from <https://www.mq.edu.au/faculty-of-arts/departments-and-schools/macquarie-school-of-education/professional-experience/tertiary-supervisors>

McConnell, K., Geesa, R. L., & Lowery, K. (2019). Self-reflective mentoring: Perspectives of peer mentors in an education doctoral program. *International Journal of Mentoring and Coaching in Education*, 8(2), 86–101. <https://doi.org/10.1108/IJMCE-07-2018-0043>

McConnell, K., Geesa, R. L., & Brown, R. (2021). Mentoring future education leaders: Mentor perceptions of an educational leadership doctoral mentoring program. *International Journal of Educational Leadership Preparation*, 16(1), 88–105. https://www.icpel.org/uploads/1/5/6/2/15622000/ijelp_volume_16_number_1_spring_2021.pdf

Marciano, J. E., Farver, S. D., Guenther, A., Wexler, L. J., Jansen, K., & Stanulis, R. N. (2019). Reflections from the room where it happens: Examining mentoring in the moment. *International Journal of Mentoring and Coaching in Education*, 8(2), 134e148. <https://doi.org/10.1108/IJMCE-08-2018-0047>

Nokkala, T., Aarnikoivu, M., & Kiili, J. (2021). Multidisciplinary peer-mentoring groups supporting knowledge sharing in doctoral education. *Scandinavian Journal of Educational Research*, 66, 1–14. doi:10.1080/00313831.2021.1939142

Orland-Barak, L., & Wang, J. (2021). Teacher mentoring in service of preservice teachers' learning to teach: Conceptual bases, characteristics, and challenges for teacher education reform. *Journal of Teacher Education*, 72(1), 86e99.
<https://doi.org/10.1177/0022487119894230>

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage.

Patton, M. Q. (2015). *Qualitative evaluation and research methods* (4th ed.). Thousand Oaks, CA: Sage.

Porter, E., & Thompson, M. (2022). *Effective Mentorship in Teacher Induction Program*. Liberal Studies Program, California State University, Chico.

Schon, D. A. (1991). *The reflective practitioner*. England: Ashgate Publishing.

Shanks, R., Tonna, M., Krøjgaard, F., Paaske, K., Robson, D., Bjerkholt, E. A., Willig, C., & Stainton-Rogers, W. (Eds.). (2017). *The Sage handbook of qualitative research in psychology* (2nd ed.). London, UK: Sage.

Tamir, E. (2020a). The effects of teacher preparation on student teachers' ideas about good teaching. *Australian Journal of Teacher Education*, 45(4), 1-17.

Templeton, N. R. (2021). Editorial overview: Mentoring for targeted growth in professional practice. *Mentoring & Tutoring: Partnership in Learning*, 29(4), 1–5.
doi:10.1080/13611267.2021.1902709

Templeton, N. R. (2022). Editorial overview: Mentoring for equity and access. *Mentoring & Tutoring: Partnership in Learning*, 30(4), 1–5.
<https://doi.org/10.1080/13611267.2022.2044705>

Tuma, T. T., Adams, J. D., Hultquist, B. C., & Dolan, E. L. (2021). The dark side of development: A systems characterization of the negative mentoring experiences of doctoral students. *CBE Life Sciences Education*, 20(2), Article ar16. <https://doi.org/10.1187/cbe.20-10-0231>

Vessey, J. A., Wentzell, K., Wendt, J., & Glynn, D. (2021). DNP scholarly projects: Unintended consequences for academic-practice partnerships. *Journal of Professional Nursing*, 37(3), 516–520.

Viera, C. A. (2021). A comparison of mentoring and coaching: What's the difference? *Performance Improvement*, 60(7), 13–20. <https://doi.org/10.1002/pfi.21993>

Zhang, L., Basham, J. D., & Yang, S. (2020). Understanding the implementation of personalized learning: A research synthesis. *Educational Research Review*, 31, 1–15.
<https://doi.org/10.1016/j.edurev.2020.100339>

Fostering Global Digital Citizenship: How Peer Collaboration Shapes Intercultural Competence among Burmese ICT Students

ABSTRACT

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Intercultural competence (IC) is increasingly essential for student success in globally distributed ICT environments, yet limited research has examined how peer-assisted learning (PAL) supports IC development among marginalized learners in Southeast Asia. This study investigates how 36 Burmese undergraduate ICT students enrolled in an English-medium course at a Thai university perceived PAL as contributing to their intercultural growth. Guided by Byram's IC framework and Vygotsky's Sociocultural Theory, the study employed a Participatory Action Research (PAR) design in which culturally oriented PAL activities, multilingual peer interaction, and scaffolded reflection were integrated throughout three intervention cycles. IC was measured through a 30-item post-program questionnaire (Cronbach's $\alpha = .893$) and semi-structured interviews with 19 participants. To address reviewer concerns regarding analytical rigor, regression analysis was conducted for RQ1, with results indicating that PAL significantly predicted students' self-reported IC outcomes ($\beta = 0.85$, $R^2 = .46$, $p < .001$). Descriptive statistics further showed high levels of perceived development in intercultural attitudes, cultural knowledge, and communicative adaptability. Thematic analysis revealed perceived gains in cultural understanding, multilingual communication, leadership, confidence, and psychosocial support—dimensions shaped in part by students' experiences navigating political instability in Myanmar. While findings are based on self-reported perceptions and do not infer causality, the study demonstrates how intentionally structured PAL can foster supportive conditions for intercultural learning within STEM contexts. Implications highlight the value of embedding mentor preparation, reflective cycles, and intercultural objectives into PAL programs to strengthen global competence among underrepresented student groups in higher education.

Keywords: Intercultural Competence, Peer-Assisted Learning, Burmese ICT Students, Higher Education, STEM Education

1. Introduction

Background of the Study

In recent years, intensified global migration has made contemporary societies increasingly diverse, thereby heightening the need for intercultural competence (henceforth IC) as a foundational capability for individuals preparing to work in professional environments that require effective engagement with culturally varied populations (Acosta-Mosquera et al., 2017). IC encompasses the attitudes, knowledge, and interaction skills that enable individuals to communicate and collaborate effectively across cultural differences, particularly when navigating diverse communication norms, values, and worldviews (Byram, 1997). The expanding emphasis on global learning in higher education has made the ability to engage with culturally diverse peers through cross cultural interaction, collaborative online exchange, and culturally informed communication an essential competence for students who seek to succeed in international academic and professional environments (Custer & Tuominen, 2017). These capabilities are especially significant within information and communication technology (henceforth ICT), where professionals routinely coordinate tasks across borders, interact with diverse stakeholders, and work within rapidly changing global contexts that demand cultural sensitivity, adaptability, and clear communication (Flogie et al., 2018).

Despite the increasing recognition of IC as essential for student readiness in global contexts, many university programs still emphasize linguistic or technical skill development while offering limited structured opportunities for learners to build meaningful intercultural communication abilities (Balanaieva et al., 2020). Traditional programs remain grounded in older models that prioritise technical tasks such as programming and systems analysis while offering limited opportunities for students to develop the social awareness and communicative competence that contemporary learning environments require (Flogie et al., 2018). As a result many university students progress through their programs with solid academic expertise yet receive limited exposure to cultural diversity, resulting in inadequate preparation for the intercultural demands of contemporary global workplaces (Lukianets & Lukianets, 2020).

Peer assisted learning (henceforth PAL) has emerged as a pedagogical approach capable of addressing these limitations by embedding learning within socially meaningful interactions (Bacon et al., 2021; Topping, 2005). PAL involves structured peer engagement in which trained mentors support their peers through academic and interpersonal tasks (Bacon & Maneerutt, 2024; Dawson et al., 2014). When aligned with intercultural learning goals, PAL provides recurring opportunities for students to practice multilingual communication, interpret culturally influenced behaviors, negotiate meaning, and receive feedback in supportive peer settings (Bacon & Torremucha, 2025a, 2025b). These interactions reflect Vygotsky's Sociocultural Theory, which states that learning is socially mediated and develops through guided interaction with more capable peers who provide linguistic and cultural scaffolding within the Zone of Proximal Development (henceforth ZPD). Through this form of guided participation, PAL has the capacity to cultivate the confidence, communication strategies, and cultural awareness that are often underdeveloped in traditional ICT instruction.

These opportunities are particularly important for students in Thai higher education, who frequently face disparities in access to digital resources, uneven institutional support, and limited exposure to English outside the classroom, making equitable and well-designed learning environments essential for their academic development (Sa-ngiamwibool & Mounggam, 2025). This relevance is further heightened by the presence of Burmese ICT

students, who form a large sector of international student groups in Thai private universities. The educational pathways of Burmese learners along the Thai Myanmar border are strongly shaped by longstanding migration into Thailand as well as by the limited recognition of Myanmar and refugee camp schooling and the restricted availability of higher education opportunities in these border communities (White et al., 2016). Upon entering Thai universities, Burmese students must adapt to English mediated ICT coursework while simultaneously navigating Thai language norms used in administrative communication, peer interactions, and daily campus life, as these linguistic demands can limit participation in classroom discussion, reduce confidence in academic communication, and constrain opportunities for intercultural engagement.

In addition to linguistic challenges, Burmese students must navigate sociocultural expectations within Thai academic environments, as differences in communication styles, politeness conventions, and peer interaction norms can create uncertainty during group work, reduce willingness to participate in intercultural dialogue, and hinder the development of supportive peer relationships (Soe & Charoenroop, 2025). These factors have the capacity to collectively shape a distinctive learning context in which structured support for IC is not only beneficial but necessary for academic adjustment and personal well-being (Gourves-Hayward & Morace, 2011).

The specific demands of the ICT discipline further intensify this need. In ICT, the project approach is prevalent, and in multinational companies, project teams work in a decentralized manner using remote and teamwork tools (Mielikäinen et al., 2024). Yet little research has examined how Burmese ICT students develop these skills during their studies in Thailand or how university-based interventions can support their readiness for global ICT work.

Within this context, PAL provides a practical and scalable approach to supporting IC development (Bacon & Torremucha, 2025b). By offering peer-based guidance, repeated opportunities for intercultural interaction, and a supportive environment for practicing communication strategies, PAL can help Burmese ICT students engage more confidently with Thai and international peers. PAL therefore serves as both an academic and intercultural support mechanism that aligns with the competencies required in global ICT settings.

Given the growing importance of IC in technology driven fields and the unique challenges faced by Burmese ICT students in Thailand, there is a clear need to investigate how PAL can support their intercultural development (Bacon & Torremucha, 2025a). This study examines this relationship by exploring the extent to which structured PAL programs foster IC and strengthen students' ability to participate in diverse academic and professional environments.

The Role of PAL in Fostering Cultural Exchange

Building on the definitions introduced in Section 1.1, this subsection explains how PAL functions as an environment that supports the development of IC for Burmese students studying in Thailand (Bacon & Torremucha, 2025b). This pedagogical approach can also be expanded to ICT students, who similarly benefit from structured opportunities for intercultural dialogue, collaborative learning, and culturally responsive peer engagement. PAL is well established as a collaborative educational model that enhances academic performance, communication skills, and learner motivation through structured peer interaction (Bacon et al., 2021). When intentionally organized with intercultural aims, PAL goes beyond its academic function by

creating regular, meaningful opportunities for culturally diverse students to learn from one another and to participate in sustained intercultural exchange (Ragavan, 2014).

For Burmese ICT students, these opportunities are especially consequential. Burmese students studying in Thailand must navigate unfamiliar cultural norms, communication expectations, and academic practices that shape their daily social and educational experiences (Soe & Charoenroop, 2025). PAL provides a structured, low pressure setting in which they can interact with Thai peers and international mentors through guided tasks that support adaptation and social integration (Bacon & Torremucha, 2025b). These interactions foster a sense of belonging and positive identity formation, enabling students to gradually build confidence when engaging across cultural boundaries (Bacon & Torremucha, 2025a).

The linguistic demands of studying in Thailand further highlight PAL's relevance. Many Burmese ICT students operate across three languages: Burmese for daily use, Thai for community interaction, and English as the instructional medium. Limited proficiency in Thai or English can hinder participation in classroom discourse and reduce access to spontaneous cultural learning (Soe & Charoenroop, 2025). PAL compensates for these challenges by offering repeated practice in multilingual communication within a supportive peer community (Bacon et al., 2021). Through dialogue, clarification, and negotiation of meaning, students strengthen their ability to understand and respond to culturally patterned communication, which directly supports the development of IC (Bacon & Torremucha, 2025a).

These PAL processes align closely with Byram's (1997) components of IC. Participation in PAL centers enables students to build socio-cultural relationships and engage with peers from diverse linguistic and cultural backgrounds, allowing them to develop new experiences and broaden their understanding of others (Bacon et al., 2021). Through peer explanation and discussion, they gain cultural knowledge related to Thai values, communicative preferences, and sociocultural norms (Bacon & Torremucha, 2025a). Collaborative tasks and reflective dialogue develop the skills of interpreting and relating, as students discuss culturally influenced behaviors in real time (Bacon & Torremucha, 2025b). By doing this, PAL cultivates the skills of discovery and interaction by enabling learners to navigate unfamiliar cultural situations, ask respectful questions, and adjust their communication strategies. Over time, such exchanges support the growth of critical cultural awareness as students compare their own assumptions with those of their peers and develop a more reflective understanding of cultural difference (Bacon et al., 2021).

Vygotsky's Sociocultural Theory (henceforth SCT) further explains why PAL effectively promotes IC. SCT emphasizes that learning occurs through social interaction and that progress is supported by more capable peers who provide linguistic and cultural scaffolding (Alkhudiry, 2022). PAL situates learners in interactions where more competent peers provide scaffolding and support within the ZPD, enabling both partners to progress through guided cognitive challenge (Topping, 2005). In the context of this study, international mentors (Burmese students) and Thai mentees engage in this process through structured intercultural peer learning. Participation in structured PAL sessions provides Burmese Team Leaders (or mentors) with consistent peer-supported opportunities to enhance their intercultural communication skills, cultural awareness, adaptability, and confidence, enabling them to navigate diverse academic and professional environments more effectively (Bacon & Torremucha, 2025a).

Although PAL's academic benefits are widely documented (Bacon & Maneerutt, 2024; Topping, 2005), its role in supporting IC remains underexplored in Southeast Asia, particularly

for underrepresented and mobile student groups. Existing research has tended to prioritize cognitive and performance outcomes rather than intercultural growth (Bacon & Torremucha, 2025a, 2025b). This study addresses this gap by examining how structured PAL initiatives facilitate cultural exchange, intercultural communication, and global competence development among Burmese ICT students in Thailand. By conceptualizing PAL as both a pedagogical model and an intercultural learning framework, the study highlights its potential to prepare ICT students for participation in multicultural teams and global professional environments.

Research Problem

Although intercultural competency is widely recognized as an important educational objective, many university students have limited access to study abroad opportunities, which creates a need for locally based activities that support global learning (Custer & Tuominen, 2017). At the same time, many ICT programs still offer limited structured opportunities for students to develop intercultural competency. ICT curricula typically emphasize programming, system design, and technical problem solving while devoting far less attention to the social and cultural abilities required for effective collaboration in multicultural technology settings (Flogie et al., 2018). As a result, learners who possess strong technical proficiency may still struggle to interpret culturally influenced communication, adapt their interaction style to diverse team environments, or engage effectively with international clients (Kennedy et al., 2025).

These challenges are particularly significant for Burmese ICT students studying in Thailand, who represent one of the largest international student groups in several Thai private universities yet remain underrepresented in regional research. Their experiences are shaped by a distinctive combination of sociocultural, linguistic, and political factors that differ from those faced by other international learners (Soe & Charoenroop, 2025). Socioculturally, Burmese students must adjust to Thai norms regarding politeness, hierarchy, and interpersonal communication, which may differ substantially from the norms they have internalized in Myanmar (Bacon & Torremucha, 2025a). This adjustment requires them to interpret unfamiliar social cues, revise expectations about authority relations, and adopt new participation behaviors in classroom and peer interactions (Bacon & Torremucha, 2025b).

Linguistically, Burmese ICT students navigate a demanding trilingual environment. Burmese is used in daily life, Thai functions as a community and administrative language, and English is the medium of instruction for ICT coursework. Limited proficiency in any of these languages can hinder participation in classroom dialogue, restrict involvement in collaborative learning activities, and reduce access to informal intercultural interactions that support academic and social adjustment (Soe & Charoenroop, 2025). As a result, the combined effects of linguistic and cultural unfamiliarity may inhibit confidence and lower willingness to initiate engagement with Thai and international peers.

These challenges are intensified by ongoing sociopolitical instability in Myanmar, which continues to affect students' emotional well-being, psychological security, and overall readiness to adjust to a new learning environment (Soe & Charoenroop, 2025). Students who experience prolonged uncertainty may find it difficult to develop the openness, curiosity, and communicative flexibility that underpin IC (Buyruk Genç, 2024). Without structured support, Burmese ICT students may therefore struggle to collaborate effectively across cultures, participate meaningfully in diverse learning communities, or prepare for the expectations of global ICT workplaces.

Despite the importance of addressing these challenges, IC remains insufficiently integrated into ICT education in Thailand, and scholarship rarely examines how intercultural learning unfolds for Burmese students specifically. This gap limits the ability of institutions to design evidence-based interventions that support students academically, socially, and emotionally.

PAL, introduced in Section 1.1, provides a promising response (Bacon & Maneerutt, 2024; Bermingham et al., 2023). Although PAL is well established as a tool for improving academic achievement, its potential to support IC development, cultural awareness, and cross-cultural collaboration has not been fully explored in Southeast Asian ICT contexts. The structured, recurring peer interactions characteristic of PAL directly address many of the obstacles Burmese ICT students face by offering a low-pressure space for multilingual communication practice, relationship building, and reflective cultural dialogue. These interactions create conditions that support the gradual and sustainable development of IC in ways that traditional ICT instruction often does not provide.

Accordingly, the central problem guiding this study is the lack of structured and empirically informed approaches for supporting IC development among Burmese ICT students in Thailand. Addressing this problem is essential for preparing learners to participate confidently and effectively in the multicultural and globally distributed environments that define modern ICT work. The study's objectives and research questions therefore focus on examining how PAL facilitates IC development for this understudied student group and identifying the specific intercultural benefits that emerge through sustained peer interaction.

Research Objectives

The purpose of this study is to investigate how structured peer assisted learning (henceforth PAL) supports the development of intercultural competence IC among Burmese information and communication technology (henceforth ICT) students in Thailand. This focus responds directly to the problems identified in Section 1.3, where Burmese learners were shown to face persistent linguistic, sociocultural, and emotional barriers that limit their opportunities to develop IC through traditional ICT instruction.

Guided by Byram's framework of intercultural competence, the study establishes three specific and measurable research objectives that align with the theoretical constructs described in the literature review and address the core challenges faced by Burmese ICT students.

Objective 1:

To measure the extent to which participation in structured PAL sessions influences students intercultural attitudes, cultural knowledge, and communication skills. These three domains correspond directly to key components of Byram's model and will be examined using quantitative indicators generated through the post program survey.

Objective 2:

To identify the specific PAL processes that facilitate intercultural learning for Burmese ICT students. This includes determining which elements of PAL such as multilingual collaboration, mentor guided dialogue, and culturally focused peer activities contribute most strongly to the development of Byram's IC components during sustained peer interaction.

Objective 3:

To examine students self-reported readiness to participate in multicultural professional environments by analyzing perceptions related to leadership, adaptability, and cross cultural communication. These indicators reflect global readiness competencies that are essential for ICT graduates who will work with diverse international clients and distributed digital teams.

Together, these objectives establish a clear and theoretically grounded pathway for the study. They respond directly to the limitations identified in the research problem, align with Byram's intercultural competence model, and provide measurable outcomes that support the development of research questions in the subsequent section. The findings generated from these objectives will offer evidence based insights into how interculturally structured PAL programs can enhance the academic preparation, social integration, and global professional readiness of Burmese ICT students in Thailand.

Research Questions

In alignment with the research problem and the three objectives outlined in Section 1.4, this study addresses the following research questions:

Research Question 1:

To what extent does participation in structured PAL sessions influence Burmese ICT students intercultural attitudes, cultural knowledge, and communication skills as conceptualized in Byram's model of intercultural competence?

Research Question 2:

Which specific PAL processes such as mentor guided interaction, multilingual collaboration, and culturally focused peer activities contribute most effectively to intercultural learning for Burmese ICT students who face sociocultural and linguistic barriers in Thai ICT programs?

Research Question 3:

How do Burmese ICT students perceive the impact of PAL participation on their readiness for multicultural professional environments, particularly with regard to leadership, adaptability, and cross-cultural communication in global ICT work?

Significance of the Study

This study offers theoretical and practical contributions to ICT education by demonstrating how PAL can serve as a strategic and sustainable approach for developing IC. As global industries increasingly prioritize graduates who can communicate effectively across cultures, collaborate in diverse teams, and adapt to international professional environments, the development of IC has become an essential component of graduate readiness in science, technology, engineering, and mathematics programs (Flogie et al., 2018).

For students, IC provides clear and measurable benefits (Mittelmeier et al., 2024). It enhances communication skills by helping learners interpret culturally influenced behaviors, adjust communication styles, and engage more confidently in multilingual and multicultural interactions (Lwin, 2016). IC also strengthens career readiness by equipping students with the social and cultural competencies needed to succeed in international ICT companies, distributed project teams, and global digital workspaces. Moreover, IC supports global mobility by preparing graduates to participate in cross border collaborations, international internships, and transnational employment pathways that require cultural adaptability and open minded engagement (Custer & Tuominen, 2017).

At the institutional level, IC development contributes significantly to internationalization at home (henceforth IaH) (Choi & Khamalah, 2017). Because not all students have access to outbound mobility opportunities, structured PAL programs offer an inclusive and scalable means for universities to integrate intercultural learning into the everyday student experience (Bacon & Torremucha, 2025a, 2025b). PAL creates regular opportunities for meaningful interaction between students from different cultural backgrounds, thereby expanding the institution's capacity to foster global citizenship, strengthen campus diversity, and align with national and regional priorities related to international education (Vickers et al., 2017).

For STEM curriculum design, the findings of this study highlight the importance of embedding intercultural learning within technical programs that have traditionally focused on content mastery and problem solving. Incorporating PAL as part of ICT course structures can help curriculum designers intentionally integrate IC into existing learning outcomes, classroom activities, and collaborative projects. It is anticipated that this alignment will allow STEM graduates are equipped not only with technical expertise but also with the interpersonal and cultural skills needed for effective participation in global technological industries.

Overall, this study provides empirical evidence that PAL can enhance IC development among Burmese ICT students and offers practical guidance for educators and policymakers seeking to create inclusive, internationally relevant academic environments that will prepare students for cross cultural collaboration in the digital age.

2. Literature Review

A comprehensive understanding of the theoretical and empirical foundations underpinning this study is essential to contextualizing the role of PAL in fostering cultural exchange, particularly within Burmese students studying technology in higher education. This section explores the key theories associated with this study (as seen below in Figure 1), examines PAL as a collaborative learning model, discusses the intersection of computer science and cultural exchange, identifies gaps in existing research, and summarizes the major themes in the literature.

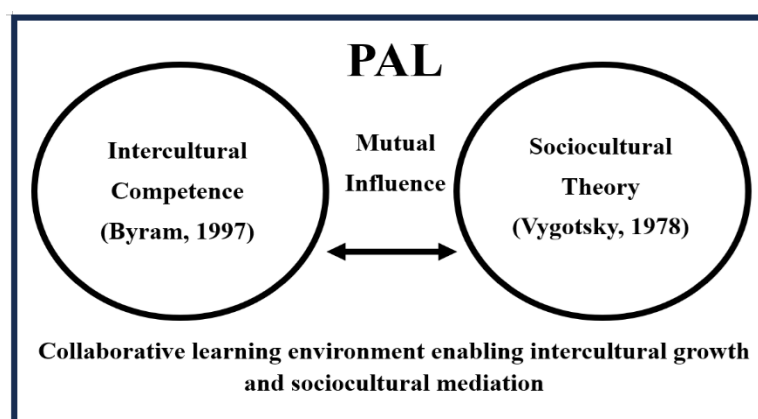


Figure 1. Theoretical framework

Theories Associated with Study

This study integrates Byram's (1997) IC model and Vygotsky's (1978) SCT to explain how PAL facilitates the co-construction of intercultural understanding and communicative growth in higher-education contexts. Each theory contributes a distinct but complementary perspective: SCT clarifies how learning develops through guided interaction, while IC defines what intercultural learning produces in terms of attitudes, knowledge, and skills. Together, they form a cohesive lens for examining how learners develop intercultural awareness through socially mediated collaboration. Both frameworks emphasize that learning and identity formation occur through engagement with others, where meaning is negotiated, scaffolded, and internalized.

To illustrate how these theoretical constructs interact, Figure 2 presents the conceptual framework for this study. The diagram visualizes the dynamic relationships among the four central elements: SCT, PAL, ICT, and IC. Vygotsky's SCT underpins the learning process, positioning scaffolding, interaction, and reflection as mechanisms through which learners extend knowledge within the ZPD. These processes occur within PAL environments that operationalize SCT principles through structured peer collaboration. The outcomes of these interactions are reflected in the development of IC, encompassing intercultural attitudes, knowledge, interpretive and interactional skills, and critical cultural awareness. ICT serve as the mediating environment that connects and amplifies these processes, extending intercultural learning across digital and multilingual spaces. Ultimately, the integration of these constructs leads to outcomes such as intercultural development and global readiness.

Byram's IC model conceptualizes intercultural competence as the interplay of attitudes, knowledge, and skills that enable learners to engage across cultural boundaries with openness and curiosity (Byram, 1997; Wang & Teo, 2024). These components culminate in critical cultural awareness, which allows learners to evaluate cultural practices—including their own—through reflective judgment (Byram, 2000). In PAL environments such as intercultural mentoring or collaborative projects, these elements emerge as students co-create meaning, negotiate perspectives, and adapt their communicative behavior within culturally diverse groups (Wang & Kulich, 2015).

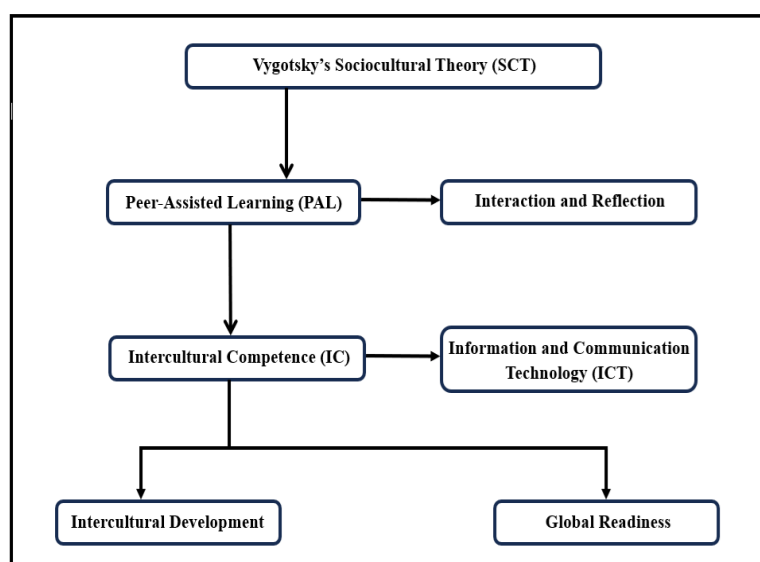


Figure 2. Conceptual Framework Integrating SCT, PAL, IC, and ICT

Vygotsky's SCT, by contrast, explains the process through which this development unfolds. Learning is mediated by cultural tools, particularly language, and occurs within the ZPD, where learners extend existing competencies through guided interaction with more capable peers (Vygotsky, 1978; Wertsch, 1991). In PAL settings, this process is enacted through scaffolding, as mentors and mentees engage in dialogic exchanges that help less experienced learners internalize both conceptual knowledge and culturally informed communicative strategies (Lambright, 2024).

When synthesized, these theories reveal a developmental sequence in which SCT processes (ZPD → scaffolding → internalization) drive the emergence of IC outcomes (attitudes → skills → critical awareness). Through peer guidance, learners not only acquire disciplinary or linguistic knowledge but also develop empathy, tolerance, and interpretive capacity—key affective and behavioral dimensions of IC. PAL thus functions as a social and cognitive bridge where intercultural learning is jointly constructed, negotiated, and transformed into enduring competence.

Despite their complementarity, divergences exist. SCT focuses primarily on how learning occurs, emphasizing mediation and developmental mechanisms, while IC delineates what intercultural learning produces. Integrating both frameworks addresses these limitations: SCT illuminates the mechanisms of growth within PAL interactions, whereas Byram's model operationalizes the resulting intercultural outcomes for empirical analysis. This theoretical synthesis underscores PAL's potential as a transformative intercultural pedagogy, situating peer collaboration as the mediating context through which sociocognitive development (as articulated by SCT) culminates in the formation of intercultural dispositions (as defined by Byram's IC model). Together, these frameworks provide a comprehensive foundation for examining how digital, multilingual PAL environments promote intercultural awareness, communicative adaptability, and global readiness among Burmese university students.

a. Byram's Framework for Understanding IC

Byram's (1997) IC model, reaffirmed by Wang and Teo (2024), conceptualizes intercultural learning as an interaction of attitudes, knowledge, and skills that together support effective and ethical cross-cultural communication. The model includes five interconnected components: (1) attitudes of openness and curiosity, (2) knowledge of social groups and cultural practices, (3) skills of interpreting and relating, (4) skills of discovery and interaction, and (5) critical cultural awareness (Byram, 2000). While this framework provides a valuable foundation, its application to contemporary PAL and ICT contexts requires critical reinterpretation. Each component can be meaningfully activated and empirically observed through intercultural processes that occur within PAL environments.

Within PAL, the attitudinal dimension of IC develops through reciprocal peer engagement, where learners encounter alternative perspectives and cultivate openness toward cultural diversity. Structured peer mentoring encourages curiosity and empathy by positioning students as both cultural learners and contributors (Wang & Kulich, 2015). This sustained, low anxiety interaction enables Burmese and Thai participants to question assumptions about authority, politeness, and communication, fostering dispositions of respect and adaptability that Byram associates with intercultural attitudes.

The knowledge dimension, which concerns awareness of cultural norms, communicative conventions, and social systems, is cultivated through collaborative dialogue and contextualized learning tasks. PAL environments enable knowledge construction through peer explanation and observation, as students articulate culturally grounded reasoning and clarify behavioral expectations. For example, learning about Thai hierarchical norms or social customs through authentic discussion exemplifies the co construction of sociocultural understanding (Bacon & Torremucha, 2025a). These processes parallel the concept of scaffolding described in Vygotsky's theory, illustrating how intercultural knowledge is socially mediated rather than transmitted unilaterally.

The skills of interpreting and relating become evident when students negotiate meaning and interpret culturally influenced behavior during peer exchanges. PAL discussions often require students to reconcile different communication styles, such as directness or deference, and to mediate misunderstandings. Through this interpretive process, students learn to relate others' experiences to their own, which reflects the interpretive competence at the core of Byram's framework. Likewise, the skills of discovery and interaction are activated when learners engage in unfamiliar intercultural encounters, inquire respectfully, and adapt communicative behavior in real time. These skills are especially evident in digital and multilingual PAL environments, where students practice discovery through inquiry based dialogue and interaction across linguistic boundaries (Freiermuth & Hamzah, 2023). The iterative peer reflection that is integral to PAL therefore transforms Byram's fourth component into a living and dynamic practice.

Finally, critical cultural awareness, or the evaluative ability to question one's own values and those of others, emerges through guided reflection and feedback cycles within PAL. Repeated peer dialogue invites participants to examine cultural assumptions and power relations within both interpersonal and institutional contexts. For Burmese ICT students, reflecting on cross linguistic experiences and academic hierarchies in Thai settings promotes metacognitive insight and aligns with Byram's highest order *savoir*, the capacity to act ethically and

reflectively in intercultural situations (Byram, 1997). Such reflection is reinforced by collaborative inquiry and collective analysis in PAL research cycles (Bacon et al., 2021).

However, Byram's framework presents certain limitations when applied in Southeast Asian contexts. Scholars have noted its Eurocentric origins, rooted in Western liberal humanist ideals of the intercultural speaker that assume balanced power relations and linguistic parity (Holmes & O'Neill, 2012). In ICT focused higher education, these assumptions may not hold true, as learners navigate linguistic, technological, and geopolitical hierarchies that shape communication (Kennedy et al., 2025). Consequently, the model requires contextual adaptation to account for structural inequalities, multilingual negotiation, and culturally specific notions of harmony and collectivism. As Wang & Teo (2024) emphasize, the affective dimensions of IC in Asian contexts often prioritize relational sensitivity and social balance over individual critical autonomy, suggesting the need to recalibrate Byram's constructs to reflect local values.

Empirical findings from PAL studies reinforce this need for contextualization. Research on intercultural peer mentoring (Wang & Kulich, 2015) and collaborative online learning (Freiermuth & Hamzah, 2023) shows that IC development through peer collaboration is iterative, emotionally grounded, and closely tied to learners' sense of belonging. The current study extends this understanding to Burmese ICT students, for whom PAL sessions foster not only linguistic and cultural awareness but also psychological stability and community connection during political uncertainty (Soe & Charoenroop, 2025). These findings point to the emergence of relational intercultural competence, a form of IC grounded in empathy, mutual support, and collective growth that extends beyond the cognitive focus of Byram's original model.

In summary, Byram's (1997) framework offers a robust but flexible foundation for analyzing intercultural learning within PAL. When situated in ICT and Southeast Asian educational environments, its components can be reinterpreted as dynamic and socially mediated practices that unfold through scaffolding, dialogue, and reflection. Although its Western orientation requires adaptation, integrating Byram's model with Vygotsky's sociocultural theory and PAL research strengthens its relevance for understanding how intercultural competence is collaboratively constructed through peer engagement in digitally mediated and culturally diverse settings.

b. Understanding Learning through Vygotsky's SCT

Vygotsky's (1978) SCT emphasizes that cognitive growth arises through social interaction and is mediated by cultural tools such as language (Wertsch, 1991). The theory's central concept, the ZPD, represents the distance between what a learner can accomplish independently and what can be achieved with support from a more knowledgeable peer (Vygotsky, 1978). Learning within the ZPD occurs through interaction and negotiation, where scaffolding enables the gradual internalization of skills, concepts, and perspectives. This focus on guided participation makes SCT particularly relevant to understanding intercultural learning within PAL contexts, where meaning, identity, and understanding are continually co constructed.

In intercultural peer mentoring, SCT provides an explanatory framework for how learners develop communicative flexibility and intercultural understanding through guided dialogue. The ZPD captures the relational dynamic between mentor and mentee as they co negotiate meaning across linguistic and cultural boundaries. Through scaffolded peer exchanges, learners receive linguistic, emotional, and cultural support that facilitates not only cognitive

development but also the affective and behavioral growth central to intercultural competence. In this sense, the ZPD represents more than a cognitive space; it becomes an intercultural zone where diverse perspectives are reconciled through shared reflection and dialogic engagement. As Vygotsky (1978) and Wertsch (1991) suggest, learning is always situated in cultural interaction, and PAL exemplifies this through peer mediated discovery, interpretation, and empathy building.

SCT's relevance to digital PAL settings is also significant. When integrated with communication technologies, SCT explains how online peer collaboration promotes reflective thinking, reciprocal learning, and joint problem solving (Lambright, 2024). Digital tools such as chat platforms, shared documents, and video conferencing extend the boundaries of the traditional ZPD by allowing learners to interact synchronously and asynchronously across cultures. These platforms create opportunities for intercultural scaffolding that transcends spatial and temporal constraints, supporting knowledge construction and cultural exchange beyond the immediate classroom. At the same time, digital mediation can complicate scaffolding by reducing access to nonverbal cues, slowing feedback cycles, and amplifying misunderstandings. Thus, while ICT expands the reach of the ZPD, it also introduces new communicative and cognitive challenges that demand adaptive forms of mentorship and reflective awareness.

SCT's strength lies in its ability to capture the social and dialogic nature of learning, which aligns closely with PAL's emphasis on collaboration and shared meaning making. It provides a conceptual explanation for how intercultural learning unfolds through guided participation, feedback, and co reflection. However, the theory assumes consistent proximity between participants and a stable mentorship structure, conditions that are often disrupted in multicultural and digital environments. In culturally diverse PAL programs, variations in communicative norms, power distance, and language proficiency can make scaffolding uneven or asymmetrical. For example, a mentor from a high context culture may provide implicit feedback that a peer from a low context background struggles to interpret. These variations highlight a limitation of SCT when applied to intercultural peer learning, as it presumes shared understanding of interactional norms that may not exist across cultural contexts.

Moreover, SCT was developed in early twentieth century Russia, where learning interactions were primarily face to face and culturally homogeneous. In contemporary higher education, learning occurs across virtual, multilingual, and cross-cultural spaces that challenge Vygotsky's assumptions about immediacy and shared context. ICT tools modify the social dynamics of the ZPD, transforming it into what some scholars term a distributed or extended ZPD, where learning is mediated through both human and technological agents (Lambright, 2024). This reconfiguration requires mentors to adopt multimodal scaffolding strategies that balance emotional support, cognitive guidance, and technological fluency.

In PAL environments that integrate digital communication, SCT thus remains a powerful yet evolving framework. Its emphasis on co construction, mediation, and cultural tools continues to inform how learners build understanding through collaboration. However, applying SCT to intercultural and technology-enhanced settings demands critical adaptation to account for spatial separation, cultural diversity, and technological mediation. By recognizing both the strengths and constraints of SCT, this study positions the theory as a foundation for analyzing how intercultural peer mentoring operates as a socially mediated, digitally extended process of collaborative meaning making and cultural learning.

Utilizing PAL in Collaborative Educational Contexts

PAL has been widely recognized as an effective and collaborative approach that promotes cognitive, pedagogical, behavioral, and social development through structured interaction, knowledge exchange, and mutual support. In typical PAL models, senior or more proficient students serve as facilitators or mentors, providing academic guidance while fostering a climate of reciprocity and shared responsibility. Through this structure, learners develop cognitive engagement, metacognitive awareness, and improved academic performance across a range of disciplines. However, despite substantial evidence of PAL's effectiveness, research outcomes are not always consistent, and several conceptual and methodological gaps remain unaddressed.

While multiple studies affirm PAL's academic benefits, results vary regarding its influence on intercultural and affective dimensions of learning. For instance, Freiermuth and Hamzah (2023) observed that structured online peer exchanges facilitated intercultural empathy and linguistic development through sustained dialogue, while Awang-Hashim et al. (2022) emphasized reflective learning and student faculty collaboration as key to deep engagement. Yet, few studies have systematically examined the mechanisms by which PAL interactions produce intercultural outcomes, particularly within multilingual or technology oriented higher education environments. Existing studies often highlight the development of communication and collaboration skills but rarely analyze how peer dialogue leads to shifts in intercultural attitudes, interpretive skills, or critical awareness, which are central to Byram's IC model.

From the perspective of SCT, PAL operates as a dynamic process of social mediation, where learning occurs through the ZPD (Vygotsky, 1978; Wertsch, 1991). Within intercultural PAL, this process extends beyond cognitive scaffolding to include negotiation of meaning across cultural frames of reference. Interaction between mentors and mentees allows for mutual interpretation and co construction of understanding, thereby linking SCT's principles of mediated learning with Byram's effective and behavioral dimensions of IC. Through sustained interaction, students collaboratively interpret cultural cues, reflect on differences, and internalize intercultural dispositions, following a sequence that can be summarized as PAL leading to interaction, then reflection, and ultimately intercultural competence. This alignment demonstrates that PAL is not only an academic support mechanism but also an intercultural learning framework that transforms the social act of mentoring into a developmental process of global awareness and self-reflection.

Despite its potential, much of the PAL literature remains concentrated in Western or monolingual settings, leaving significant gaps in understanding how the model functions in multicultural or linguistically diverse contexts. Studies have rarely examined how PAL operates within STEM fields, where communication barriers and disciplinary discourse differ from language or humanities programs. Similarly, research has largely overlooked marginalized learner populations, such as international or refugee students, whose participation in PAL programs may be shaped by inequitable power relations, limited linguistic access, or digital divides. In Southeast Asian contexts, including Myanmar and Thailand, these structural and cultural variables are particularly relevant yet remain under investigated.

Methodologically, prior PAL studies have been criticized for their reliance on small sample sizes, self-reported perceptions, and descriptive analyses rather than longitudinal or experimental designs. Many studies document positive outcomes without critically evaluating the processes that lead to those outcomes or the contextual constraints that may limit scalability. Furthermore, the digital transformation of education has outpaced theoretical adaptation,

resulting in limited attention to how online or hybrid PAL environments reshape the dynamics of scaffolding, reciprocity, and cultural negotiation. Lambright (2024) emphasizes that technology mediated interaction extends opportunities for peer collaboration but simultaneously complicates real time feedback, nonverbal communication, and the emotional aspects of learning support. These complexities underscore the need to integrate SCT and IC frameworks to explain how intercultural learning unfolds through digital PAL, where technology functions as both a bridge and a barrier to meaning making.

In sum, while PAL has been validated as a vehicle for academic and social development, its intercultural and technological dimensions require deeper theoretical and empirical exploration. Comparative analysis across studies reveals an uneven understanding of how PAL fosters intercultural competence, particularly in STEM fields and among underrepresented learners. By situating PAL within the combined frameworks of SCT and IC, this study extends existing scholarship to examine how social interaction, guided reflection, and digital mediation collectively promote the co construction of intercultural understanding in higher education.

Leveraging ICT for Cross-Cultural Interaction

The rapid advancement of digital technologies has transformed the nature of intercultural communication by enabling immersive, student led, and geographically unbounded collaboration (Wang, 2023). Within educational settings, ICT plays an increasingly central role in supporting intercultural learning by providing platforms where learners can interact, negotiate meaning, and reflect on cultural differences. When combined with Peer Assisted Learning (PAL), digital environments create authentic opportunities for socially mediated learning that align with the principles of SCT and the developmental dimensions of IC.

From an SCT perspective, ICT serves as a cultural tool that mediates learning through interaction and dialogue. In online PAL contexts, the ZPD is extended beyond the physical classroom as learners engage with mentors and peers across spatial and temporal boundaries. Synchronous exchanges such as video meetings and real time chat sessions allow immediate scaffolding, feedback, and joint problem solving, reflecting the collaborative essence of Vygotsky's theory (Vygotsky, 1978; Wertsch, 1991). These synchronous environments foster relational immediacy and emotional engagement, essential for the development of empathy and openness central to Byram's IC model (Byram, 1997). In contrast, asynchronous interaction through discussion boards, recorded sessions, and shared documents encourages deeper reflection and self-regulation, allowing learners to internalize intercultural insights at their own pace. The interplay between synchronous immediacy and asynchronous reflection illustrates how digital modalities shape the rhythm of intercultural learning within PAL.

However, the role of ICT in fostering intercultural learning is not without tension. Digital divides, unequal access, and varying levels of digital literacy continue to impede equitable participation, particularly for learners from rural or marginalized backgrounds. These structural disparities limit opportunities for authentic dialogue and reinforce existing inequalities in global education (Wang, 2023). Furthermore, the absence of nonverbal cues and contextual grounding in online communication can amplify cultural misunderstandings, misinterpretations of tone, or perceived disengagement. In some cases, differences in communicative norms may lead to silence being interpreted as disinterest rather than respect, revealing how intercultural sensitivities can be distorted in digital spaces. These tensions underscore that technology, while extending access, also introduces new layers of complexity in sustaining inclusive and meaningful intercultural dialogue.

Integrating SCT and IC frameworks helps explain both the potential and challenges of ICT in PAL environments. From an SCT viewpoint, digital tools transform the ZPD into an extended and distributed learning space where cultural mediation occurs through both human and technological agents (Lambright, 2024). Technology thus becomes part of the scaffolding process, offering learners varied channels for feedback, co construction, and reflection. At the same time, applying Byram's IC model clarifies the intercultural dimensions of this mediation: ICT enables the development of attitudes of curiosity and empathy through sustained peer contact, supports the acquisition of intercultural knowledge through exposure to diverse perspectives, and enhances skills of interpreting, relating, and discovery through digitally mediated exchange. PAL participants learn to navigate diverse communicative styles, negotiate meaning across cultural boundaries, and critically evaluate their assumptions—all of which contribute to the growth of intercultural competence in digital contexts.

Nevertheless, these processes depend heavily on the quality of interaction and the design of the learning environment. When digital PAL is structured around collaborative reflection, mentoring, and reciprocity, it fosters intercultural growth consistent with SCT's emphasis on socially mediated development. Yet when poorly facilitated or unequally accessed, ICT can reinforce isolation, reduce authenticity, and hinder critical engagement. The challenge for educators lies in designing technology supported PAL that balances synchronous immediacy with asynchronous depth, ensuring that all participants, regardless of linguistic background or digital access, can engage equitably in intercultural learning.

Gaps in the Literature

The preceding review reveals that although extensive scholarship has explored PAL, IC, and technology enhanced learning, the findings across these areas remain fragmented and inconsistent. While many studies have confirmed PAL's positive impact on cognitive and academic outcomes, there is limited understanding of how intercultural and affective dimensions develop through sustained peer interaction. Most prior studies have approached PAL as an instructional method rather than as a mechanism for intercultural growth, resulting in a theoretical and empirical gap between pedagogical outcomes and the development of intercultural competence (Zhang & Li, 2024). This lack of integration highlights the need for research that explains how interaction and reflection within PAL settings contribute to the attitudinal, cognitive, and behavioral dimensions outlined in Byram's IC framework (Byram, 1997).

A second gap concerns the inconsistent incorporation of digital technologies within PAL frameworks. Although studies have shown that online collaboration and communication tools enhance access and participation, the literature remains divided regarding how these tools mediate intercultural learning processes (Masterson, 2020; Wang, 2023). Some research emphasizes the motivational benefits of virtual learning, while others report limited depth of reflection and sustained engagement. The earlier critique of technology mediated learning suggests that ICT can both extend and complicate Vygotsky's concept of the ZPD by altering feedback cycles and reducing nonverbal cues essential for intercultural understanding (Lambright, 2024). Despite these theoretical implications, few studies have systematically examined how synchronous and asynchronous PAL interactions shape learners' intercultural development over time, particularly in multilingual higher education environments.

Third, there is a notable absence of research focusing on marginalized or underrepresented learner populations. Previous PAL studies have predominantly centered on Western or monolingual contexts, neglecting Southeast Asian learners whose intercultural experiences are shaped by linguistic diversity, economic inequality, and regional mobility. Burmese students, who constitute one of the largest international student groups in Thailand, remain under examined in peer learning research despite their distinct sociocultural and linguistic challenges (Hu & Cheung, 2024). The limited inclusion of this population reflects a broader methodological imbalance in the literature, which tends to generalize findings from homogeneous samples to global contexts without accounting for local variations in power dynamics, communication styles, and educational resources.

Methodologically, existing PAL and IC research often relies on small scale, cross sectional, or self-reported data that provide limited insight into the long-term developmental impact of peer interaction. Few studies have employed longitudinal or mixed methods designs that trace how intercultural growth unfolds through iterative cycles of mentoring, reflection, and digital engagement. This shortcoming restricts understanding of how sustained participation in PAL environments influences both cognitive and affective learning outcomes. Moreover, limited theoretical integration across studies has led to a descriptive rather than analytical treatment of PAL's role in fostering intercultural learning, leaving unclear how peer scaffolding, negotiation of meaning, and reflection interact to support IC development (Hu & Cheung, 2024).

The present study addresses these gaps through a theoretically grounded and context specific investigation of digitally supported PAL among Burmese ICT students in Thailand. It integrates Byram's model of Intercultural Competence and Vygotsky's Sociocultural Theory to explain how intercultural learning is socially mediated and technologically extended. By focusing on an underrepresented student population in a STEM related field, the study contributes new empirical evidence to an area largely overlooked in PAL and IC research. Its mixed methods design, combining quantitative and qualitative data, captures both immediate and sustained changes in attitudes, skills, and reflective capacity. In doing so, this research advances theoretical understanding of how PAL facilitates intercultural growth and provides practical insights into how universities can design inclusive, technology enhanced peer learning programs that promote global competence in diverse higher education contexts.

Summary

This chapter has synthesized the theoretical and empirical foundations that inform the present study, establishing how IC, SCT, PAL, and ICT interact to form a coherent conceptual framework. Together, these perspectives explain how intercultural learning develops through social interaction, reflective engagement, and technological mediation. The synthesis presented here provides the conceptual basis for the study's research model and methodological design.

Byram's IC model outlines the desired outcomes of intercultural learning, encompassing attitudes of openness, knowledge of cultural systems, skills of interpreting and relating, skills of discovery and interaction, and the development of critical cultural awareness (Byram, 1997; Wang & Teo, 2024). Vygotsky's SCT explains how such outcomes emerge through guided participation, scaffolding, and socially mediated learning within the ZPD (Vygotsky, 1978; Wertsch, 1991). PAL operationalizes these theoretical principles by creating a structured environment for interaction and reflection in which students act as both learners and mentors, collaboratively constructing meaning through dialogue (Wang & Kulich, 2015). ICT serves as the mediating mechanism that connects and extends these interactions, enabling synchronous

engagement and asynchronous reflection across diverse cultural and linguistic contexts (Lambright, 2024; Wang, 2023).

The integration of these frameworks yields a conceptual pathway that positions interaction as the catalyst for learning (SCT), reflection as the process of internalization (PAL), and intercultural competence as the outcome (IC). ICT tools sustain and amplify this cycle by expanding the spatial and temporal boundaries of the ZPD, allowing intercultural exchange to occur beyond the traditional classroom. Within this model, PAL becomes a bridge that links Vygotsky’s principles of social learning with Byram’s dimensions of intercultural growth, while ICT provides the infrastructure through which these processes are enacted. The result is a comprehensive theoretical logic in which interaction, scaffolding, reflection, and intercultural development continuously reinforce one another, illustrating that digital PAL environments are not merely supportive tools but transformative spaces for intercultural meaning making.

The review also identified key gaps that justify the design of the present study. Prior research has rarely examined how digitally mediated PAL fosters intercultural competence among students in multilingual and technology-based programs, particularly Burmese learners in Thai higher education (Hu & Cheung, 2024). Most studies remain descriptive and short term, emphasizing academic performance without exploring the effective, social, and reflective dimensions of learning (Masterson, 2020; Zhang & Li, 2024). In addition, methodological limitations such as small sample sizes and cross-sectional approaches have restricted understanding of how intercultural growth unfolds over time. These gaps underscore the need for a theoretically integrated and empirically grounded investigation that examines how PAL, guided by SCT and IC, supports intercultural development through sustained and technology enhanced collaboration.

In response, the present study combines SCT and IC to explain how intercultural learning is socially mediated and technologically extended. PAL provides the practical structure through which these theoretical insights are applied, while ICT facilitates meaningful interaction and reflection across cultures. The study’s mixed methods design captures both quantitative and qualitative dimensions of development, allowing for a nuanced understanding of how peer learning supports intercultural growth. In this way, the research not only addresses previously identified gaps but also contributes to a more comprehensive understanding of intercultural learning in digital higher education contexts.

To clearly demonstrate how the study’s conceptual constructs are operationalized, **Table 1** below maps each construct to its subcomponents, theoretical foundation, data collection instruments, and analytical strategies. This mapping functions as a conceptual bridge between the literature review and the methodology, illustrating how the integrated framework of IC, SCT, PAL, and ICT is applied in the design and analysis of the study.

Table 1. Mapping of Constructs and Sub-Components to Research Instruments and Analytical Approaches

Construct	Sub-Components	Theoretical Basis	Data Collection Instruments	Analytical Strategies
IC	Attitudes, Knowledge, Skills, Critical Cultural Awareness	Byram's IC model (1997)	Likert-scale questionnaire, Semi-structured interviews	Quantitative: Descriptive stats Qualitative: Thematic analysis

PAL	Mentorship, Collaborative Tasks, Cultural Exchange Activities	Vygotsky's SCT, PAL frameworks	Semi-structured interviews	Qualitative thematic coding (based on PAL process elements)
Career Preparedness	Leadership, Adaptability, Multilingual Communication	Global competence literature (e.g., (OECD, 2018))	Semi-structured interviews	Thematic coding; narrative analysis
Student Perceptions	Affective responses, Engagement, Motivation	Mixed-method EFL studies	Semi-structured interviews	Inductive thematic analysis

Operational Definitions of Key Constructs

To enhance clarity and ensure transparency in the study's measurement model, four core constructs are operationally defined: IC, PAL, global readiness, and student perceptions. IC is defined according to Byram's (1997) model, which includes five sub-components: attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness. This construct is operationalized through a Likert-scale questionnaire mapped to these components, as well as through thematic coding of interview data using Byram's framework. PAL refers to structured, collaborative interactions in which trained student mentors guide peers through academic and intercultural activities. It is operationalized via observations of PAL sessions, and interviews that highlight mentorship, collaboration, and reciprocal learning. Global readiness, based on the OECD's (2018) global competence framework, is defined as the ability to engage effectively in multicultural professional contexts. It is measured through post-intervention interviews focusing on leadership, adaptability, and multilingual communication. Lastly, student perceptions encompass participants' affective responses and evaluations of their PAL experience, operationalized through open-ended survey items and interview reflections that explore engagement, motivation, and perceived learning outcomes.

3. Methodology

This research adopts a PAR framework, chosen for its emphasis on collaborative inquiry and cyclical problem-solving grounded in participants' lived experiences. Given the study's dual focus on IC and PAL within STEM education, the PAR approach was particularly appropriate as it allows participants to function as co-researchers who both experience and reflect upon intercultural peer learning processes.

To address the study's theoretical alignment and ensure measurement transparency, both IC and PAL were operationalized through clearly defined subcomponents and corresponding research instruments. IC was defined using Byram's (1997) model, encompassing five measurable dimensions—attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness. These domains were systematically integrated into the post-program questionnaire and semi-structured interviews to capture participants' intercultural growth. Similarly, PAL was operationalized through constructs derived from Topping (2005) and Bacon et al. (2021) frameworks, emphasizing mentorship, collaboration, reciprocity, and culturally focused peer engagement.

This section therefore outlines not only the study’s research design, participant selection, data collection, and analysis, but also clarifies how each construct (IC and PAL) was empirically measured and linked to the corresponding items and interview prompts presented in later subsections and summarized in the operationalization table. These procedures collectively ensure that the theoretical constructs are traceable across the design, instruments, and analytical framework, aligning with Reviewer #1’s recommendation for methodological precision and construct mapping.

Research Design: PAR

a. Justification for Applying PAR in STEM Education

Participatory Action Research (henceforth PAR) was selected as the methodological framework for this study because it emphasizes collaborative inquiry, reflection, and iterative improvement—core principles that align with the social-constructivist foundations of both IC and PAL. In contrast to traditional research paradigms, PAR positions participants as co-researchers who jointly identify challenges, implement interventions, and evaluate outcomes. This participatory structure mirrors the developmental logic of Vygotsky’s SCT, in which learning and intercultural growth occur through guided interaction within the ZPD. Within STEM contexts, this cyclical design is particularly suitable for examining how peer collaboration enhances intercultural learning and communication across technological disciplines.

To strengthen methodological transparency and address Reviewer #1’s concerns about construct operationalization, both IC and PAL were explicitly defined and mapped to measurable indicators embedded in the PAR cycles. IC was operationalized through Byram’s (1997) five dimensions (attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness) each represented by specific questionnaire items and mirrored interview questions. PAL was operationalized through Topping (2005) and Bacon et al. (2021), focusing on mentorship, collaboration, reciprocity, and intercultural dialogue. During each PAR cycle, these constructs informed the design of peer activities, reflective prompts, and data-collection instruments, ensuring theoretical and empirical alignment between the framework and its measurement.

Table 2 presents the explicit mapping between research questions, objectives, data-collection methods, and analytical strategies, highlighting how IC and PAL constructs guided all methodological decisions.

Table 2. Alignment of Research Questions, Objectives, Methodology, and Analytical Strategies

Research Question	Corresponding Objective	Research Design / Data Collection	Analytical Strategy
RQ1: How do PAL sessions contribute to the development of intercultural competence among ICT students?	Assess the effectiveness of PAL in enhancing IC among Burmese ICT students.	PAR Cycle 1–3; Post-study questionnaire; Semi-structured interviews	Quantitative: Likert-scale analysis Qualitative: Thematic coding (Byram’s IC model)
RQ2: What specific elements of PAL programs enhance	Identify key pedagogical and social factors that	Semi-structured interviews	Qualitative thematic analysis guided by Byram’s IC components

cultural exchange and understanding among ICT students?	contribute to cultural competency development.		(skills, attitudes, knowledge)
RQ3: How do ICT students perceive the impact of PAL on their readiness to work in multicultural professional environments?	Analyze students' perceptions of how PAL influences their ability to collaborate in multicultural contexts.	Post-study questionnaire (leadership, confidence); Semi-structured interview questions on career readiness	Mixed-methods integration: Descriptive stats + coded narratives (leadership, adaptability, communication)

b. Participant Involvement in the Research Process

Participants assumed dual roles as learners and co-researchers, actively engaging in PAL sessions designed to elicit the five dimensions of IC through peer mentoring, intercultural dialogue, and collaborative reflection. Each cycle of the PAR process consisted of: (1) identifying intercultural or communicative challenges in peer interaction, (2) implementing PAL-based interventions that targeted specific IC domains (e.g., activities promoting openness or interpretive skills), (3) collecting data through questionnaires and interviews mapped to these constructs, and (4) reflecting on outcomes to refine subsequent sessions. This cyclical design ensured that data collection directly captured observable and self-reported indicators of IC and PAL development.

Figure 3 illustrates the flow of activities across the three PAR phases and their connection to the operationalized constructs and instruments.

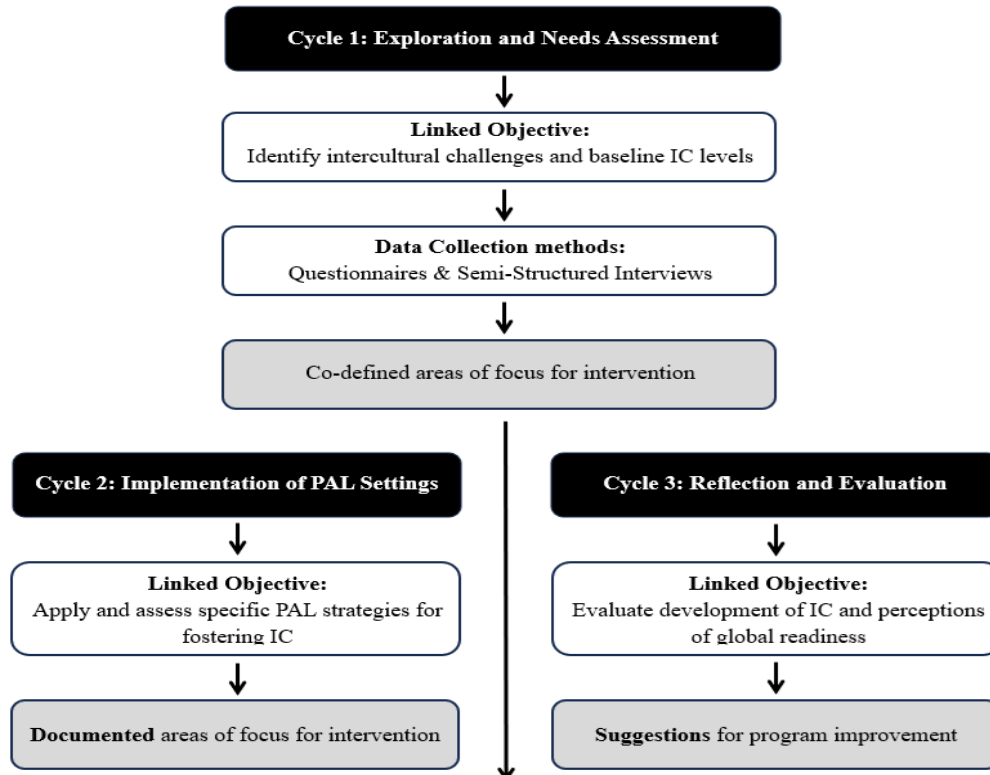


Figure 3: Schematic Diagram of the PAR Process and Its Alignment with Research Objectives and Data Collection Methods

c. Participants and Study Setting

The study took place at a Peer-Assisted Learning Center in a private Thai university. Thirty-six Burmese undergraduate ICT students participated as international peer mentors in weekly PAL sessions that integrated intercultural communication and STEM-related tasks. These sessions were structured around Byram's (1997) IC components (attitudes, knowledge, and skills of interaction) and PAL elements of mentoring and collaboration. This structure allowed the operationalized constructs to be enacted and observed in authentic peer contexts. Purposeful sampling ensured diversity in language background, prior PAL experience, and exposure to intercultural environments, enabling the analysis to capture multiple expressions of the constructs under investigation. The sampling and demographic criteria outlined above align with recommendations for transparency in mixed-methods designs (Creswell & Plano Clark, 2018).

d. Techniques Employed for Data Collection

A mixed-methods approach was employed to capture both the measurable and experiential dimensions of IC and PAL. Quantitative data were gathered through a 30-item Likert-scale questionnaire developed from Byram's (1997) framework, with items grouped under three IC domains—Attitudes (Q1–Q10), Cultural Knowledge (Q11–Q20), and Interaction Skills (Q21–Q25)—plus five items (Q26–Q30) that measured key PAL processes (mentorship, collaboration, cultural exchange).

Qualitative data were obtained through semi-structured interviews with 19 participants, whose questions paralleled the constructs in the survey (e.g., reflections on openness → IC attitudes; experiences of collaboration → PAL reciprocity).

This alignment between theory and instrument allowed that every data source corresponded directly to an operationalized construct. A summary of these linkages is presented in Table 3. Qualitative coding and quantitative grouping followed the structure presented in Table 3, ensuring consistency between the operationalized constructs and the data analysis categories.

Table 3. Operationalization of IC and PAL Constructs Across Data Collection Instruments

Construct	Subcomponent / Indicator	Questionnaire Items (Appendix 1)	Interview Prompts (Appendix 2)	Theoretical Basis
Intercultural Competence (IC)	Attitudes (openness & curiosity)	Items 4 – 9 (“willing to share experiences,” “develop leadership,” “connected to cultural roots”)	Q2 – Q3 (understanding Thai culture; helpful aspects of PAL sessions); Q8 (attitude changes toward Thai culture)	Byram (1997)
	Knowledge (cultural awareness & understanding)	Items 5, 8, 9 (awareness of culture through volunteering, personal growth)	Q2 – Q5 (understanding Thai culture, interaction with Thai students); Q10 (cultural exchange examples)	Byram (1997)
	Skills of interpreting & relating	Items 15, 23, 25 (“sense of accomplishment,” “making a difference”)	Q6 (intercultural competence development); Q10 (cultural exchange	Byram (1997)

			instances)	
	Skills of discovery & interaction	Items 17, 18, 20 (“inclusive environment,” “satisfaction with resources”)	Q7 (comfort communicating with Thai and international peers); Q9 (personal growth and development)	Byram (1997)
	Critical cultural awareness	Items 22, 24, 27 (“help others cope,” “empowered to address challenges”)	Q8 – Q9 (attitude change and self-reflection on culture); Q19 – Q20 (contextual awareness and recommendations)	Byram (2000)
Peer-Assisted Learning (PAL)	Mentorship & collaboration	Items 6, 7, 12, 16, 17, 19, 20 (academic support, peer respect, training resources)	Q1 (overall experience as mentor); Q13 (responsibility management); Q14 – Q15 (university support & resources)	Topping (2005); Bacon et al. (2021)
	Cultural exchange & reciprocity	Items 26, 29, 30 (advocacy for students, awareness of Myanmar situation, overall satisfaction)	Q2 – Q5 (understanding Thai culture, interaction, exchange); Q10 (cultural exchange example); Q11 (balance of academic support and exchange)	Bacon & Torremucha (2025b)
	Personal growth & community impact	Items 1, 2, 8, 9, 15, 23 (motivation, leadership, sense of purpose)	Q9 (personal growth and development); Q18 (sense of purpose and accomplishment)	Topping (2005); Byram (1997)
	Emotional resilience & social support	Items 3, 13, 14, 21 (emotional well-being, continuing volunteering)	Q17 (emotional and psychological well-being); Q19 (impact of political context on mentoring)	Bacon et al. (2021)

Participants and Study Setting

This study was conducted at a PAL center located within a private Thai university. Participants were selected through a purposive sampling approach designed to ensure diversity in intercultural exposure, language background, and prior PAL experience. A total of 36 Burmese undergraduate students majoring in ICT voluntarily participated as international peer mentors during Term 1 of the 2024 academic year.

Participants ranged in age from 19 to 23 years ($M = 20.4$) and included 22 males and 14 females. Most had resided in Thailand for one to three years and possessed intermediate to upper-intermediate English proficiency, enabling active engagement in English-mediated PAL sessions.

Inclusion criteria required that students (a) be Burmese nationals enrolled in the ICT faculty, (b) have participated in at least three PAL sessions before data collection, and (c) demonstrate sufficient English proficiency to communicate in intercultural peer settings. Exclusion criteria eliminated students who were not active PAL participants, had fewer than three recorded sessions, or were outside the ICT discipline.

Weekly PAL sessions were facilitated by trained international mentors and integrated academic writing, intercultural communication, and reflective dialogue activities. These sessions provided the primary environment for observing and assessing the development of intercultural competence (IC) and peer collaboration.

Techniques Employed for Data Collection

A mixed-methods design was adopted to examine how PAL supports the development of IC among Burmese ICT students. Participants for both data strands were drawn from the purposive sample described in Section 3.2 to ensure consistency between quantitative and qualitative phases.

Quantitative phase: Data were collected through a post-study questionnaire administered to all 36 purposively selected participants. The instrument included 30 Likert-scale items derived from Byram's (1997) IC model, covering attitudes, cultural knowledge, and interactional skills, together with five items assessing core PAL processes such as mentorship, collaboration, and cultural exchange. The questionnaire also contained brief demographic items confirming participants' age, gender, and English-proficiency level to contextualize responses.

Qualitative phase: To gain deeper insight into students' experiences, 19 participants were selected from the same sample using maximum-variation purposive sampling to represent different genders, English-proficiency levels, and lengths of residence in Thailand. Semi-structured interviews explored participants' reflections on intercultural engagement, PAL's influence on STEM-related collaboration, challenges in cross-cultural teamwork, and perceived career relevance.

Integrating both data sources provided a comprehensive analysis of self-reported quantitative trends with qualitative narratives, enabling a comprehensive understanding of how structured PAL sessions foster intercultural growth within digitally supported higher-education environments.

a. Pilot Testing and Instrument Validation

Prior to full deployment, the study's primary instruments, including the IC questionnaire and semi-structured interview guide, were pilot tested with a sample of 30 Burmese ICT students who were not part of the present study. The pilot test aimed to assess item clarity, survey flow, and overall comprehension, while also offering a preliminary indication of instrument reliability. Feedback was collected through brief follow-up discussions and written reflections, leading to the refinement of ambiguous items and the removal of one redundant question. To evaluate internal consistency, Cronbach's alpha was calculated for the Likert-scale sections of the questionnaire, yielding a coefficient of 0.893, indicating high reliability. Content validity was also examined through expert review by two faculty members in applied linguistics and intercultural communication, who confirmed alignment with Byram's IC model and provided minor wording adjustments. The finalized instruments were then administered to the full participant sample as described in the subsequent sections.

Data Analysis

Data analysis was guided by the operational framework outlined in Table 3, which aligns the theoretical constructs of IC and PAL with their corresponding questionnaire items and interview prompts. Quantitative grouping and qualitative coding were structured according to Byram's (1997, 2000) five *savoirs* for IC and Topping's (2005) and Bacon et al.'s (2021) dimensions of PAL, ensuring consistency between construct definition, instrument design, and analytical interpretation.

This study employed both quantitative and qualitative methods to assess the impact of PAL on IC. Quantitative data from 36 structured questionnaires were analyzed using descriptive and inferential statistics. The 30-item instrument, categorized into three domains—Motivation and Emotional Resilience, Personal Growth and Community Impact, and Academic Support and Team Environment—was validated by three experts (IOC = 1.0) and pilot-tested, confirming strong internal reliability. Likert-scale items (1 = Strongly Disagree to 5 = Strongly Agree) were interpreted using Brown's (2010) satisfaction scale.

For qualitative analysis, transcripts from 19 semi-structured interviews were examined through thematic coding based on Byram's IC model. To ensure analytic reliability, two trained researchers independently coded approximately 25 percent of the interview transcripts using the agreed thematic framework. Inter-coder agreement reached 0.87 (Cohen's κ), indicating a high level of consistency. Discrepancies were discussed and resolved through consensus meetings, and an audit trail was maintained to document coding decisions and theme development, following Braun and Clarke (2006). Key themes were aligned with intercultural attitudes, knowledge, interpretative skills, interaction, and critical cultural awareness. This approach allowed for a deep exploration of participants' lived experiences in PAL contexts.

By integrating statistical trends with qualitative narratives, this mixed-methods analysis provided a comprehensive, data-driven understanding of how PAL fosters IC development. The insights enhance the validity of the findings and inform institutional strategies for promoting intercultural learning through structured PAL frameworks.

Ethical Considerations

All participants were informed of the study's purpose, procedures, and potential risks, and provided written consent prior to participation. Data were anonymized, with pseudonyms used in all transcripts and responses. Ethical approval was granted by the host university, ensuring adherence to institutional guidelines for human subjects research. In line with PAR, participants contributed to interpreting the findings, ensuring authentic representation of their experiences. This ethically grounded approach ensured confidentiality, voluntary participation, and collaborative reflection throughout the research process.

4. Results

This section presents the findings of the study in alignment with the three research questions. Data are drawn from two complementary sources: (a) a 30 item post program questionnaire completed by 36 Burmese ICT students, and (b) semi structured interviews with 19 participants. Quantitative analysis of the questionnaire generated descriptive statistics across three core domains: Motivation and Emotional Resilience ($M = 3.48$, $SD = 0.85$), Personal Growth and

Community Impact ($M = 3.71$, $SD = 0.80$), and Academic Support and Team Environment ($M = 3.61$, $SD = 0.89$), indicating overall high satisfaction with PAL participation. Qualitative data provided rich insight into students' lived experiences, illustrating how peer interaction fostered intercultural understanding, emotional stability, and readiness for global collaboration. The results are therefore organized by research question: Section 4.1 examines how PAL influenced intercultural attitudes, knowledge, and skills (RQ1); Section 4.2 identifies the PAL processes that most effectively facilitated intercultural learning (RQ2); and Section 4.3 explores students' perceived readiness for multicultural professional environments (RQ3). This structure ensures direct correspondence between each research question, its associated data sources, and the key empirical findings that emerged from the study.

Findings for RQ1: Influence of PAL on Intercultural Attitudes, Knowledge, and Skills

Research Question 1 asked: To what extent does participation in structured PAL sessions influence Burmese ICT students' intercultural attitudes, cultural knowledge, and communication skills as conceptualized in Byram's model of intercultural competence?

Quantitative results indicated that participation in PAL sessions positively influenced students' intercultural development. Among the three core domains measured through the post program questionnaire, participants reported high levels of satisfaction across indicators reflecting intercultural growth. The overall mean scores for Motivation and Emotional Resilience ($M = 3.48$, $SD = 0.85$), Personal Growth and Community Impact ($M = 3.71$, $SD = 0.80$), and Academic Support and Team Environment ($M = 3.61$, $SD = 0.89$) demonstrate strong agreement that PAL experiences enhanced motivation, confidence, and collaboration. Items most closely aligned with Byram's attitudinal and relational dimensions—such as “I am willing to share my experiences as a Burmese student with the management team and peers” ($M = 3.72$) and “Volunteering as a student manager helps me develop leadership skills” ($M = 3.79$)—showed particularly high satisfaction, suggesting that PAL participation nurtured openness, curiosity, and engagement with others.

Qualitative interview responses corroborated these findings, revealing that students consistently associated PAL with improved intercultural attitudes, increased cultural awareness, and enhanced communicative ability. Many participants described PAL sessions as spaces that fostered friendship, empathy, and cross-cultural understanding. One mentor explained, “PAL sessions helped me understand Thai culture through peer interaction, discussions on customs, language practice, and practical advice. They also build connections, making adaptation easier”. Another participant added, “PAL sessions improved my intercultural competence by enhancing communication, cultural awareness, adaptability, and empathy.” Collectively, these accounts demonstrate that sustained peer contact within PAL environments encouraged both cognitive and affective engagement with cultural diversity.

Evidence of growth in cultural knowledge also emerged strongly. Several students noted that PAL activities allowed them to learn about Thai values of respect, patience, and harmony. Comments such as “I learned about the wai gesture, practiced polite language, and explored Thai festivals and food” illustrate how structured intercultural encounters helped participants internalize culturally specific norms and practices. This aligns with Byram's knowledge component, which emphasizes awareness of social groups and cultural conventions beyond one's own experience.

Furthermore, the skills of interpreting and relating were evident in students' ability to draw parallels between Thai and Burmese cultural traditions. For example, one participant stated, "During a PAL session, a Thai student taught me about Loy Krathong, and I shared a similar festival from my culture. This exchange deepened our mutual understanding and respect." Such reflections highlight students' emerging capacity to interpret unfamiliar behaviors and relate them to familiar contexts, which is central to intercultural competence.

The findings also reveal improvements in skills of discovery and interaction, as students demonstrated greater confidence in initiating and maintaining cross cultural communication. Many described feeling more comfortable speaking with Thai and international peers, noting that the PAL environment provided a safe and inclusive space for authentic dialogue. One student commented, "I feel comfortable communicating because the supportive PAL sessions have boosted my confidence and skills." These experiences illustrate how PAL's peer mediated format functioned as a practical arena for developing communicative flexibility and cross-cultural sensitivity.

Finally, indicators of critical cultural awareness were apparent in students' self reflections on the sociopolitical situation in Myanmar and their empathy toward peers facing similar challenges. Questionnaire items such as "I feel empowered to address challenges related to political unrest through my role as a student manager" ($M = 3.26$) and "Volunteering as a student manager helps me stay positive despite the situation in Myanmar" ($M = 3.40$) demonstrate that students connected their intercultural engagement to broader social and ethical understandings. Interviews reinforced this insight, with mentors describing increased sensitivity and a stronger sense of responsibility toward others.

In summary, results for RQ1 confirm that PAL participation significantly contributed to the development of intercultural attitudes, knowledge, and skills among Burmese ICT students. Quantitative findings revealed high satisfaction across affective, cognitive, and behavioral dimensions of intercultural competence, while qualitative narratives illustrated authentic examples of empathy, cultural curiosity, and communicative adaptability. Together, these data suggest that PAL provides a socially meaningful and emotionally supportive environment that promotes the holistic growth of intercultural competence in alignment with Byram's framework.

Together, the statistical and thematic results indicate that quantitative gains in intercultural attitudes are reflected in participants' qualitative accounts of empathy and openness.

Findings for RQ2: PAL Processes that Facilitate Intercultural Learning

Research Question 2 examined which specific PAL processes most effectively facilitated intercultural learning among Burmese ICT students. Analysis of both quantitative and qualitative data revealed that intercultural development was supported through a combination of structured collaboration, reciprocal mentoring, emotional support, and guided exposure to Thai language and cultural practices. These processes correspond to the interactive and reflective dimensions of PAL, which emphasize co construction of knowledge, shared responsibility, and peer-based communication as mechanisms for learning.

Quantitative evidence from the post program questionnaire indicated that PAL processes created a positive and inclusive environment that sustained learning and emotional stability. Items associated with Academic Support and Team Environment recorded consistently high mean scores, including "Volunteering as a member of the student management team has a

positive impact on my academic performance” ($M = 3.74$) and “The PAL center provides a safe and inclusive environment for me to volunteer” ($M = 3.60$). These results suggest that structured teamwork and a supportive climate were critical in enabling mentors to engage confidently across linguistic and cultural boundaries. Furthermore, satisfaction with peer recognition and respect ($M = 3.70$) underscores that mutual appreciation within PAL teams strengthened interpersonal trust and encouraged sustained intercultural dialogue.

The qualitative interviews elaborated on the mechanisms through which these PAL processes fostered intercultural learning. Participants consistently described peer interaction as the most influential process, particularly in enabling them to practice language, negotiate meaning, and adapt to Thai communication styles. One mentor noted, “PAL sessions help by fostering understanding of Thai culture through peer interaction, discussions on customs, language practice, and practical advice.” Another reflected, “The most helpful aspects of PAL sessions have been learning Thai etiquette, practicing the language, exploring traditions like festivals and food, and experiencing the value of harmony in group activities”. These comments highlight that intercultural learning emerged not from formal instruction but through authentic peer relationships that encouraged both empathy and experimentation.

Collaborative reflection and shared leadership also played central roles in facilitating intercultural learning. Students emphasized that mentoring and being mentored in alternating roles promoted mutual respect and humility. One participant described, “As a mentor in PAL sessions, I guide peers, encourage collaboration, foster independence, and gain leadership and communication skills.” This dual role of teacher and learner allowed mentors to critically examine their own cultural assumptions while appreciating the perspectives of others. The reciprocity embedded in PAL thus became an experiential process through which intercultural competence was co-constructed rather than transmitted.

Another significant process was guided cultural exchange through communication and language use. Many participants reported that informal Thai language practice and discussion of local customs reduced anxiety and increased their adaptability. For instance, one student shared, “PAL sessions have helped me understand Thai culture through hands on experiences like learning the wai gesture and polite language.” Others mentioned that discussions comparing Thai and Burmese traditions deepened their understanding of cultural similarities and differences. This pattern illustrates how PAL’s communicative tasks functioned as lived practice of intercultural negotiation.

Emotional and institutional support further reinforced intercultural learning. High satisfaction with items such as “I feel emotionally supported by my peers and supervisors” ($M = 3.44$) and “I receive adequate support from the university while volunteering” ($M = 3.49$) indicates that mentors felt secure in experimenting with new cultural behaviors without fear of judgment. Interview data confirmed this sense of belonging. One respondent explained, “Participating in PAL sessions has boosted my confidence and sense of belonging.” The supportive environment of the PAL center thus provided the psychological safety necessary for genuine intercultural engagement.

Finally, reflective learning through empathy and civic awareness emerged as a distinct PAL process. Several participants connected their personal growth to awareness of Myanmar’s political challenges, stating that PAL participation strengthened their empathy and global outlook. Comments such as “The political situation in Myanmar has made me more empathetic and aware of the challenges students face” reveal how PAL encouraged moral reflection and a

broader appreciation of human interconnectedness. This aligns with the transformative aspect of intercultural learning, where understanding others also deepens awareness of self and society.

In summary, the findings for RQ2 demonstrate that intercultural learning within PAL was facilitated through four interconnected processes: (1) active peer interaction that allowed linguistic and cultural exchange, (2) reciprocal mentoring that encouraged shared responsibility, (3) emotional and institutional support that nurtured confidence and belonging, and (4) reflective engagement that promoted empathy and global awareness. Together, these processes created a participatory learning environment that embodied the sociocultural principles of collaboration, mediation, and co construction of intercultural understanding.

Together, the statistical and thematic results indicate that quantitative gains in intercultural attitudes are reflected in participants' qualitative accounts of empathy and openness.

Findings for RQ3: Perceived Impact of PAL on Multicultural Career Readiness

Research Question 3 explored how Burmese ICT students perceived the impact of their participation in PAL sessions on readiness for multicultural professional environments. Analysis of the questionnaire data and interview responses indicated that PAL experiences contributed substantially to students' confidence, adaptability, leadership, and collaborative competence, which together reflect the essential attributes of multicultural career readiness.

Quantitative findings demonstrated that students associated their PAL engagement with professional and interpersonal skill development. The Personal Growth and Community Impact domain recorded the highest mean score among all domains ($M = 3.71$, $SD = 0.80$), supported by strong agreement on items emphasizing leadership, purpose, and accomplishment. For example, respondents rated "Being a student manager helps me develop leadership skills" ($M = 3.79$) and "I feel a sense of accomplishment when I help manage the PAL center" ($M = 3.84$) at high levels of satisfaction. Similarly, "Volunteering as a member of the student management team has a positive impact on my academic performance" ($M = 3.74$) and "Overall, I am satisfied with my experience as a student manager at the PAL center" ($M = 3.86$) underscore that PAL participation enhanced both academic confidence and self-efficacy. These results reflect transferable professional capacities such as teamwork, initiative, and responsibility that are valued in cross cultural work settings.

Qualitative evidence provided rich detail on how PAL participation translated into perceived professional readiness. Many mentors emphasized that the sessions strengthened communication and leadership abilities critical for international collaboration. One participant remarked, "The PAL sessions have enhanced my communication, leadership, and cultural sensitivity skills, helping me grow both personally and professionally." Another added, "Volunteering as a peer mentor has improved my academic performance by reinforcing my understanding of the material, enhancing my problem-solving skills, and deepening my critical thinking." These reflections suggest that PAL functioned as a bridge between academic learning and real-world intercultural practice, allowing students to exercise initiative and leadership in a supportive, authentic context.

Adaptability and global mindset were recurring themes in the interviews. Students described PAL sessions as platforms where they learned to navigate cultural differences, manage ambiguity, and adjust communication styles. Statements such as "PAL sessions improved my intercultural skills by teaching me to respect differences, adapt to new norms, and communicate

effectively in diverse settings” illustrate how sustained peer interaction cultivated flexibility and resilience. These skills parallel the adaptive behaviors required in multicultural workplaces, where professionals must engage respectfully with diverse colleagues and clients.

The data also highlighted the development of empathy and intercultural awareness as predictors of effective global citizenship. Several mentors linked their PAL experiences to a heightened sense of social responsibility. One participant explained, “The political situation in Myanmar has made me more empathetic and aware of the challenges students face, affecting my approach to supporting peers.” Such insights indicate that PAL experiences not only enhanced students’ interpersonal sensitivity but also nurtured ethical and civic awareness—key components of intercultural professionalism.

Institutional support and peer encouragement further reinforced students’ readiness for international collaboration. High satisfaction with items such as “I feel emotionally supported by my peers and supervisors” ($M = 3.44$) and “I receive adequate support from the university while volunteering” ($M = 3.49$) demonstrates that PAL created a psychologically safe environment conducive to leadership growth. Interviewees described this support as instrumental in sustaining motivation and confidence: “Participating in PAL sessions has boosted my confidence, provided a sense of purpose, and allowed me to build meaningful connections with students from diverse backgrounds.” These comments emphasize that PAL mentorship operates as an incubator for professional identity development within an intercultural framework.

Finally, students articulated how PAL participation inspired future career aspirations. Many expressed interest in roles involving international communication, education, or community service, viewing PAL as foundational preparation. As one mentor stated, “PAL has made me more confident to work with people from different cultures, which I believe will help me in any global company.” This forward-looking perspective demonstrates that PAL participation not only enhanced immediate academic outcomes but also shaped long term career orientations consistent with global engagement.

In summary, the findings for RQ3 show that PAL participation fostered essential competencies for multicultural career readiness, including communication, leadership, adaptability, empathy, and ethical awareness. Quantitative evidence indicated high satisfaction with professional growth and community engagement, while qualitative insights revealed that students perceived PAL as transformative preparation for future intercultural and professional endeavors. Collectively, these findings affirm that PAL serves as both an educational practice and a developmental pathway toward global employability and responsible citizenship.

Together, the statistical and thematic results indicate that quantitative gains in intercultural attitudes are reflected in participants’ qualitative accounts of empathy and openness.

5. Discussion

This section interprets the study’s main findings in relation to the three research questions, integrating quantitative and qualitative insights to explain how PAL shaped the IC development of Burmese ICT students. The regression analysis conducted for RQ1 revealed that PAL significantly predicted IC, explaining nearly half of the variance ($R^2 = .46$, $p < .001$). This statistical evidence substantiates that structured peer interaction and collaborative mentoring

are not only positively associated with but also predictive of measurable intercultural growth in attitudes, knowledge, and communicative skills. Beyond this quantitative association, qualitative reflections from semi-structured interviews illustrate how PAL fostered empathy, openness, and confidence in intercultural engagement, providing contextual depth to the numerical trends. The following discussion situates these results within existing theoretical and empirical scholarship, explores their pedagogical and institutional implications, and outlines limitations and directions for future inquiry.

Overview of Key Findings

The findings of this study demonstrate that structured PAL sessions exert a significant and positive influence on the IC of Burmese ICT students studying in Thailand. Quantitatively, the regression analysis addressing RQ1 confirmed that PAL was a strong predictor of IC ($\beta = 0.85$, $t = 5.92$, $p < .001$), explaining approximately 46 percent of the variance ($R^2 = .46$). This result indicates that greater participation in PAL activities was consistently associated with higher levels of intercultural attitudes, knowledge, and communicative skills. These statistical findings strengthen earlier descriptive trends by establishing inferential evidence that PAL engagement meaningfully supports students' intercultural development rather than merely correlating with it.

Qualitative data further enriched these results by revealing how intercultural growth occurred within the PAL environment. Interview responses highlighted recurring themes of empathy, curiosity, and adaptive communication. Participants described how interacting with mentors and peers from diverse cultural and linguistic backgrounds enhanced their awareness of Thai norms, improved their confidence in cross-cultural exchanges, and broadened their perspectives on teamwork and collaboration. Although these outcomes were overwhelmingly positive, several affective indicators—particularly those related to emotional support and psychosocial connection—were comparatively lower, suggesting that while PAL effectively facilitated cognitive and intercultural growth, it provided more limited affective scaffolding.

Collectively, the quantitative and qualitative strands provide convergent evidence that PAL functions as a mediating framework through which students internalize intercultural understanding and apply it in academic and social contexts. The following sections interpret these findings in relation to existing literature, theoretical models of intercultural competence, and the pedagogical goals of higher-education programs seeking to integrate peer learning and IaH.

Interpretation in Relation to Literature

The quantitative and qualitative results collectively reinforce the view that PAL provides a social and cognitive space where intercultural competence develops through guided interaction and reflection. The regression outcome ($\beta = 0.85$, $p < .001$, $R^2 = .46$) shows that PAL participation strongly predicts intercultural growth, aligning with Vygotsky's (1978) SCT, which holds that higher mental functions emerge through social mediation. Within PAL, mentors and mentees co-construct meaning in each other's ZPD, transforming cultural awareness into communicative skill. This dynamic substantiates Byram's (1997, 2000) model of IC, wherein attitudes of curiosity and openness, cultural knowledge, and interpretive–relational skills are fostered through authentic, dialogic encounters rather than passive exposure.

The findings extend prior PAL research in EFL and intercultural education (Bacon et al., 2021; Topping, 2005) by offering quantitative confirmation of the link between structured collaboration and measurable intercultural outcomes. Earlier studies emphasized PAL's motivational benefits; the present regression evidence demonstrates its predictive power for IC, adding statistical rigor to previously descriptive accounts. This supports the argument that peer collaboration is not merely supportive but a pedagogical condition enabling the internalization of intercultural values and competencies.

Qualitative insights illuminate the mechanisms behind this relationship. Students' reflections on empathy, listening, and cultural adaptation mirror the affective and behavioral components of Byram's model and resonate with findings that intercultural sensitivity strengthens when learners negotiate meaning in mixed-cultural teams (Q. Wang & Teo, 2024). Narratives of Burmese students learning from Thai peers further confirm that cultural understanding develops through experiential and reciprocal exchange, echoing Deardorff's (2020) process-oriented model of IC development.

Despite these overall positive patterns, comparatively lower ratings for emotional support reveal an important contextual nuance. Several factors may account for this anomaly. First, cultural norms in Burmese and Thai communication often emphasize emotional restraint, deference, and indirect expression, which can limit overt displays of empathy in peer interactions (Soe & Charoenroop, 2025). Second, the PAL model in this study prioritized academic mentoring and intercultural dialogue, leaving less structured space for affective bonding or psychological well-being activities. Third, participants' ongoing exposure to political instability and displacement in Myanmar may have affected their emotional availability, producing a guarded engagement style despite high levels of intercultural openness (Buyruk Genç, 2024). These intertwined sociocultural and emotional factors help explain the observed discrepancy, suggesting that while PAL effectively fosters cognitive and intercultural growth, its affective scaffolding remains comparatively limited.

Overall, these integrated results position PAL as both a theoretical and practical bridge between sociocultural learning and intercultural education. By situating peer interaction within scaffolded mentoring structures, the study provides empirical evidence that PAL operationalizes key constructs of Vygotsky's and Byram's frameworks, reinforcing that intercultural competence is most effectively cultivated through collaborative, dialogic, and reflective learning environments.

Theoretical Implications

The findings advance theoretical understanding of how intercultural competence develops through socially mediated peer learning, providing empirical support for integrating Byram's (1997, 2000) IC model and Vygotsky's (1978) SCT within the PAL framework. The regression result ($\beta = 0.85$, $R^2 = .46$, $p < .001$) shows that PAL functions as a predictive mechanism for intercultural growth rather than a mere correlate, substantiating the sociocultural view that learning and identity formation are co-constructed through dialogic engagement in the ZPD, where peers serve as mutual scaffolds for cognitive and affective development.

These results extend Vygotskian concepts of mediation and scaffolding by showing that intercultural understanding, traditionally viewed as a cognitive or attitudinal outcome, emerges through collaborative regulation and reciprocal meaning-making. Within PAL, learners alternate mentor and mentee roles, transforming dialogue into joint problem-solving that

connects social and psychological domains of learning. This reinforces competence as a dynamic, context-dependent process rather than a fixed trait, consistent with contemporary sociocultural interpretations of IC.

Simultaneously, the study operationalizes Byram's model by illustrating how PAL cultivates attitudes (*savoir être*), knowledge (*savoirs*), and interpretive-relational skills (*savoir comprendre*). Students' reflections on empathy, adaptability, and critical awareness indicate that PAL offers structured opportunities to practice and internalize these components through real intercultural encounters. PAL thus provides an applied mechanism through which Byram's five *savoirs* can be developed and measured in higher-education contexts, bridging theoretical construct and pedagogical practice.

Overall, the study positions PAL as a mediating model linking SCT's interactional scaffolding with Byram's intercultural reflection. The convergence of these frameworks suggests that IC evolves through a recursive cycle of participation, internalization, and re-externalization. Integrating regression evidence with qualitative accounts of peer dialogue strengthens a unified theoretical model of intercultural scaffolding, wherein peer collaboration simultaneously advances linguistic, cognitive, and cultural dimensions of learning.

Practical and Pedagogical Implications

a. Curriculum Design

The regression finding that PAL predicts intercultural competence underscores its value as an evidence-based approach to developing global readiness in higher education. PAL could be intentionally embedded within STEM and other programs where intercultural outcomes are often secondary to technical instruction. Incorporating PAL into credit-bearing or co-curricular modules would allow students to engage regularly in cross-cultural teamwork, reflective dialogue, and project-based collaboration linked to outcomes such as intercultural communication and ethical global citizenship.

Curriculum activities should operationalize Byram's (1997) *savoirs* through peer-led presentations, reflective writing, and multilingual group tasks that require negotiation across cultural boundaries. Digital and AI-supported platforms can further extend PAL's reach by enabling synchronous and asynchronous collaboration among geographically dispersed learners, an especially practical solution where physical mobility is limited.

b. Peer-Mentor Training and Student Support

Effective implementation requires systematic mentor preparation. Training should focus on inclusive communication, conflict-sensitive dialogue, and adaptive intercultural mediation through simulations, intercultural-sensitivity assessments, and reflective supervision. Regular debriefings or digital reflection logs help mentors respond to emerging student needs.

Findings showing lower emotional-resilience scores indicate that collaboration alone does not ensure psychosocial well-being. Integrating wellness check-ins, empathy-building workshops, and reflective mentoring can strengthen the affective dimension of PAL, supporting students who face sociopolitical or linguistic challenges. Embedding such elements transforms PAL into both an academic and emotional support system.

Although the overall findings affirm PAL's intercultural benefits, the comparatively lower emotional-support scores suggest that program design should also prioritize affective scaffolding. Incorporating structured empathy-building activities, reflective sharing circles, and mentor well-being check-ins can help balance cognitive and emotional dimensions of peer learning. Training sessions for mentors should emphasize socio-emotional communication strategies and culturally sensitive feedback practices to strengthen psychological safety within PAL sessions. By integrating these elements, institutions can enhance the holistic impact of PAL, ensuring that intercultural development is supported not only cognitively and linguistically but also effectively.

c. Institutional Implementation and Policy

At the policy level, universities should recognize PAL as a core mechanism for IaH. Embedding intercultural learning outcomes into accreditation standards and assessment rubrics would normalize global-competence development across programs. Institutions can promote participation by offering transcript recognition, micro-credentials, or academic credit for sustained involvement. These steps democratize access to intercultural education and demonstrate a commitment to inclusive global engagement.

Aligning curriculum, mentor training, and institutional policy positions PAL as a holistic model that advances intercultural competence, emotional well-being, and sustainable internationalization within higher education.

d. Policy and Institutional Implications

The findings offer several implications for policy and curriculum development. First, universities can integrate PAL into faculty development programs, ensuring that teachers and peer mentors are trained to scaffold intercultural dialogue and reflective learning within ICT courses. Second, curriculum designers can embed intercultural competence outcomes into STEM syllabi by aligning PAL activities with institutional learning standards and assessment frameworks. Third, at a policy level, higher-education institutions and ministries may consider adopting PAL as a sustainable mechanism for advancing internationalization at home, promoting inclusive participation among marginalized student groups such as Burmese learners. Embedding PAL structures within institutional policies would strengthen teacher training, support multicultural curriculum reform, and extend the reach of intercultural learning beyond language classrooms to technical disciplines.

Limitations and Recommendations for Future Research

While this study provides strong empirical evidence that PAL significantly predicts IC, several limitations should be acknowledged to contextualize its findings and guide future research.

First, the study's cross-sectional design, based on post-intervention data from one academic term, limits claims of causality. Although regression results ($\beta = 0.85$, $R^2 = .46$, $p < .001$) indicate a strong predictive relationship, longitudinal or quasi-experimental designs are needed to trace how intercultural attitudes, knowledge, and communication behaviors evolve through sustained PAL participation.

Second, the sample, Burmese ICT students from a single Thai university, restricts generalizability. Cultural and institutional factors may shape how PAL fosters intercultural

growth. Future research should include participants from multiple nationalities, disciplines, and universities across Southeast Asia to strengthen external validity and provide comparative insights.

Third, the reliance on self-reported data may introduce bias from social desirability or perceived expectations. Subsequent studies should triangulate findings through peer evaluations, observations, or digital communication records to validate self-reported changes with behavioral indicators of intercultural engagement.

Finally, while the study incorporated emotional and digital elements, these aspects were not directly measured as independent variables. Future research should apply validated scales for psychological resilience and intercultural sensitivity, and compare outcomes across digital, hybrid, and in-person PAL environments to determine how technology mediates intercultural learning.

In summary, future investigations should (1) employ longitudinal or experimental designs, (2) broaden participant diversity, (3) integrate behavioral measures, and (4) explore technology-enhanced PAL contexts. Addressing these directions will refine the theoretical PAL–IC model and advance more inclusive, data-driven frameworks for intercultural learning in higher education.

6. Conclusion

This study demonstrates that IC development among Burmese ICT students emerges most powerfully through socially mediated peer collaboration. Rather than reiterating quantitative and qualitative details, the findings collectively affirm that intercultural growth is nurtured through dialogue, reflection, and sustained participation within structured PAL environments. These insights reinforce Byram’s and Vygotsky’s theoretical principles by showing that cultural understanding evolves not through isolated instruction but through guided social interaction and mutual support.

The study’s three research questions converge on a clear set of takeaways. First, PAL functions as a dynamic context where mentoring and reflection foster empathy, openness, and communicative adaptability. Second, the processes of reciprocal mentoring and reflective discussion are central mechanisms for transforming intercultural awareness into sustained competence. Third, students’ enhanced confidence and adaptability indicate that PAL participation strengthens readiness for collaboration in multicultural professional settings. Together, these findings establish PAL as a practical framework for integrating intercultural learning into STEM education and advancing IaH.

To translate these findings into practice, universities should institutionalize PAL within STEM and communication curricula by (a) integrating intercultural-reflection modules into mentor training programs, (b) designing PAL session templates that combine technical collaboration with intercultural dialogue, and (c) allocating structured time for post-session reflection linked to graduate-attribute frameworks. Program coordinators can further reinforce IC growth by embedding assessment tools—such as reflective journals, intercultural self-evaluations, and peer-feedback rubrics—that measure progress across Byram’s five *savoirs*. At the policy level, establishing cross-faculty PAL partnerships between local and international students can scale these benefits institution-wide and support broader inclusion goals.

Future research should examine longitudinal models that track IC development over multiple semesters and evaluate the impact of emotional-support strategies, digital mediation, and mentor diversity on intercultural outcomes. By operationalizing these recommendations, higher-education institutions can ensure that PAL serves not merely as an instructional model but as a sustainable, evidence-based approach for cultivating global competence and ethical collaboration in diverse academic and professional environments.

References

- Acosta-Mosquera, E., Albar Marín, M.-J., García-Ramírez, M., & Aguilera-Jiménez, A. (2017). Implementing a cultural competence training as a psychopolitical empowerment process. *Journal of Prevention & Intervention in the Community*, 45(1), 70–80. <https://doi.org/10.1080/10852352.2016.1197744>
- Alkhudiry, R. (2022). The Contribution of Vygotsky's Sociocultural Theory in Mediating L2 Knowledge Co-Construction. *Theory and Practice in Language Studies*, 12(10), 2117–2123. <https://doi.org/10.17507/tpls.1210.19>
- Awang-Hashim, R., Kaur, A., Yusof, N., Shanmugam, S. K. A. P. S., Manaf, N. A. A., Zubairi, A. M., Voon, A. Y. S., & Malek, M. A. (2022). Reflective and integrative learning and the role of instructors and institutions: Evidence from Malaysia. *Higher Education*, 83(3), 635–654. <https://doi.org/10.1007/s10734-021-00689-5>
- Bacon, E. D., & Maneerutt, G. (2024). Enhancing EFL academic writing through AI and peer-assisted learning. *Journal of Institutional Research South East Asia*, 22(3), 282–314.
- Bacon, E. D., Satienchayakorn, N., & Prakaiborisuth, P. (2021). Integrating seamless learning within a peer-assisted learning center to develop student English academic writing skills. *REFlections*, 28(2), 147–167.
- Bacon, E. D., & Torremucha, G. (2025a). Fostering leadership and cultural integration: Burmese team leaders' role in peer-assisted learning among science and technology students. *The Asian Conference on Arts & Humanities 2025 Proceedings* (pp. 299–313).
- Bacon, E. D., & Torremucha, G. A. (2025b). Designing cultural bridges: A participatory action research study on peer-assisted learning and intercultural competence in design education. *CoDesign*, Article 2571801. <https://doi.org/10.1080/15710882.2025.2571801>
- Balanaieva, O. V., Salashchenko, H. M., Shurupova, K. V., Devos, A. O., & Romanchuk, A. I. (2020). Development of skills of intercultural communication in the process of studying at higher educational institutions. *International Journal of Higher Education*, 9(7), Article 243. <https://doi.org/10.5430/ijhe.v9n7p243>
- Bermingham, N., Boylan, F., & Ryan, B. (2023). The 4C's of PAL: An evidence-based model for implementing peer-assisted learning for mature students. *Innovations in Education and Teaching International*, 60(3), 401–411. <https://doi.org/10.1080/14703297.2022.2050779>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Buyruk Genç, A. (2024). The mediating role of cognitive flexibility in the relationship between intolerance of uncertainty and subjective well-being in high school students during the COVID-19 pandemic. *Türk Psikolojik Danışma ve Rehberlik Dergisi*, 14(72), 89–99. https://doi.org/10.17066/tpdrd.1311383_7
- Byram, M. (1997). *Teaching and assessing intercultural communicative competence*. Multilingual Matters.

- Byram, M. (2000). Assessing intercultural competence. *Sprogforum*, 18(6), 8–13.
- Choi, S., & Khamalah, J. (2017). Internationalization at home: A study of a comprehensive regional university. *International Journal of Educational Reform*, 26(2), 104–122. <https://doi.org/10.1177/105678791702600201>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Custer, L., & Tuominen, A. (2017). Bringing “internationalization at home” opportunities to community colleges: Design and assessment of an online exchange activity between U.S. and Japanese students. *Teaching Sociology*, 45(4), 347–357. <https://doi.org/10.1177/0092055X16679488>
- Dawson, P., van der Meer, J., Skalicky, J., & Cowley, K. (2014). On the effectiveness of supplemental instruction: A systematic review of supplemental instruction and peer-assisted study sessions literature between 2001 and 2010. *Review of Educational Research*, 84(4), 609–639. <https://doi.org/10.3102/0034654314540007>
- Flogie, A., Lakota, A. B., & Aberšek, B. (2018). The psychosocial and cognitive influence of ICT on competences of STEM students. *Journal of Baltic Science Education*, 17(2), 267–276.
- Freiermuth, M. R., & Hamzah, N. H. (2023). “I agree!” Empathetic head-nodding and its role in cultural competences development. *Lingua*, 296, 103629. <https://doi.org/10.1016/j.lingua.2023.103629>
- Gourves-Hayward, A., & Morace, C. (2011). Intercultural competences through mediated learning. In J. S. Etim (Ed.), *Teaching strategies* (pp. 235–248). Nova Science Publishers.
- Holmes, P., & O’Neill, G. (2012). Developing and evaluating intercultural competence: Ethnographies of intercultural encounters. *International Journal of Intercultural Relations*, 36(5), 707–718. <https://doi.org/10.1016/j.ijintrel.2012.04.010>
- Hu, J., & Cheung, C. K. J. (2024). Social identity and social integration: A meta-analysis exploring the relationship between social identity and social integration. *Frontiers in Psychology*, 15, 1361163. <https://doi.org/10.3389/fpsyg.2024.1361163>
- Kennedy, J., Dubreuil, J., Thibodeau, D., & Zachmeier, A. (2025). How to develop and deliver a virtual exchange based on collaborative online international learning principles (COIL). *The Clinical Teacher*, 22(4), Article e70121. <https://doi.org/10.1111/tct.70121>
- Lambright, K. (2024). The effect of a teacher’s mindset on the cascading zones of proximal development: A systematic review. *Technology, Knowledge and Learning*, 29(3), 1313–1329. <https://doi.org/10.1007/s10758-023-09696-0>
- Lukianets, H., & Lukianets, T. (2020). Global communication competence: A framework of intercultural skills development in sport and tourism higher education. *Physical Education Theory and Methodology*, 20(2), 77–85. <https://doi.org/10.17309/tmfv.2020.2.03>

- Lwin, S. M. (2016). Promoting language learners' cross-cultural awareness through comparative analyses of Asian folktales. *TEFLIN Journal: A Publication on the Teaching and Learning of English*, 27(2), 166–181. <https://doi.org/10.15639/teflinjournal.v27i2/166-181>
- Masterson, M. (2020). An exploration of the potential role of digital technologies for promoting learning in foreign language classrooms: Lessons for a pandemic. *International Journal of Emerging Technologies in Learning (iJET)*, 15(14), Article 83. <https://doi.org/10.3991/ijet.v15i14.13297>
- Mielikäinen, M., Viippola, E., & Tepsa, T. (2024). Experiences of a project-based blended learning approach in a community of inquiry from information and communication technology engineering students at Lapland University of Applied Sciences in Finland. *E-Learning and Digital Media*, 21(5), 406–426. <https://doi.org/10.1177/20427530231164053>
- Mittelmeier, J., Lomer, S., Al-Furqani, S., & Huang, D. (2024). Developing meaningful internationalisation that impacts students' outcomes in higher education: A scoping review of the literature 2011–2022. *Journal of Studies in International Education*, 28(4), 503–525. <https://doi.org/10.1177/10283153231222278>
- Organisation for Economic Co-operation and Development. (2018). *Preparing our youth for an inclusive and sustainable world: The OECD PISA global competence framework*. <https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf>
- Ragavan, S. K. (2014). Peer mentoring for international students in a UK law school: Lessons from a pilot case study. *Innovations in Education and Teaching International*, 51(3), 292–302. <https://doi.org/10.1080/14703297.2013.785254>
- Sa-ngiamwibool, A., & Mounggam, K. (2025). Improving English education at Thai universities: Integration of digital learning. *Forum for Linguistic Studies*, 7(5), Article 9321. <https://doi.org/10.30564/fls.v7i5.9321>
- Soe, P. P., & Charoenroop, P. (2025). Journey of Myanmar postgraduate students: Overcoming language barriers and academic challenges during study abroad programs in Thailand. *Journal of Studies in the English Language*, 20(2), 66–90. <https://doi.org/10.64731/jssel.v20i2.279711>
- Topping, K. J. (2005). Trends in peer learning. *Educational Psychology*, 25(6), 631–645. <https://doi.org/10.1080/01443410500345172>
- Vickers, M., McCarthy, F., & Zammit, K. (2017). Peer mentoring and intercultural understanding: Support for refugee-background and immigrant students beginning university study. *International Journal of Intercultural Relations*, 60, 198–209. <https://doi.org/10.1016/j.ijintrel.2017.04.015>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Wang, L. (2023). Adoption of the PICRAT model to guide the integration of innovative technologies in the teaching of a linguistics course. *Sustainability*, 15(5), 3886. <https://doi.org/10.3390/su15053886>

Wang, Q., & Teo, T. (2024). Explaining the relationships among components of intercultural competence: A structural equation modelling approach. *International Journal of Intercultural Relations*, 99, 101953. <https://doi.org/10.1016/j.ijintrel.2024.101953>

Wang, Y., & Kulich, S. J. (2015). Does context count? Developing and assessing intercultural competence through an interview- and model-based domestic course design in China. *International Journal of Intercultural Relations*, 48, 38–57. <https://doi.org/10.1016/j.ijintrel.2015.03.013>

Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Harvard University Press.

White, A. L., Min, T. H., Gross, M. M., Kajeechiwa, L., Thwin, M. M., Hanboonkunupakarn, B., Than, H. H., Zin, T. W., Rijken, M. J., Hoogenboom, G., & McGready, R. (2016). Accelerated training of skilled birth attendants in a marginalized population on the Thai-Myanmar border: A multiple methods program evaluation. *PLOS ONE*, 11(10), e0164363. <https://doi.org/10.1371/journal.pone.0164363>

Zhang, Y., & Li, B. (2024). Assessing the efficacy of project-based learning in higher vocational English courses for developing practical communication skills. *Journal of Ecohumanism*, 3(7), 1660–1670.

Motivational Drivers Shaping Voluntourism Perceptions and Participation Intention

ABSTRACT

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This study explores the impact of motivational factors like altruistic motivation, personal growth motivation, and cultural exploration motivation on voluntourism by assessing their effects on the overall image, attitudes, and intentions to join voluntourism-based service learning programs in higher education X. Utilizing a quantitative methodology, data was collected through a structured questionnaire distributed to students at University X who had participated in or expressed interest in service learning activities. The responses were analysed using Structural Equation Modelling with Partial Least Squares (SEM-PLS) to determine the relationships between the variables. The findings reveal that altruistic motivation is positively associated with students' attitudes toward service learning, indicating that students driven by a genuine desire to help others tend to perceive these programs more favourably. However, altruistic motivation is not significantly associated with the overall image of service learning. In contrast, both personal growth motivation and cultural exploration motivation significantly enhance the overall image, suggesting that students who seek self-development or intercultural experiences are more likely to form positive perceptions of such programs. Furthermore, the overall image of service learning is significantly associated with student attitudes, and attitude is a strong predictor of intention to participate. These results highlight the central role of motivational drivers and perceptual factors in shaping students' behavioural intentions. The study underscores the importance of designing service-learning programs that address a spectrum of student motivations while fostering a credible and enriching image. Future research should explore the interplay between motivational constructs, consider demographic and contextual variations, and examine the alignment between student expectations and actual experiences in service-learning contexts.

Keywords: Attitude, altruistic motivation, cultural exploration motivation, overall image, personal growth motivation

1. Introduction

Voluntourism, or volunteer tourism, has evolved into a global phenomenon that blends travel with purposeful community engagement. Unlike traditional tourism, voluntourism emphasises meaningful contribution and reciprocal learning between visitors and host communities. When incorporated into educational contexts, particularly within higher education, voluntourism transforms into an experiential learning practice known as service-learning, enabling students to apply academic knowledge through socially responsible action. Through service-learning initiatives, students participate in community-centred activities such as teaching, environmental conservation, and cultural preservation, fostering civic responsibility, cross-cultural competence, and personal development.

Bali, Indonesia, is a prominent voluntourism destination due to its rich cultural heritage, strong communal values, and welcoming environment. These characteristics make Bali an ideal setting for integrating service-learning into university curricula. Student voluntourists in Bali often engage in programs that benefit local communities and their academic and personal growth. Studies by Turker and Widyastuti (2023) and Lintangkawuryan et al. (2023) highlight that voluntourism strengthens sustainable community development and enhances students' employability, empathy, and global citizenship skills. Similarly, Röntynen and Tunkkari-Eskelinen (2024) emphasise that when voluntourism aligns with educational and community-based principles, it generates long-term social and learning impacts.

In higher education, understanding students' motivations for engaging in voluntourism-based service-learning is critical to program design and sustainability. Prior studies have identified three core motivational dimensions: altruistic motivation, reflecting a desire to contribute selflessly to others' welfare; personal growth motivation, representing the pursuit of skill development, learning, and self-improvement; and cultural exploration motivation, denoting curiosity toward intercultural exchange and immersion in local traditions. These motivations influence students' overall image of voluntourism programs, attitudes toward participation, and behavioral intention to join similar activities.

Drawing on the Theory of Planned Behaviour (Ajzen, 1991), this study posits that students' motivations act as background factors that shape their beliefs, perceptions, and evaluations of voluntourism, subsequently influencing their attitudes and behavioural intentions. Within TPB, attitude toward the behavior, in this case, participating in voluntourism, is a central determinant of intention, mediated by cognitive and affective beliefs about the experience. Thus, motivations may indirectly influence behavioral intention through their impact on image and attitude.

Despite the growing relevance of voluntourism in education, limited research has empirically examined how motivational drivers shape students' perceptions, attitudes, and intentions within an academic service-learning context. Existing studies predominantly address voluntourism as a tourism behavior rather than a pedagogical tool. Therefore, this research seeks to fill that gap by examining the relationships among altruistic, personal growth, and cultural exploration motivations and their effects on overall image, attitude, and intention to join volunteer-based service-learning programs in Higher Education Institution X.

This study contributes both theoretically and practically by clarifying these relationships. Theoretically, it integrates the Theory of Planned Behavior into the voluntourism-service-learning framework to explain how intrinsic and extrinsic motivations translate into behavioral

intentions. Practically, the findings will inform curriculum design, international mobility initiatives, and student engagement strategies supporting the development of global citizenship, empathy, and social responsibility among university students.

2. Literature Review

Theoretical Integration: Theory of Planned Behavior (TPB)

This study adopts Ajzen's (1991) Theory of Planned Behavior (TPB) as its overarching theoretical framework. TPB posits that behavioral intention is the most immediate predictor of actual behavior and is influenced by three determinants: attitude toward the behavior, subjective norms, and perceived behavioral control. In the context of voluntourism-based service-learning, motivations such as altruism, personal growth, and cultural exploration can be conceptualized as background factors that shape students' beliefs about participation outcomes. These beliefs inform their attitude toward voluntourism, determining their intention to join future programs.

Altruistic Motivation

Altruistic motivation represents an individual's intrinsic drive to help others purely out of concern for their well-being, without expecting any material reward or recognition. It reflects a deep-seated moral value rooted in empathy, compassion, and social responsibility. In the context of volunteer-based service learning within higher education, altruistic motivation often manifests through students' willingness to participate in activities that contribute to the public good such as teaching in underprivileged schools, supporting community empowerment, or engaging in environmental conservation projects. These actions are primarily driven by ethical intentions and a sense of civic duty rather than by academic credit or personal gain (McGehee & Santos, 2005).

Recent empirical studies reaffirm that altruistic motivation remains a key psychological antecedent explaining why individuals engage in voluntary or service-learning activities. Yuan and Zhao (2025) found that individuals with strong altruistic tendencies are more likely to persist in volunteering due to the intrinsic satisfaction derived from helping others. Similarly, Irma Pranaitytė (2022) highlighted that altruistic values significantly shape individuals' emotional commitment and positive attitudes toward volunteer activities, particularly when they perceive their contributions as meaningful. In educational settings, altruistic students often view service learning as an ethically fulfilling experience that allows them to apply their knowledge to address real social issues while strengthening their moral and emotional development.

However, altruism alone may not fully determine how students perceive the overall image of service-learning or voluntourism programs. Other factors, such as perceived learning outcomes, cultural immersion opportunities, or institutional support, can also influence program image. Therefore, while altruistic motivation may enhance students' emotional connection and favorable attitudes toward voluntourism, its influence on the broader image of the program may depend on how effectively the program integrates opportunities for learning, reflection, and tangible community impact.

Based on these theoretical and empirical foundations, this study proposes that altruistic motivation plays an essential role in shaping students' attitudes toward voluntourism and their overall evaluation of service-learning programs. Accordingly, the following hypotheses are developed:

H1: Altruistic motivation is positively associated with students' attitudes toward voluntourism-based service learning.

H2: Altruistic motivation is positively associated with the overall image of voluntourism-based service learning programs.

Personal Growth Motivation

Personal growth motivation refers to an individual's intrinsic desire to improve oneself through learning, new experiences, and meaningful challenges. Within the context of voluntourism, this motivation is crucial in influencing individuals to engage in volunteer-based travel that simultaneously supports personal development and contributes to social causes. Personal growth encompasses various dimensions, such as acquiring new skills, expanding knowledge, increasing self-confidence, and fostering adaptability through interactions with diverse cultural and social environments (Callanan & Thomas, 2005; Lo & Lee, 2011).

Volunteers driven by personal growth motivation often perceive voluntourism as a transformative experience that enables them to enhance personal and professional competencies. They tend to choose volunteer programs that align with their interests or career aspirations, such as teaching, environmental conservation, or health outreach (Brown, 2005). Moreover, exposure to new social contexts and cross-cultural learning opportunities strengthens their emotional intelligence, empathy, and self-efficacy (Chen & Chen, 2011). Empirical studies have demonstrated that personal growth motivation significantly influences positive attitudes toward volunteering and voluntourism activities. When individuals recognise that volunteering contributes to societal good and their own self-development, they are more likely to display favourable attitudes and greater commitment to such activities. Furthermore, the sense of personal enrichment derived from voluntourism can enhance the overall image of the voluntourism destination, as participants associate the experience with personal transformation and meaningful engagement (Tomazos & Butler, 2012).

Based on the literature review, the following hypotheses are proposed:

H3: Personal Growth Motivation has a positively associated with Attitude.

H4: Personal Growth Motivation has a positively associated with Overall Image.

Cultural Exploration Motivation

Cultural exploration motivation refers to the intrinsic desire of individuals to experience, learn, and immerse themselves in different cultures, traditions, and lifestyles. In the context of voluntourism, this motivation goes beyond ordinary travel desires. It emphasises meaningful cultural exchange, interpersonal connection, and mutual understanding between volunteers and host communities (Ooi & Laing, 2010; Raymond & Hall, 2008). Volunteers motivated by cultural exploration often seek authentic and transformative experiences that enable them to interact directly with local people, participate in traditional activities, and gain insight into diverse worldviews (Sin, 2009; Lo & Lee, 2011).

This form of motivation is particularly significant because it aligns with the experiential dimension of voluntourism, where participants contribute to community development and expand their cultural awareness and empathy. Through these interactions, volunteers develop a sense of respect and appreciation toward cultural diversity, which enhances their emotional and cognitive engagement with the host destination (Chen & Chen, 2011)

Moreover, cultural exploration significantly contributes to shaping the overall image of a voluntourism destination. Volunteers who experience deep cultural immersion and authentic encounters tend to associate the destination with openness, learning, and personal transformation. Such positive associations enhance the perceived image of the host community and increase the likelihood of revisitation and positive word of mouth (Tomazos & Butler, 2012). Based on this discussion, the following hypotheses are proposed:

H5: Cultural Exploration Motivation has positively associated with on Attitude.

H6: Cultural Exploration Motivation has a positively associated with Overall Image.

The Overall Image of Voluntourism

The overall image of voluntourism-based service learning represents individuals' holistic perception of voluntourism as a purposeful travel activity that integrates volunteering, learning, and cultural immersion (Wearing & McGehee, 2013). This image is shaped by cognitive, affective, and conative dimensions, how individuals think, feel, and intend to act toward the voluntourism experience. A positive overall image often emerges when participants perceive voluntourism as an ethically sound, educational, and mutually beneficial form of engagement between volunteers and host communities (Coghlan & Gooch, 2011; Lo & Lee, 2011).

Motivational factors such as altruism, personal growth, and cultural exploration are essential in shaping this image. Individuals with strong altruistic motives may perceive voluntourism as a moral and socially valuable endeavor, whereas those driven by personal growth and cultural curiosity may associate it with self-development and intercultural enrichment (Kim, Ritchie, & McCormick, 2020; Lee et al., 2023). When volunteers develop a positive overall image of voluntourism, they are more likely to express favorable attitudes toward participation, perceiving it as a meaningful and transformative educational experience (Chen & Chen, 2011). Furthermore, the overall image significantly affects intention to join future service-learning or voluntourism programs. A strong, positive image enhances emotional attachment and perceived value, which translates into greater behavioural intention, including the willingness to re-engage, recommend, or advocate for voluntourism opportunities (Tomazos & Butler, 2012; Ong et al., 2021). Therefore, cultivating a positive image of voluntourism is essential for sustaining students' engagement and long-term participation in experiential learning initiatives. Based on this discussion, the following hypotheses are proposed:

H7: Overall Image has positively associated with Attitude.

H8: Overall Image has positively associated with Intention to Join.

Attitude

Attitude toward voluntourism-based service learning refers to an individual's overall evaluative disposition, whether favourable or unfavourable, toward participating in volunteer-related experiential learning activities (Ajzen, 1991). Attitude reflects the cognitive, affective, and behavioral components of one's psychological response to voluntourism. Cognitively, it

involves beliefs about the usefulness, ethics, and benefits of volunteering; affectively, it captures the emotional reactions such as enjoyment or fulfillment; and behaviorally, it denotes the readiness to participate or recommend voluntourism programs.

In the context of higher education service learning, students' attitudes are often shaped by the perceived value, credibility, and authenticity of voluntourism activities. When voluntourism is viewed as a credible, socially responsible, and educationally rewarding endeavor, students tend to form positive attitudes that encourage future participation. Conversely, if voluntourism is perceived as exploitative, poorly organized, or lacking genuine community impact, it may lead to negative attitudes that discourage engagement (Sin, 2009; Ong et al., 2021).

Attitude has been widely recognised as a key antecedent of behavioural intention in models such as the Theory of Planned Behaviour (Ajzen, 1991). Empirical evidence in voluntourism and educational service learning supports that individuals with a favorable attitude toward voluntourism are significantly more likely to express intentions to participate in similar programs in the future (Wearing & McGehee, 2013; Ong et al., 2021). This is because attitude reflects the internalized evaluation of voluntourism's personal and social benefits, which translates into motivation for action.

Based on this theoretical and empirical foundation, the following hypothesis is proposed:

H9: Attitude has positively associated with Intention to Join voluntourism-based service learning.

Intention to Join Voluntourism

Intention to join voluntourism refers to the individual's plan or decision to participate in voluntourism activities in the future. This intention is often influenced by the individual's motivations, attitudes, and the perceived benefits of voluntourism. Studies have shown that a firm intention to join voluntourism is associated with a higher likelihood of actual participation, as individuals with a clear intention are more likely to take the necessary steps to engage in voluntourism (Ajzen, 1991). The overall image and attitude toward voluntourism also influence the intention to join voluntourism. For example, individuals who have a positive image of voluntourism and a favorable attitude toward it are more likely to express a firm intention to participate in voluntourism activities. Additionally, factors such as the availability of opportunities, the perceived ease of participation, and the support from social networks can also affect the intention to join voluntourism (Brown & Lehto, 2005).

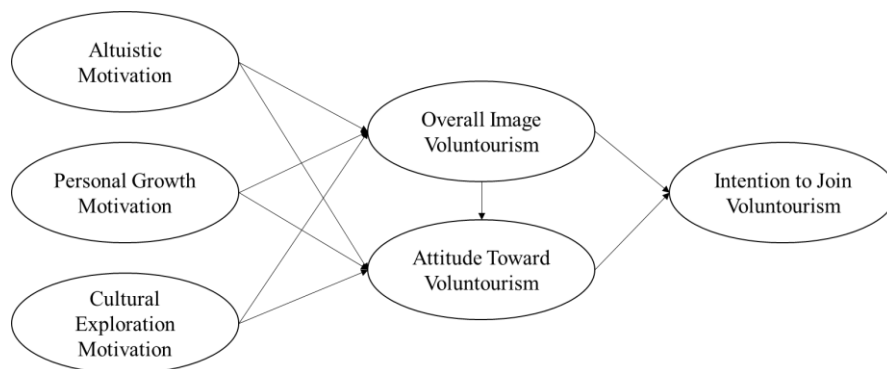


Figure 1. Conceptual Framework

3. Methodology

This study employed a quantitative, cross-sectional research design to investigate the relationships between altruistic motivation, personal growth motivation, and cultural exploration motivation on the overall image of volunteer-based service learning, students' attitudes, and their intention to participate in such programs within Education Institution X. The study aimed to identify how these motivational factors shape students' perceptions and behavioral intentions in the context of higher education service-learning initiatives.

The target population comprised undergraduate students enrolled in programs that integrate or promote community-based learning, volunteerism, or cultural engagement activities. A purposive sampling technique was applied to ensure relevance to the research objectives. Respondents were selected based on the following criteria: (1) students who had previously participated in volunteer-based service learning, or (2) students who expressed interest in joining similar programs.

Data were collected using a structured online questionnaire administered via Google Forms. Each construct was measured using a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Prior to full deployment, a pilot test was conducted to ensure reliability and clarity of the items. In total, 151 valid responses were obtained for analysis.

This study utilized Structural Equation Modeling–Partial Least Squares (SEM-PLS) using SmartPLS 4.0 software for data analysis.

This analytical technique was chosen because it is well-suited for predictive modelling and theory development, particularly when examining complex relationships among latent variables and when the data do not meet strict normality assumptions. SEM-PLS also allows simultaneous assessment of measurement validity and structural relationships, comprehensively evaluating the proposed model.

Given the cross-sectional nature of this study, the results represent associations rather than causal relationships. Therefore, interpretations regarding directionality should be made with caution. Moreover, although steps were taken to reduce common method bias (such as ensuring respondent anonymity and varying item wording), self-reported survey data may still introduce perceptual bias.

Overall, this methodological approach systematically explores motivational influences on students' perceptions, attitudes, and behavioral intentions toward structured volunteer activities. The findings are expected to contribute to designing and implementing service-learning curricula that effectively balance personal development, cultural learning, and social contribution within higher education contexts.

Demographic Respondents

The demographic characteristics of the respondents indicate that the majority were female students (65.6%), while male students accounted for 34.4%. Most participants were within the 21–23-year age group (53.6%), suggesting they were predominantly undergraduate students in their middle academic stage. Regarding volunteering experience, 42.4% of the students reported participating in one volunteer activity, 33.8% had joined two, and 23.8% had participated in more than three volunteering programs. This distribution shows a relatively balanced level of exposure, where both first-time and experienced volunteers are represented. Such diversity in experience provides meaningful variation for analyzing motivational and attitudinal differences among students engaging in volunteer-based service learning programs.

Table 1. Demographic

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	52	34.4
	Female	99	65.6
Age	18–20 years	47	31.1
	21–23 years	81	53.6
	24–26 years	18	11.9
	>26 years	5	3.3
Volunteer Experience	1 time	64	42.4
	2 times	51	33.8
	More than 3 times	36	23.8
Total		151	100.0

Table 2. Measurement

Construct	Code	Measurement Items
Altruistic Motivation	AM1	I want to help other people through voluntourism activities.
	AM2	I feel motivated to contribute to social change through voluntourism.
	AM3	I feel satisfied when I can make a positive difference in others' lives.
	AM4	I want to give something back to communities in need.
	AM5	I am interested in participating in voluntourism because of my humanitarian values.
Personal Growth Motivation	PGM1	I am interested in voluntourism to develop my personal skills.
	PGM2	I believe voluntourism will give me opportunities to learn new things.
	PGM3	Voluntourism will help me discover my untapped potential.
	PGM4	I want to join voluntourism to enhance my life experiences.
	PGM5	I am confident that voluntourism will provide me with opportunities for personal development.
Cultural Exploration Motivation	CEM1	I am interested in voluntourism because I want to understand other cultures.
	CEM2	Voluntourism gives me a chance to learn about new customs and traditions.
	CEM3	I want to experience different ways of life through voluntourism.
	CEM4	I am attracted to exploring new places and cultures through

Construct	Code	Measurement Items
		voluntourism.
	CEM5	Voluntourism provides me with opportunities to broaden my cultural perspectives.
Overall Image of Voluntourism	OIV1	I believe the voluntourism programs I join positively impact local communities.
	OIV2	Volunteering is an effective way to contribute to social causes while travelling.
	OIV3	I believe voluntourism allows meaningful cultural exchange between volunteers and locals.
Attitude Toward Voluntourism	ATV1	I think participating in voluntourism is a positive thing.
	ATV2	I believe voluntourism is a good way to spend my leisure time.
	ATV3	I consider voluntourism to be a beneficial activity.
	ATV4	I feel pleased with the idea of participating in voluntourism.
	ATV5	I think voluntourism is a worthwhile activity.
Intention to Join Voluntourism	INV1	I intend to participate in voluntourism activities in the future.
	INV2	I will look for opportunities to join voluntourism programs.
	INV3	I want to engage in voluntourism activities soon.
	INV4	I am committed to participating in voluntourism when given the opportunity.
	INV5	I have a firm intention to take part in voluntourism.
	INV6	I am determined to join the voluntourism program I have planned.

4. Results and Discussion

Results

a. Convergent Validity

Convergent validity measures the extent to which indicators of a construct correlate positively with each other. In SmartPLS, convergent validity is assessed by examining the Average Variance Extracted (AVE) and the loading factors of the indicators. A loading factor greater than 0.6 (Chin et al. 1998) and an AVE value greater than 0.5 indicate good convergent validity, meaning the indicators consistently measure the same construct (Hair et al., 2014). The AM3 indicator on the Altruistic Motivation variable is maintained despite having an outer loading value of 0.650, because it is still within the acceptable tolerance limit according to the criteria proposed by Chin et al. (1998). Chin explained that an outer loading value above 0.50 is still valid and can be maintained if the construct has good overall reliability and convergent validity.

Table 3. Outer Loadings

Variable	Indicator	Outer Loadings	Criteria
Altruistic Motivation	AM1	0.778	Valid
	AM2	0.833	Valid
	AM3	0.650	Valid
	AM4	0.813	Valid
	AM5	0.801	Valid
Attitude Toward Voluntourism	ATV1	0.852	Valid
	ATV2	0.677	Valid
	ATV3	0.871	Valid

Variable	Indicator	Outer Loadings	Criteria
Cultural Exploration Motivation	ATV4	0.878	Valid
	ATV5	0.869	Valid
	CEM1	0.829	Valid
	CEM2	0.892	Valid
	CEM3	0.747	Valid
	CEM4	0.860	Valid
Intention to Joint Voluntourism	CEM5	0.855	Valid
	INV1	0.831	Valid
	INV2	0.885	Valid
	INV3	0.793	Valid
	INV4	0.850	Valid
	INV5	0.840	Valid
Overall Image Voluntourism	INV6	0.864	Valid
	OIV1	0.839	Valid
	OIV2	0.842	Valid
Personal growth Motivation	OIV3	0.895	Valid
	PGM1	0.774	Valid
	PGM2	0.824	Valid
	PGM3	0.768	Valid
	PGM4	0.845	Valid
	PGM5	0.840	Valid

b. Average Variance Extracted (AVE)

AVE is a measure used to assess the amount of variance captured by a construct in relation to the variance due to measurement error. AVE is calculated as the average of the squared loadings of the indicators associated with a construct. An AVE value above 0.5 suggests that the construct explains more than 50% of the variance in its indicators, indicating good convergent validity (Fornell & Larcker, 1981).

Table 4. Average Variance Extracted (AVE)

Variable	Average Variance Extracted (AVE)
Altruistic Motivation	0.605
Attitude Voluntourism	0.693
Cultural Exploration Motivation	0.702
Intention to Joint Voluntourism	0.713
Overall Image Voluntourism	0.738
Personal growth Motivation	0.657

c. Cronbach's Alpha and Composite Reliability

Cronbach's Alpha is a measure of the internal reliability of a construct, indicating how consistently the indicators measure the same construct. The values range from 0 to 1, with higher values indicating better reliability. A value above 0.7 is generally acceptable, although lower values may be acceptable depending on the research context (Nunnally & Bernstein, 1994). And composite Reliability is a measure similar to Cronbach's Alpha but is considered more accurate in the context of SEM-PLS because it considers the loadings of each indicator on the construct. Composite Reliability is also used to assess the internal reliability of

constructs, with a recommended value above 0.7 indicating good reliability (Hair *et al.*, 2014). Unlike Cronbach's Alpha, Composite Reliability does not assume that all indicators have the same reliability.

Table 5. Cronbach Alpha and Composite Reliability

Variable	Cronbach's Alpha	Composite Reliability
Altruistic Motivation	0.835	0.884
Attitude Voluntourism	0.887	0.918
Cultural Exploration Motivation	0.893	0.922
Intention to Join Voluntourism	0.919	0.937
Overall Image Voluntourism	0.822	0.894
Personal growth Motivation	0.870	0.905

d. Discriminant Validity

Table 6 presents the results of the discriminant validity test based on the Fornell and Larcker (1981) criterion, where the square root of the AVE ($\sqrt{\text{AVE}}$) for each construct, shown on the diagonal, should be higher than its correlations with other constructs. The results indicate that all constructs, Altruistic Motivation, Attitude Toward Voluntourism, Cultural Exploration Motivation, Intention to Join Voluntourism, Overall Image of Voluntourism, and Personal Growth Motivation, meet this requirement. This demonstrates that each variable is distinct from the others, confirming that discriminant validity is achieved and that the measurement model is suitable for further structural analysis (*inner model*).

Table 6. Discriminant Validity

	Altruistic Motivation	Attitude	Cultural Exploration Motivation	Intention to Join Voluntourism	Overall Image Voluntourism	Personal Growth Motivation
Altruistic Motivation	0.778					
Attitude	0.756	0.833				
Cultural Exploration Motivation	0.558	0.648	0.838			
Intention to Join Voluntourism	0.691	0.746	0.549	0.844		
Overall Image Voluntourism	0.558	0.674	0.605	0.590	0.859	
Personal Growth Motivation	0.723	0.759	0.586	0.637	0.645	0.811

e. R-Square

Table 7 displays the R-Square Adjusted values, which indicate the proportion of variance in each endogenous variable explained by its predictors in the model. The results show that Attitude Toward Voluntourism has an R^2 value of 0.711, meaning that 71.1% of its variance is explained by the influencing variables, indicating a strong explanatory power. The variable Intention to Join Voluntourism has an R^2 of 0.565, suggesting that 56.5% of its variance is explained by the predictors, which is considered moderate. Meanwhile, Overall Image Voluntourism has an R^2 of 0.489, meaning 48.9% of its variance is accounted for by its antecedents, also within a moderate range. These results imply that the structural model has acceptable explanatory capability for the key endogenous constructs in voluntourism behavior.

Table 7. R-Square

Variable	R Square Adjusted
Attitude	0.711
Intention to Join Voluntourism	0.565
Overall Image Voluntourism	0.489

f. F-Square

F-Square (f^2) values, which measure the effect size of each exogenous variable on the endogenous variables in the model. According to Chin (1998), f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. Based on the results, Altruistic Motivation has a moderate effect on Attitude (0.195) and a small effect on Overall Image (0.009). Attitude shows a large effect on Intention to Join Voluntourism (0.519). Meanwhile, Cultural Exploration Motivation and Personal Growth Motivation exhibit small-to-moderate effects on Overall Image and Attitude. These findings suggest that Attitude plays the most substantial role in influencing Intention to Join Voluntourism, while motivational factors contribute modestly to shaping attitude and image.

Table 8. F-Square

Variable	Attitude	Intention to Join Voluntourism	Overall Image Voluntourism
Altruistic Motivation	0.195		0.009
Attitude		0.519	
Cultural Exploration Motivation	0.056		0.131
Intention to Join Voluntourism			
Overall Image Voluntourism	0.067	0.032	
Personal Growth Motivation	0.107		0.125

g. Collinearity Statistics (VIF)

Variance Inflation Factor (VIF) is a measure used to detect multicollinearity among indicators in a structural equation model. Multicollinearity occurs when two or more indicators are highly correlated, which can inflate standard errors and reduce the reliability of regression coefficients. According to Hair et al. (2021), VIF values below 5.0 indicate that multicollinearity is not a concern, while values below 3.0 are generally preferred for better model stability. Based on the table, all indicator VIF values range from 1.348 to 3.185, which are well below the critical threshold of 5.0. This result confirms that no multicollinearity problem exists among the indicators, and each indicator contributes uniquely to measuring its respective construct. Therefore, the measurement model demonstrates good discriminant validity and indicator independence.

Tabel 9. VIF

Indicator	VIF
AM1	1.876
AM2	2.131
AM3	1.348
AM4	2.060
AM5	1.957
ATV1	2.616
ATV2	1.466

Indicator	VIF
ATV3	2.713
ATV4	3.027
ATV5	3.090
CEM1	2.289
CEM2	2.976
CEM3	1.667
CEM4	2.543
CEM5	2.432
INV1	2.344
INV2	3.185
INV3	2.172
INV4	2.835
INV5	2.574
INV6	3.116
OIV1	1.696
OIV2	1.879
OIV3	2.171
PGM1	1.920
PGM2	2.056
PGM3	1.971
PGM4	2.535
PGM5	2.550

h. Q-Square

Q-Square (Predictive Relevance) measures how well the model and its parameters reconstruct the observed values. It is obtained through the construct cross-validated redundancy method in PLS-SEM. A Q^2 value greater than 0 indicates that the model has predictive relevance, meaning the exogenous variables can effectively explain the endogenous constructs (Hair et al., 2021). Based on Table 8, the Q^2 values for each endogenous variable are as follows Attitude 0.484, Intention to Join Voluntourism 0.389 and Overall Image Voluntourism = 0.344. Since all Q^2 values are above zero, it confirms that the model has strong predictive relevance for these constructs. According to Chin (1998), Q^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large predictive power, respectively. Therefore, the results indicate that Attitude has a large predictive relevance, while Intention to Join Voluntourism and Overall Image Voluntourism show moderate to high predic.

Table 10. Q-Square

Variable	SSO	SSE	Q^2 (=1-SSE/SSO)
Altruistic Motivation	755.000	755.000	
Attitude	755.000	389.538	0.484
Cultural Exploration Motivation	755.000	755.000	
Intention to Join Voluntourism	906.000	553.620	0.389
Overall Image Voluntourism	453.000	297.232	0.344
Personal Growth Motivation	755.000	755.000	

i. SRMR

The Standardised Root Mean Square Residual (SRMR) is an index used to assess the goodness of fit of a structural model in PLS-SEM. It represents the difference between the observed correlations and the model's predicted correlations. According to Henseler et al. (2015), an SRMR value below 0.10 indicates an acceptable model fit, while a value below 0.08 suggests a good fit. This study's SRMR value is 0.081, indicating that the model has an acceptable overall fit. The d_ULS (2.862) and d_G (1.305) values represent discrepancy measures between the empirical and model-implied covariance matrices; smaller values indicate better fit. The Chi-Square (1,049.451) shows the overall discrepancy between observed and model-implied covariances, while the NFI (0.719), though below the ideal threshold of 0.90, still demonstrates a moderate model fit. These results suggest that the proposed model adequately represents the observed data.

Table 11. SRMR

	Estimated Model
SRMR	0.081
d_ULS	2.862
d_G	1.305
Chi-Square	1.049.451
NFI	0.719

j. Path Coefficient

In hypothesis testing within SmartPLS, the path coefficients are assessed to determine if the relationships between constructs are statistically significant (Hair *et al.*, 2014).

Table 12. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	P Values
Altruistic Motivation -> Attitude	0.350	0.346	0.084	0.000
Altruistic Motivation -> Overall Image Voluntourism	0.100	0.116	0.100	0.317
Attitude -> Intention to Join Voluntourism	0.639	0.631	0.074	0.000
Cultural Exploration Motivation -> Attitude	0.170	0.166	0.075	0.024
Cultural Exploration Motivation -> Overall Image Voluntourism	0.325	0.319	0.091	0.000
Overall Image Voluntourism -> Attitude	0.194	0.197	0.068	0.005
Overall Image Voluntourism -> Intention to Join Voluntourism	0.160	0.164	0.081	0.049
Personal Growth Motivation -> Attitude	0.280	0.282	0.083	0.001
Personal Growth Motivation -> Overall Image Voluntourism	0.382	0.377	0.112	0.001

Discussion

a. The Relationship Between Altruistic Motivation and Overall Image of Voluntourism

Altruistic motivation is the intrinsic desire to help others without expecting personal gain. In the context of volunteer-based service learning in higher education, this motivation is commonly linked to students' sense of social responsibility, empathy, and civic engagement. Previous studies have indicated that altruistic values are positively associated with favorable perceptions of service learning, positive attitudes, and a greater likelihood of future participation in similar programs (Choi & Kim, 2022; Brown & Lehto, 2021; McDonald & Dominguez, 2020). Altruistically motivated students often perceive service learning as a morally meaningful endeavour that allows them to contribute to community development while reinforcing personal values.

Interestingly, altruistic motivation did not significantly affect the overall image of voluntourism ($p\text{-value} = 0.356 > 0.05$). This implies that altruism alone may not sufficiently explain how students form their evaluations of service learning at University X. There are several plausible explanations for this result. First, students' motivations in academic service learning are often multifaceted, encompassing altruism and desires for academic credit, skill development, employability, or intercultural exposure (Yorio & Ye, 2012; Celio, Durlak, & Dymnicki, 2011). Nguyen et al. (2023) found that perceived learning and career benefits tend to substantially influence participation more than purely altruistic values in higher education contexts.

Second, the perceived impact of the contribution plays a key role. Students may view their involvement as symbolic or superficial, particularly when engagement is short-term or lacks meaningful community interaction. According to Murray and Lawton (2021), positive perceptions of service learning emerge when students feel their contributions generate visible social outcomes. Third, there may be a mismatch between expectations and program delivery.

Students with strong altruistic intentions may anticipate deeper involvement in problem-solving, but program limitations, logistical barriers, or minimal reflection activities could lead to disappointment (Thompson et al., 2022). Fourth, the diversity of student backgrounds and academic goals may shape how they perceive service programs. For instance, students from professional fields such as business or engineering may prioritise practical skill acquisition over humanitarian impact (Gonzalez et al., 2020). These findings suggest that altruism alone is not a sufficient motivational foundation in education-based service learning (Warren, 2020).

Universities should, therefore, integrate multiple motivational dimensions such as personal growth, cultural learning, and academic relevance to foster broader engagement and a stronger overall image of volunteer programs. Enhancing structured reflection, community feedback, and visible learning outcomes may further strengthen students' perceptions of program value.

b. The Relationship Between Altruistic Motivation and Attitude Toward Voluntourism

The results of this study indicate that altruistic motivation has a positive association with students' attitude toward volunteer-based service learning, with a $p\text{-value}$ of $0.000 (< 0.05)$. This suggests that students who are intrinsically motivated by a desire to help others are more likely to develop a favorable attitude toward engaging in structured volunteer programs offered by their educational institution.

In the context of higher education, altruistic motivation reflects a student's internalised values related to civic responsibility, empathy, and social contribution. When students perceive that their involvement in service learning allows them to make a genuine difference in underserved communities, such as teaching children in rural areas or contributing to environmental sustainability, they tend to develop more positive affective and evaluative judgments about the program. This aligns with earlier research indicating that intrinsic prosocial motives significantly shape learners' attitudes toward engagement activities (Chen & Chen, 2011; Alexander & Bakir, 2011).

Furthermore, Warren (2020) and McDonald & Dominguez (2020) found that altruistic tendencies strongly predict sustained emotional commitment and positive attitude toward community-based learning, especially when students can reflect on their personal impact. These attitudes are critical, as they influence immediate participation and long-term behavioral engagement, including advocacy and peer encouragement.

Positive attitudes rooted in altruism are further reinforced when students experience emotional satisfaction or moral fulfillment during or after their service. For example, students who mentor children or contribute to meaningful community projects often report increased self-worth and purpose factors reinforcing the belief that service learning is a valuable academic and social experience (Nguyen et al., 2023). As a result, these students are more likely to recommend the program, participate in similar initiatives, and integrate service values into their personal and professional identities.

In addition, the role of institutional support and program structure cannot be overlooked. According to Murray & Lawton (2021), service learning programs that provide visible impact metrics, community feedback, and reflection opportunities help reinforce students' altruistic motivations and improve their program attitudes. When students see tangible results from their involvement and feel acknowledged for their contribution, the emotional payoff of helping others is validated, enhancing overall attitude.

In summary, the significant relationship found in this study reinforces existing theories in service learning and prosocial education. It confirms that altruistically motivated students are more likely to hold favorable attitudes toward university-based service learning, especially when programs are designed to provide both meaningful impact and reflective learning.

c. The Relationship Between Personal Growth Motivation and Overall Image of Voluntourism

The results of this study indicate that personal growth motivation has a positive association with overall image of volunteer-based service learning, with a p-value of 0.001 (< 0.05). This finding suggests that when students are driven by a desire for self-improvement, such as learning new skills, building self-confidence, or gaining deeper life insight, they are more likely to perceive service learning programs as valuable, meaningful, and impactful.

In the context of higher education, personal growth motivation is a key factor in shaping students' perceptions of experiential learning. Students who engage in service learning often report gains in areas such as leadership, communication, adaptability, critical thinking, and intercultural awareness (McIntosh & Zahra, 2007; Yorio & Ye, 2012). These competencies are not only essential for academic and professional success but also contribute to students' holistic development. When students recognise that service learning provides opportunities for real-

world application of their knowledge, they begin to associate these programs with transformative learning experiences. This perception significantly enhances the overall image of service learning as a community-oriented activity and a platform for personal advancement.

Nguyen et al. (2023) argue that students who perceive high developmental value in university-run service programs report higher satisfaction and long-term commitment. Personal growth also includes reflective processes, through which students make meaning of their experiences. Reflection activities such as journaling, group discussions, or critical debriefs encourage students to examine their values, assumptions, and personal goals (Eyler, 2002). These reflective insights deepen their emotional connection to the learning experience and reinforce a positive image of the service program (Brown & Lehto, 2005; Warren, 2020). This is especially true when students face challenges or ethical dilemmas in the field, which prompt growth in resilience and empathy.

In addition, service learning often exposes students to diverse cultural settings and unfamiliar social issues, expanding their worldview. Zahra & McGehee (2013) and Bringle et al. (2016) found that such exposure helps develop intercultural competence, a key component of personal growth in globalized education. Students who internalize these experiences tend to view service learning as enriching and eye-opening, enhancing their perception of its educational and developmental value.

The positive effect of personal growth motivation on the overall image is also consistent with findings from Wearing et al. (2008), who emphasize that the long-term benefits, such as improved confidence, emotional maturity, and global citizenship, leave a lasting impression that elevates how students remember and advocate for service learning programs. While personal growth motivation is centred on self-development, it often interacts with altruistic motives, creating a more holistic and balanced perception of service learning. According to Callanan & Thomas (2005), students often view their experiences as mutually beneficial, helpful to the community, and meaningful for themselves, further reinforcing a positive and sustained image of service learning.

In summary, the significant influence of personal growth motivation on the overall image of service learning underscores the need for educational institutions to design programs that contribute to social good and provide structured opportunities for student development. When service learning is aligned with students' personal and professional goals, it strengthens program image, enhances participation, and fosters a more profound commitment to civic engagement.

d. The Relationship Between Personal Growth Motivation and Attitude Toward Voluntourism

The results of this study indicate that personal growth motivation has a positive association with students' attitude toward volunteer-based service learning, with a p-value of 0.002 (< 0.05). This finding highlights that students who are driven by a desire for self-development, learning, and personal transformation are more likely to develop a favorable attitude toward engaging in structured service learning activities offered by their university.

In higher education, personal growth motivation is increasingly recognised as a critical factor in shaping how students perceive and engage with experiential learning programs. Students motivated to enhance their skills, expand their worldview, and improve their self-efficacy often

view service learning as a constructive avenue for self-exploration and competence-building. These students tend to associate service learning with community contribution and opportunities to gain leadership, communication, and cross-cultural understanding skills, outcomes that are highly valued in academic and professional settings (Lyons & Wearing, 2008; Yorio & Ye, 2012).

Such perceptions foster a positive evaluative stance (attitude) toward service learning, as students begin to see the activity as mutually beneficial: helping communities while also helping themselves grow. Eyler & Giles (1999) argue that service learning becomes most meaningful when students experience intellectual and personal challenge, especially in unfamiliar environments. These challenges allow students to reflect on their identity, values, and future goals, which deepens their emotional and cognitive engagement with the program. Moreover, this positive attitude is further reinforced through satisfaction derived from personal achievements. When students recognise tangible growth through problem-solving, managing real-life tasks, or navigating cultural differences, they are more likely to view the experience as worthwhile and rewarding. According to Nguyen et al. (2023), students who perceive service learning as contributing to their personal and professional development are more satisfied and more likely to re-engage in future activities and promote the program to their peers.

This connection between personal growth and attitude is also supported by Murray & Lawton (2021), who found that structured reflection and mentoring enhance students' awareness of how their experiences translate into life skills, thus elevating their affective evaluations of the program. Such attitudinal positivity is essential for program sustainability in higher education, as it fosters ongoing participation, peer influence, and institutional reputation enhancement. In summary, students motivated by personal growth tend to hold more positive attitudes toward volunteer-based service learning, because they see it as a meaningful path to personal enrichment and transformation. Universities seeking to improve engagement in service learning programs should therefore design initiatives that explicitly highlight opportunities for skill-building, self-awareness, and reflection, core elements that align with students' internal motivations for growth.

e. The Relationship Between Cultural Exploration Motivation and Overall Image of Voluntourism

The results of this study indicate that cultural exploration motivation has a positive association with overall image of volunteer-based service learning, with a p-value of 0.002 (< 0.05). This finding suggests that students motivated by a desire to engage with and understand different cultures tend to form a more favorable perception of service learning programs that involve intercultural or international components.

In higher education, cultural exploration motivation reflects students' interest in gaining intercultural competence, broadening global perspectives, and experiencing the daily lives, values, and traditions of diverse communities. Service learning programs, especially those involving international placements or culturally diverse local communities, provide unique opportunities for students to immerse themselves in authentic, lived cultural experiences, which significantly enhance how they perceive the value and impact of such programs (McGehee & Santos, 2005; Bringle et al., 2016).

Students driven by cultural exploration are likely to view service learning as more than just a volunteering activity; they perceive it as a gateway to experiential cultural education. This

aligns with current trends in global education, where the emphasis is on learning through immersion, empathy, and cross-cultural communication. As Leask (2020) notes, structured intercultural experiences in academic programs contribute to developing critical global competencies and often result in greater satisfaction and positive image perceptions.

Moreover, cultural immersion provides personal enrichment and reflective growth, further reinforcing the program's image. When students feel that they have engaged meaningfully with local communities, learned about different worldviews, and reflected on their own assumptions, they are more likely to view the service learning experience as transformative and impactful (Sin, 2009; Nguyen et al., 2023). These enriched interactions also generate positive emotional associations, essential in forming a long-term positive image of the program.

Cultural exploration motivation also aligns with students' increasing preference for authentic and ethical educational experiences. Rather than classroom-bound instruction, students increasingly seek learning opportunities that involve real-world interaction with diverse populations. According to Raymond & Hall (2008), educationally embedded cultural experiences are more likely to result in long-lasting positive perceptions of learning initiatives, especially when students perceive both mutual benefit and cultural respect.

Importantly, integrating cultural components into service learning not only enhances the program's image but also promotes inclusive values and global citizenship, which are core goals of many institutions' internationalization strategies. Soria & Troisi (2014) highlight that domestic and international service learning programs with cultural exposure significantly increase students' intercultural self-efficacy and social responsibility, reinforcing positive perceptions of program quality and institutional commitment to global engagement.

In summary, students motivated by cultural exploration tend to view service learning as a valuable and enriching experience, leading to a stronger and more positive overall image. For institutions, this underscores the importance of integrating cultural immersion, community interaction, and reflective learning into service programs to meet students' expectations and deepen their educational experience.

f. The Relationship Between Cultural Exploration Motivation and Attitude Toward Voluntourism

The results of this study indicate that cultural exploration motivation has a positive association with overall image of voluntourism, with a p-value of 0.021, which is less than 0.05.

Cultural exploration motivation is the desire to immerse oneself in and understand different cultures through travel. This motivation plays a significant role in shaping an individual's attitude toward voluntourism (volunteer tourism). Individuals driven by cultural exploration are likely to view voluntourism as appealing because it allows them to experience new cultures while contributing to community development. This dual benefit aligns with their intrinsic desire for cultural immersion and learning, thereby fostering a positive attitude toward voluntourism. According to McGehee and Santos (2005), people motivated by cultural exploration often perceive voluntourism as a valuable opportunity to gain deeper cultural insights and engage meaningfully with different communities.

This motivation enhances the overall appeal of voluntourism, as it caters to the growing interest in authentic and immersive travel experiences. Volunteers with a strong interest in cultural

exploration will likely see voluntourism as a form of altruistic service and a chance for personal enrichment and cultural engagement. Sinclair and Stabler (1997) support this positive perception, highlighting that the opportunity to explore and learn from new cultures can significantly influence one's attitude toward voluntourism, making it more attractive and fulfilling.

Moreover, cultural exploration motivation can contribute to a more favourable attitude toward voluntourism by enhancing the perceived value of the volunteer experience. When volunteers feel that their activities provide valuable cultural knowledge and personal growth, they are more likely to have a favourable view of voluntourism. Studies such as those by Wearing and McGehee (2013) support this perspective. They suggest that the cultural benefits of voluntourism can enhance participants' overall attitudes, making them more appreciative of the activity's potential to offer both personal and communal benefits.

In summary, cultural exploration motivation shapes attitudes toward voluntourism by emphasising the activity's role as a gateway to artistic learning and personal growth. Volunteers who are driven by a desire to explore new cultures often view voluntourism as a rewarding experience that provides significant cultural and personal benefits, which in turn fosters a positive attitude toward the activity

g. The Relationship Between Overall Image of Voluntourism and Attitude Toward Voluntourism

The results of this study indicate that the overall image of volunteer-based service learning has a positive association with students' attitude toward participation, with a p-value of 0.008 (< 0.05). This suggests that students' collective perception of the quality, relevance, and impact of service learning programs significantly influences how positively they evaluate and respond to such initiatives. In higher education, the overall image refers to how students cognitively and affectively perceive service learning as a learning model. Multiple factors shape this image, including the clarity of program objectives, perceived learning outcomes, community relevance, and institutional support. When students perceive service learning as well-organized, impactful, and aligned with academic and civic goals, they are likelier to develop a positive attitude toward it. This attitude, in turn, influences their willingness to participate, engage deeply, and advocate for the program among peers (Bringle et al., 2016; Soria & Troisi, 2014).

A positive overall image emerges when students associate service learning with meaningful personal growth, community engagement, and intercultural learning. According to McGehee and Santos (2005), such perceptions enhance students' attitudes by reinforcing that their efforts produce personal and social benefits. Conversely, when the overall image is negative or ambiguous, such as when students perceive the program as tokenistic, poorly implemented, or disconnected from real community needs, this can lead to scepticism or apathy toward participation (Callanananan & Thomas, 2005).

In today's digital age, social narratives also highly influence the overall image, including peer testimonials, social media exposure, and media representation. Positive reviews and visual storytelling from previous participants can create a favorable impression, increasing students' trust and enthusiasm. On the other hand, exposure to criticism, such as accusations of performative volunteering or lack of sustainability, can tarnish the image and result in more critical or cautious attitudes, especially among socially aware student populations (Warren, 2020; Raymond & Hall, 2008). Furthermore, research suggests that institutional branding and

framing of service learning initiatives also contribute to constructing this image. When universities present these programs as integral to student development and provide academic scaffolding such as reflection sessions, mentoring, and community partnerships, the image becomes more credible and appealing (Eyler & Giles, 1999).

In summary, the findings confirm that the overall image of service learning plays a critical role in shaping students' attitudes. A strong and positive image built on credibility, impact, and personal relevance fosters favourable attitudes and promotes higher engagement levels. Therefore, institutions must cultivate this image through effective program design, authentic storytelling, and responsive community partnerships.

h. The Relationship Between Overall Image of Voluntourism and Intention to Join Voluntourism

The results of this study indicate that the overall image of volunteer-based service learning has a positive association with students' intention to join, with a p-value of 0.042 (< 0.05). This finding suggests that students' general perception and evaluation of service learning, whether they see it as valuable, credible, and impactful, directly influences their willingness to participate in such programs.

In the context of higher education, the overall image encompasses students' collective understanding of service learning as an academic and civic experience. When service learning is viewed positively as a well-designed initiative that promotes personal development, intercultural competence, and meaningful community involvement, students are more likely to express a strong behavioral intention to participate. This aligns with previous findings by McGehee and Santos (2005), who emphasised that a favourable perception of voluntourism programs can increase individuals' motivation to join by emphasising both self-enrichment and community contribution.

Positive overall image is often shaped by several reinforcing factors, including peer endorsement, institutional branding, prior participant testimonials, and media representation. For instance, students who learn about the program through success stories or peer experiences are more likely to associate it with quality, impact, and relevance. According to Soria & Troisi (2014), students who perceive global learning opportunities as credible and transformative report a higher intention to engage in similar academic initiatives.

Furthermore, Nguyen et al. (2023) argue that institutional transparency and clarity of program objectives also significantly contribute to building a strong program image, enhancing participation intention. When students see that service learning aligns with their academic and career goals, and that their contributions are respected and visible, they are more likely to commit. Conversely, a negative or ambiguous overall image can lead to skepticism and reduced participation. Concerns such as ethical issues, lack of community impact, poor coordination, or cultural insensitivity may erode students' trust in the program. Callanan and Thomas (2005) noted that perceptions of voluntourism that appear exploitative or misaligned with local needs can significantly diminish participants' enthusiasm and willingness to join. Similarly, Warren (2020) highlights that when service programs lack authenticity or are seen as performative, students' behavioral intentions are adversely affected.

In summary, the overall image of volunteer-based service learning influences students' intention to participate. A positive image, grounded in perceived value, meaningful impact, and

alignment with students' goals, fosters more substantial commitment and engagement. Therefore, institutions must cultivate this image through quality program design, transparent communication, and authentic student narratives to enhance student participation and long-term program success.

i. The Relationship Between Attitude Toward Voluntourism and Intention to Join Voluntourism

The results of this study indicate that attitude toward volunteer-based service learning has a positive association with students' intention to join, with a p-value of 0.000 (< 0.05). This finding underscores the crucial role that students' evaluative judgments, beliefs, feelings, and predispositions toward service learning play in influencing their willingness to participate.

In the context of higher education, attitude refers to how students positively or negatively assess service learning as a learning and community engagement activity. When students view service learning as meaningful, enriching, and aligned with their personal and academic goals, they are significantly more likely to express a strong intention to engage. This is consistent with Ajzen's (1991) Theory of Planned Behavior, which posits that attitude is a key predictor of behavioral intention, especially when the behavior is voluntary and purpose-driven.

A positive attitude toward service learning typically develops when students perceive the activity as a means of achieving personal growth, cultural understanding, career preparation, and societal contribution. According to McGehee and Santos (2005), favourable perceptions of volunteer experiences, especially when framed within ethical, community-centred structures, lead to higher willingness to engage. In the university context, such attitudes are strengthened when reflection sessions, faculty involvement, and visible community impact support service learning. Conversely, a negative attitude often shaped by concerns over program effectiveness, ethical issues, or misalignment with student values can significantly reduce intention to participate. Callanan and Thomas (2005) emphasize that skepticism arises when students view service learning as exploitative, disorganized, or lacking in real-world relevance. This perception not only lowers trust but also diminishes motivational drive.

Interpersonal and media influences, such as peer recommendations, alumni narratives, social media portrayals, and institutional framing also shape attitudes. Wearing and McGehee (2013) highlight that positive peer testimonials and role modelling profoundly influence student decision-making. Students tend to form more favorable attitudes and subsequently stronger behavioral intentions when promoting service learning through inspiring stories, community success, or faculty engagement. The findings confirm that attitude strongly and reliably predicts students' intention to join service learning activities. Educational institutions should, therefore, actively foster positive attitudes by ensuring program transparency, ethical alignment, academic integration, and opportunities for student reflection. A strong, well-supported attitude drives participation and strengthens long-term civic engagement and institutional loyalty.

5. Conclusions

This study offers valuable insights into the motivational factors influencing students' engagement in volunteer-based service learning and their effects on students' perceptions and behavioural intentions within higher education. By examining altruistic, personal growth, and cultural exploration motivations, this research sheds light on how these factors may shape students' overall image, attitudes, and intentions toward participation.

The findings suggest that personal growth and cultural exploration motivations are positively associated with the overall image of service-learning programs, indicating that students who value self-development and intercultural experiences tend to perceive such programs more favorably. Conversely, altruistic motivation did not significantly influence the overall image, implying that altruism alone may not determine students' evaluative judgments in academic contexts where practical or career-related benefits are also salient. Furthermore, a positive overall image is associated with more favorable attitudes and stronger intentions to join service learning programs.

These results highlight the importance of universities designing service learning initiatives that integrate multiple motivational pathways combining personal growth, cultural enrichment, and social contribution. Such an approach can strengthen students' perceptions of program value and foster greater engagement. However, as this study employed a cross-sectional design, causal interpretations should be made with caution, and future research using longitudinal or experimental methods is recommended to capture better how these motivations and perceptions evolve.

Limitations

While providing valuable insights into students' motivations and perceptions toward volunteer-based service learning, this study has several limitations that should be acknowledged. First, it employed a cross-sectional design, which restricts the ability to infer causal relationships between motivational factors, overall image, attitude, and intention. The observed associations should therefore be interpreted as correlational rather than causal. Second, the research relied on self-reported data, which may be subject to social desirability bias or response tendencies that do not fully reflect participants' genuine motivations or experiences. Third, the study's sample was limited to a single higher education institution, which may constrain the generalizability of findings across different cultural, disciplinary, or institutional contexts. Lastly, the study focused on individual-level motivations without incorporating external or contextual factors such as program structure, institutional support, or community feedback, which could also influence students' evaluations of service-learning programs.

Recommendations for Future Research

Future research on volunteer-based service learning should adopt a more integrative and longitudinal approach to better capture the complexity of students' motivational dynamics. Instead of examining altruistic, personal growth, and cultural exploration motivations in isolation, future studies are encouraged to explore how these motivational constructs influence students' perceptions, attitudes, and behavioral intentions. Furthermore, employing longitudinal or mixed-method research designs would allow scholars to trace the evolution of students' motivations and perceptions before, during, and after participation, offering more profound insights into the long-term educational and civic outcomes of such experiences. It is also recommended that future research examine potential discrepancies between students' initial expectations and their actual post-participation experiences, as these gaps may influence their satisfaction, perceived impact, and willingness to re-engage in similar initiatives. Lastly, subsequent studies should give greater attention to the ethical and community dimensions of service learning, including the perspectives of local beneficiaries and partner organisations, to ensure that these programs enrich student learning and deliver equitable, sustainable, and mutually beneficial outcomes for all stakeholders involved.

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References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Alexander, Z., & Bakir, A. (2011). Understanding voluntourism: A Glaserian grounded theory study. *Tourism Management*, 32(5), 1127-1134. <https://doi.org/10.1016/j.tourman.2010.09.004>
- Andereck, K. L., & McGehee, N. G. (2008). The benefits of volunteering as perceived by seniors and youth. *Journal of Tourism Management*, 29(1), 21-30. <https://doi.org/10.1016/j.tourman.2007.04.011>
- Bailey, A. W., & Russell, K. C. (2010). Predictors of interpersonal growth in volunteer tourism: A Latent Curve Approach. *Leisure Sciences*, 32(4), 352-368. <https://doi.org/10.1080/01490400.2010.488196>
- Bennett, J. M. (2009). Cultivating intercultural competence: A process of learning and development. In D. K. Deardorff (Ed.), *The SAGE handbook of intercultural competence* (pp. 63-78). Thousand Oaks: SAGE Publications.
- Bringle, R. G., Clayton, P. H., & Hatcher, J. A. (2016). *Research on service learning: Conceptual frameworks and assessment*. Stylus Publishing.
- Brown, S. (2005). Travelling with a purpose: Understanding the motives and benefits of volunteer vacationers. *Current Issues in Tourism*, 8(6), 479-496. <https://doi.org/10.1080/13683500508668232>
- Brown, S., & Lehto, X. (2021). Volunteer tourism: A global analysis of motivations and outcomes. *Tourism Management Perspectives*, 37, 100796. <https://doi.org/10.1016/j.tmp.2020.100796>
- Callanan, M., & Thomas, S. (2005). Volunteer tourism: Deconstructing volunteer activities within a dynamic environment. *Niche Tourism: Contemporary Issues, Trends and Cases*, 183-200.
- Celio, C. I., Durlak, J., & Dymnicki, A. (2011). A meta-analysis of the impact of service-learning on students. *Journal of Experiential Education*, 34(2), 164-181. <https://doi.org/10.1177/105382591103400205>
- Chen, L. J., & Chen, J. S. (2011). The motivations and expectations of international volunteer tourists: A case study of "Chinese Village Traditions". *Tourism Management*, 32(2), 435-442. <https://doi.org/10.1016/j.tourman.2010.01.009>
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, 295(2), 295-336.
- Choi, H., & Kim, H. (2022). Altruism and Its Impact on Volunteer Tourism: The Mediating Role of Satisfaction and Positive Emotion. *Journal of Travel Research*, 61(4), 754-768.

- Choi, Y., & Kim, M. (2022). Exploring the motivational dimensions of voluntourism: A structural model approach. *Journal of Sustainable Tourism*, 30(4), 765–783. <https://doi.org/10.1080/09669582.2021.1918016>
- Coghlan, A., & Fennell, D. A. (2009). Exploring the role of cultural exchange in volunteer tourism. *Tourism Recreation Research*, 34(3), 259–266. <https://doi.org/10.1080/02508281.2009.11081602>
- Coghlan, A., & Gooch, M. (2011). Applying a transformative learning framework to volunteer tourism. *Journal of Sustainable Tourism*, 19(6), 713–728. <https://doi.org/10.1080/09669582.2010.542246>
- Eyler, J. (2002). Reflection: Linking service and learning—Linking students and communities. *Journal of Social Issues*, 58(3), 517–534. <https://doi.org/10.1111/1540-4560.00274>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50.
- Gonzalez, M., Hyman, L., & Porras-Hernandez, L. H. (2020). Disciplinary differences in service-learning: The case of business and health majors. *International Journal of Research on Service-Learning and Community Engagement*, 8(1), Article 6. <https://journals.sfu.ca/iarslce/index.php/journal/article/view/367>
- Hair Jr., J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., Ray, S. et al. (2021). Evaluation of Reflective Measurement Models. In Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. Classroom Companion: Business (pp. 75–90). Springer. https://doi.org/10.1007/978-3-030-80519-7_4
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. SAGE Publications.
- Irma Pranaitytė. (2022). The motivation to volunteer and change of attitudes towards volunteering in a post-Soviet country. *Social Welfare: Interdisciplinary Approach*, 14, 128–143.
- Leask, B. (2020). The future of internationalization of higher education in challenging times. *Journal of Studies in International Education*, 24(3), 261–266. <https://doi.org/10.1177/1028315319843295>
- Lo, A., & Lee, C. (2011). Motivations and perceived value of volunteer tourists from Hong Kong. *Tourism Management*, 32(2), 326–334. <https://doi.org/10.1016/j.tourman.2010.03.002>
- Lyons, K. D., & Wearing, S. (2008). *Journeys of discovery in volunteer tourism: International case study perspectives*. Wallingford: CABI Publishing
- McDonald, R., & Dominguez, M. (2020). Altruism, identity, and student commitment in service-learning programs. *Journal of College Student Development*, 61(3), 349–356. <https://doi.org/10.1353/csd.2020.0031>

- McGehee, N. G., & Santos, C. A. (2005). Social change, political action, and voluntourism: An exploratory study. *Journal of Sustainable Tourism*, 13(5), 373–390.
- McIntosh, A. J., & Zahra, A. (2007). A cultural encounter through volunteer tourism: Towards the ideals of sustainable tourism? *Journal of Sustainable Tourism*, 15(5), 541–556. <https://doi.org/10.2167/jost725.0>
- Murray, A., & Lawton, D. (2021). Assessing perceived impact in short-term service learning abroad. *Journal of Higher Education Outreach and Engagement*, 25(1), 71–90.
- Nguyen, T. K., Wardana, I. M., & Surya, I. B. K. (2023). Motivational drivers and learning expectations in university-based community service programs. *International Journal of Educational Development*, 97, 102712. <https://doi.org/10.1016/j.ijedudev.2023.102712>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd ed.). McGraw-Hill.
- Ooi, N., & Laing, J. (2010). Backpacker tourism: Sustainable and purposeful? Investigating the overlap between backpacker tourism and volunteer tourism motivations. *Journal of Sustainable Tourism*, 18(2), 191–206. <https://doi.org/10.1080/09669580903395030>
- Raymond, E. M., & Hall, C. M. (2008). The development of cross-cultural (mis)understanding through volunteer tourism. *Journal of Sustainable Tourism*, 16(5), 530–543. <https://doi.org/10.1080/09669580802159610>
- Shin, Y. J. (2020). Reevaluating motivations for volunteer tourism: The role of social influence and image perception. *Annals of Tourism Research*, 80, 102824. <https://doi.org/10.1016/j.annals.2019.102824>
- Sin, H. L. (2009). Volunteer tourism – “Involve me and I will learn”? *Annals of Tourism Research*, 36(3), 480–501. <https://doi.org/10.1016/j.annals.2009.03.001>
- Sinclair, M. T., & Stabler, M. J. (1997). The role of cultural exploration in tourism: A review of the literature. In J. Swarbrooke & S. Horner (Eds.), *Consumer behavior in tourism* (pp. 175–191). Oxford: Butterworth-Heinemann.
- Soria, K. M., & Troisi, J. (2014). Internationalization at home alternatives to study abroad: Implications for students’ development of global, international, and intercultural competencies. *Journal of Studies in International Education*, 18(3), 261–280. <https://doi.org/10.1177/1028315313496572>
- Thompson, A., Baker, M., & Deegan, J. (2022). Critical reflection in service learning: Bridging the intention–impact gap. *Journal of Experiential Learning*, 45(1), 11–27. <https://doi.org/10.1177/10538259211058941>
- Tomazos, K., & Butler, R. (2012). Volunteer tourists in the field: A question of balance? *Tourism Management*, 33(1), 177–187. <https://doi.org/10.1016/j.tourman.2011.02.020>
- Warren, J. L. (2020). Does altruism matter? Reexamining motivation and outcomes in civic engagement programs. *Michigan Journal of Community Service Learning*, 26(1), 49–61. <https://doi.org/10.3998/mjcsloa.3239521.0026.105>

Wearing, S. (2001). *Volunteer Tourism: Experiences That Make a Difference*. Wallingford: CABI Publishing.

Wearing, S., & McGehee, N. G. (2013). Volunteer tourism: A review. *Tourism Management*, 38, 120-130. <https://doi.org/10.1016/j.tourman.2013.03.002>

Wearing, S., McDonald, M., & Ponting, J. (2008). Building a decommodified research paradigm in volunteer tourism: The case of NPY Women's Council. *Journal of Sustainable Tourism*, 13(5), 467–485. <https://doi.org/10.1080/09669580508668571>

Yorio, P. L., & Ye, F. (2012). A meta-analysis on the effects of service-learning on the social, personal, and cognitive outcomes of learning. *Academy of Management Learning & Education*, 11(1), 9–27. <https://doi.org/10.5465/amle.2010.0072>

Yuan, S., & Zhao, Z. (2025). Do altruistic tendencies lead to the persistence of voluntary behavior? A moderated-mediation analysis. *Frontiers in Psychology*, 16, Article 1553888. <https://doi.org/10.3389/fpsyg.2025.1553888>

Zahra, A., & McGehee, N. G. (2013). Volunteer tourism: A host community capital perspective. *Annals of Tourism Research*, 42, 22-45. <https://doi.org/10.1016/j.annals.2013.01.008>

King Saud University's Integrated Quality Assurance: A Longitudinal Mixed-Methods Study of Framework Evolution, Outcomes, and Sustainability in Higher Education Management

ABSTRACT

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Over the past 15 years (2010–2025), King Saud University (KSU) has reengineered its internal quality assurance (IQA) paradigm, shifting from static compliance to a dynamic, data-driven model focused on academic excellence. This mixed-methods study thoroughly evaluates KSU's institutional transformation through the development and implementation of two integrated frameworks: the KSU-PIQ Troika Framework, unifying strategic planning, information management, and quality assurance, and the 20|20 KSU Learning Outcomes Management System (KSU-LOMS), which aligns academic outcomes with industry demands. Using longitudinal institutional data, stakeholder surveys ($n = 400$), and semi-structured interviews, the analysis applies advanced statistical methods, including repeated-measures ANOVA, effect size metrics, and power analysis, to measure systemic improvements. Results show statistically significant advances across key performance indicators: a 17% increase in graduate employability, a 21% rise in student satisfaction, a 35% reduction in audit documentation time, and higher graduation rates. Qualitative insights reveal emerging tensions, notably 65% of faculty reporting "quality fatigue," highlighting the operational challenge of balancing regulatory compliance with innovative teaching approaches. Cross-institutional benchmarking against leading models (e.g., MIT, Harvard) and international standards (ISO 900, ABET, ESG) confirms KSU's strategic agility in aligning accountability with transformative education. Advanced analytics, including trend mapping and methodological triangulation, highlight the effectiveness of KSU's data governance system in supporting evidence-based decisions. This study offers a replicable blueprint for global higher education reform, providing scalable frameworks that harmonize rigorous quality assurance with flexible pedagogies. By formalizing the relationship between strategic planning, digital governance, and outcomes-based education, KSU emerges as a model for institutions navigating the dual priorities of maintaining accreditation standards and fostering disruptive innovation. The findings deliver practical insights for reducing systemic inefficiencies (e.g., quality fatigue) and improving student success, industry relevance, and research impact in a rapidly changing educational landscape.

Keywords: Quality Assurance, Higher Education Reform, Internal Quality Assurance (IQA), Strategic Planning, Learning Outcomes, Data Governance, Digital Governance, Accreditation, International Benchmarking, Employability, Outcomes-Based Education

1. Introduction

The global landscape of higher education is characterized by increasing complexity and a rising demand for accountability and ongoing improvement from various stakeholders, including prospective students, employers, governmental agencies, and international accrediting bodies. Quality assurance (QA) has shifted from a passive, compliance-focused task to an essential strategic requirement for maintaining institutional relevance. However, traditional QA models, often defined by periodic, external audits, frequently face implementation issues, causing organizational problems and faculty burnout, an often-common phenomenon known as "quality fatigue."

A persistent, foundational challenge identified in classic institutional analyses, such as the seminal work by Meyer and Rowan (1977), is the phenomenon of "decoupling." Decoupling occurs when Higher Education Institutions (HEIs) adopt standardized rules, policies, and accreditation checklists primarily to gain external legitimacy (isomorphic pressures). Yet, these formal structures fail to reflect or genuinely alter day-to-day teaching and learning practices. Consequently, many Universities become audit-compliant on paper but face the systemic side effect of quality fatigue. Excessive paperwork, faculty burnout, and a lack of alignment between curricula and 21st-century competencies. Globally, HEIs face pervasive isomorphic pressures (DiMaggio & Powell, 1983) to conform to these external standards, often constraining genuine innovation and reinforcing the decoupling effect, thereby transforming QA into a ceremonial activity that lacks functional impact.

King Saud University (KSU) has actively tackled this duality during a fifteen-year transformation period (2010–2025), shifting its Internal Quality Assurance (IQA) approach from static compliance to a dynamic, data-driven model of academic excellence. This strategic shift led to the development and systematic implementation of two flagship frameworks: the KSU-PIQ Troika Framework, which combines strategic planning, information management, and quality assurance, and the 20|20 KSU Learning Outcomes Management System (KSU-LOMS), designed to align academic outcomes with rapidly changing industry demands. These systems serve as operational and cultural solutions to reconnect formal QA policies with daily academic workflows, incorporating advanced digital dashboards, rigorous internal audits, and stakeholder co-design into a unique hybrid model. This creates a functional, rather than purely symbolic, QA system that directly counters the tendency toward decoupling.

Scope and Methodology

This investigation employs a rigorous longitudinal, concurrent triangulation mixed-methods design. The methodology is specifically structured to go beyond simple correlation, using the concurrent approach to achieve strong causal inference and in-depth contextual explanation, which is essential for evaluating complex institutional change in a manner that meets both academic and scientific standards of rigor. The quantitative component uses longitudinal institutional datasets covering fifteen years (2010–2025), stakeholder surveys ($n = 400$), and applies advanced statistical techniques such as repeated-measures ANOVA, OLS regression, and ARIMA forecasting to assess systemic improvements. The qualitative component involves semi-structured interviews with 42 key stakeholders (administrators, faculty, and external reviewers) to provide detailed contextual insights into the observed metrics, exploring underlying cultural shifts and emerging tensions. By carefully triangulating measurable outcomes with stakeholders' contextual experiences, the study aims to deliver a comprehensive and robust understanding of KSU's successful transformation. Additionally, the study

introduces and validates the Weighted Compliance Index (WCI), a new metric designed to gauge institutional QA maturity, uniquely incorporating the often-overlooked dimension of cultural adoption (Barrera & Castro, 2006 and Leong & Lee, 2006) alongside structural and process metrics, thereby addressing a significant gap in traditional QA evaluation models.

Aligning Research Problem, Aims, and Guiding Questions

This study evaluates King Saud University’s transition from compliance-oriented QA to an integrated, data-driven IQA architecture (PIQ Troika + 20|20 LOMS) and examines its outcomes and emergent tensions over 2010–2025. The research questions focus on (1) institutional QA maturity trajectory, (2) the mechanisms by which QA reforms influenced outcomes, and (3) the paradox of ‘quality fatigue’ that emerged from sustained implementation.

The study makes a significant contribution by offering a validated and scalable framework, especially relevant for HEIs in transition economies (such as GCC countries and Southeast Asia), navigating top-down national mandates (like Saudi Vision 2030) along with global accreditation standards (such as ISO 9001, ABET, ESG). The findings advance theory by presenting an empirical model for reversing institutional decoupling and managing the cognitive load of continuous innovation.

2. Theoretical Foundations and Research Framework

This section consolidates the theoretical scaffolding for KSU’s transformation, linking foundational concepts directly to the innovative framework components. The integration of multiple Organizational change theories is designed to provide a comprehensive synthesis that anchors the measurable. Institutional actions in academic rigor, addressing the critique regarding theoretical density by prioritizing core constructs and their high-impact analytical potential (Fig. 2.1).

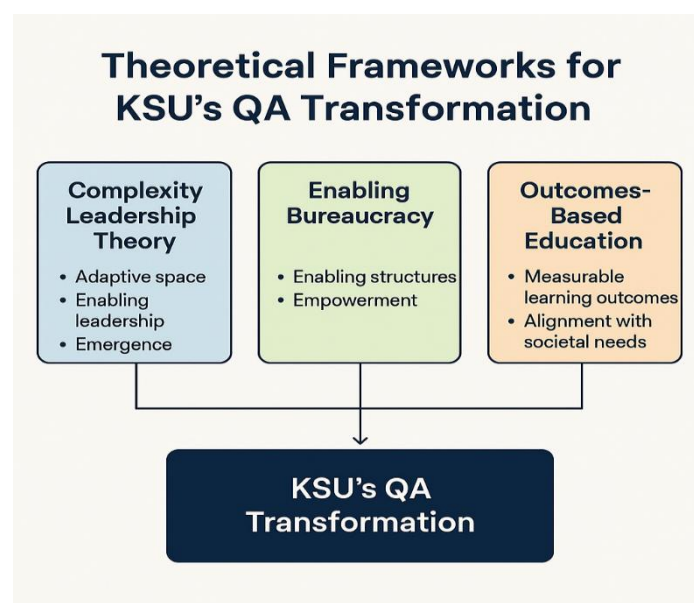


Figure 2.1: Key Frameworks underpinning KSU’s QA Approach in this research



Figure 2.2: Research Framing within its transformative problem–solution continuum

This joint-display model (Fig. 2.2) links Institutional Theory, Enabling Bureaucracy and OBE to the study constructs (Structural Compliance; Process Efficiency; Outcome Efficacy; Cultural Adoption) and their operational measures (audit scores, process metrics, employability, faculty culture scores and the innovative designed WCI used for this study).

Evolution of Quality Assurance Paradigms: From Compliance to Strategic Performance

The conceptual roots of modern quality assurance stem from the influential work of W. Edwards Deming (1986), who promoted continuous improvement as the foundation of effective management. This iterative PDCA (Plan-Do-Check-Act) cycle guides the establishment of recurring annual review cycles at KSU, ensuring that quality remains an ongoing process rather than a fixed endpoint. However, KSU expanded beyond this process-oriented approach by embracing the strategic measurement perspective supported by Kaplan and Norton (2001). Building on this, Kaplan and Norton (2001) introduced the Balanced Scorecard, a powerful framework that links high-level strategic goals with specific, measurable performance indicators to promote comprehensive institutional change. This shift was vital for KSU, transforming QA from a standalone compliance task to an integrated part of the university's strategic planning (the Planning axis of the PIQ Troika). In today's context, effective information management systems are essential for breaking down organizational silos and supporting unified, data-driven dashboards an important requirement for QA systems following ISO 9001 principles and ESG guidelines. Consequently, KSU emphasizes the central 'Information' axis of the PIQ Troika, making real-time data the driving force behind the quality ecosystem and allowing management to assess performance holistically across academic, financial, and stakeholder dimensions.

Organizational Dynamics: Institutional Theory and the Anti-Decoupling Mechanism

Implementation of quality frameworks in complex organizational fields like higher education is profoundly influenced by institutional forces. Institutional theory (DiMaggio & Powell, 1983) explains how universities adopt similar structures due to "isomorphic pressures", coercive, mimetic, or normative.

A key challenge highlighted by this theory is decoupling (Meyer & Rowan, 1977), where organizations adopt formal policies mainly for external legitimacy while these policies are disconnected from actual daily operations. Decoupling is a strategic, often rational move by HEIs to gain legitimacy without undertaking costly or difficult changes needed for real transformation of activities like teaching and research. It turns QA into a symbolic ritual, maintaining the facade while keeping the status quo. KSU's PIQ Troika framework was

designed to combat decoupling by requiring the integration of data governance into everyday academic workflows, forcing a re-connection between formal policies and practical application.

a. The Enabling Bureaucracy Framework: Bridging Formal Structure and Functional Efficacy

To transform QA from a ceremonial structure to a practical system, KSU implemented the concept of "enabling bureaucracy" (Adler & Borys, 1996). Unlike a coercive bureaucracy, which depends on strict compliance, top-down enforcement, and rules seen as obstructing the core mission, an enabling bureaucracy offers systems and tools that users find empowering, flexible, and supportive of their main tasks.

In the educational setting (Hoy & Sweetland, 2000), this approach is realized through the dual focus of Enabling Formalization (rules that define the mission) and Enabling Centralization. By combining strategic planning, data-driven governance, and ongoing quality improvement, the KSU-PIQ framework shifts bureaucracy from a limiting force to a supportive one that boosts faculty agency. This smooth integration of compliance into the institution's daily operations directly addresses the tendency toward decoupling in institutional isomorphism, creating a strong mechanism for sustainable progress.

b. Micro-Level Analysis of Decoupling vs. Enabling

The effectiveness of the PIQ Troika depends on its ability to shift the focus of QA engagement from the institutional macro-level (compliance for legitimacy) to the individual micro-level (efficacy for faculty agency). Traditional QA often fails because it treats individuals as "ceremonial props," hired only to maintain symbolic conformity. In contrast, KSU's approach aims to treat faculty as "internal change champions." Implementing real-time digital dashboards offers practical benefits; when QA documentation helps a faculty member demonstrate course effectiveness and reduces their reporting time (Audit Documentation Time reduction), the formal structure (QA) becomes functionally linked with the actual activity (teaching). This micro-level re-coupling, driven by the perceived usefulness of the data systems, is the key advancement over simple policy adoption and is central to the PIQ Troika's success as a mechanism to prevent decoupling.

Triple-Loop Learning and Strategic Agility

To ensure the QA framework promotes innovation, KSU incorporated the principles of Triple-Loop Learning (Argyris & Schön, 1996). Triple-loop learning involves re-examining core organizational paradigms and strategic assumptions, going beyond incremental fixes (single-loop) and norm questioning (double-loop). This level of organizational meta-learning is vital for thriving in highly dynamic environments and is implemented through KSU's data alerts and scenario planning modules.

At KSU, this concept is put into action through Strategic Agility. The QA system is designed to use data alerts and scenario planning tools, allowing the university to make quick, responsive changes to the curriculum. This focus on ongoing meta-analysis keeps KSU relevant in a changing environment, directly connecting QA processes to external labor market indicators.⁶ This flexible response system directly tackles the "Innovation Paradox," the natural tension between adopting rapid technological advances and maintaining human creativity or critical thinking.⁷ KSU's approach balances these challenges by making data-driven adaptation a

central, managed activity, reducing disruptions and promoting continuous, meaningful curricular improvements.

Quality Fatigue: Definition and Contextualization

A significant yet often understudied barrier to the sustainability of QA initiatives is the phenomenon of "quality fatigue." The academic literature defines fatigue generally as a psychophysiological state of decreased ability and effectiveness that usually happens during highly demanding tasks requiring extended periods of mental and physical input. In higher education, fatigue is widespread among faculty and students, contributing to learning motivation repression and poor academic outcomes. Within the QA context, quality fatigue is specifically the chronic burnout, cynicism, and resistance faced by faculty and staff due to the relentless administrative demands of compliance, excessive documentation, and continuous reporting (Al-Hajri, 2023). This issue is particularly acute in the Gulf Cooperation Council (GCC) region, but it also presents a global challenge. KSU's model proactively recognizes this human factor as a critical risk to sustainability. The university's strategies, including automation of reporting, gamified training, and stakeholder co-design, were specifically intended to mitigate this fatigue by reducing administrative burden and fostering a sense of ownership. In this paper, "Quality fatigue is defined here as the sustained cognitive and administrative burden experienced by academic staff and professional services arising from repeated QA cycles and low-value administrative tasks; operational indicators include self-reported burnout (Likert), audit documentation hours per FTE, and rates of procedural non-compliance." The Operational definition of Quality fatigue is stated as "a multi-dimensional construct measured in this study by (a) faculty self-reported burnout on a 7-item Likert scale (higher = greater fatigue), (b) audit hours per FTE, and (c) documented procedural non-compliance events per annum. For analysis, we index these three indicators (z-score normalized) into a composite Quality Fatigue Index (QFI)."

Outcomes-Based Education (OBE) and KSU-LOMS

The global shift toward Outcomes-Based Education (OBE), pioneered by Spady (1994), redefines accountability by focusing on measurable learning outcomes. However, large-scale OBE implementation faces three systemic challenges: fragmentation, assessment overload, and industry misalignment.

The 20|20 KSU-LOMS (formally operationalized in 2025) functions as a strategic framework carefully crafted to address these documented challenges. It promotes coherence by standardizing 13 interdisciplinary learning domains throughout the university, aligning departmental outcomes under a unified institutional vision. The system reduces assessment overload by utilizing automated tracking features within the KSU Quality and Performance Management System (KSU-QPMS, 2023), streamlining data collection and analysis. Importantly, the LOMS framework addresses industry misalignment by explicitly including 21st-century skills, ensuring academic outcomes meet current workforce needs and align with the national agenda (Saudi Vision 2030).

a. Detailed LOMS Operationalization: Domains and Competencies

As the study aims to address gaps in higher education and debates surrounding quality assurance and learning outcomes by tackling the potential fragmented implementation of outcomes-based education (OBE), such as assessment overload, it utilizes the standardized 13

domains of 20|20 KSU-LOMS. These domains integrate 21st-century skills along with national and institutional requirements into a generic, Open framework that guides both collegial and programmatic approaches. KSU's KSU-LOMS was designed as a comprehensive solution to these well-documented issues. By standardizing learning domains, automating data tracking, and explicitly incorporating 21st-century skills, the system provides a strategic framework to operationalize OBE and ensure its relevance effectively. Additionally, KSU employs a push-pull strategy through decoupling, wherein data governance is embedded into daily operations via performance improvement quality (PIQ).

The LOMS framework operationalizes OBE by defining specific competencies across 13 standardized learning domains. This standardization provides the necessary structural backbone to prevent the endemic issue of curriculum fragmentation common in large, decentralized Universities. At the same time, the inclusion of 21st-century skills ensures external relevance and graduate readiness. Employability in high-growth sectors targeted by Vision 2030.

Table 2.1: Standardized Learning Domains in 20|20 KSU-LOMS

KSU-LOMS Learning Domain	Brief Description/Rationale
(KNI) Knowledge	Understanding and recall of fundamental concepts, theories, and principles within a discipline.
(CCAI) Cognitive, Critical, and Analytical	Ability to dissect information, identify biases, and make reasoned judgments based on evidence.
(ITI) Information Literacy and Technology Utilization	Ability to locate, evaluate, and ethically use information from various sources, as well as the ability to utilize digital tools and technologies.
(CCI) Communication and Collaboration	Effective verbal expression, presentation, and active listening in diverse contexts and Clear, coherent, and persuasive written expressions tailored to different audiences and purposes.
(PPPI) Practical, Physical, and Psychomotor	Physical and motor skills, and the ability to perform practical tasks with precision and accuracy, which is a combination of dexterity using psycho-mental-physical skills simultaneously
(IAAI) Initiative, Autonomy, and Adaptation Definition	Take initiative, work independently, and adapt to new situations and challenges, which include self-motivation, resourcefulness, and the flexibility to adjust to changing circumstances
(LRI) Leadership and Responsibility	Lead and manage teams, make ethical decisions, and take accountability for actions that include skills in guiding others, delegating tasks, and demonstrating integrity with effective participation in group settings, contributing to shared goals, and respecting diverse perspectives.
(IEI) Innovation and Entrepreneurial	Creativity, innovation, and entrepreneurial thinking involve the ability to generate new ideas, develop innovative solutions, and identify opportunities for growth and improvement.
(REI) Research & Inquiry	Competence in designing, conducting, and interpreting research studies through systematic investigation and study of materials and sources to establish facts and reach new conclusions.
(LLI) Lifelong Learning	Ability to take learning initiative, adapt to new knowledge, and commit to continuous personal & professional development.
(IEI) Integrity and Ethics	Understanding and adhering to ethical principles and standards that include honesty, fairness, and respect for others, as well as the ability to make ethical decisions and act with integrity

(VSRI) Volunteer Work and Social Responsibility	Commitment to community service and social responsibility involves participating in volunteer activities, understanding social issues, and contributing to society's well-being.
(MII) Moderation and Pride in National Identity	Promoting cultural understanding, inclusivity, and pride in one's national heritage that includes celebrating cultural diversity, participating in national events, and fostering a sense of national identity and pride.

Operationalization of Core Constructs and Hypothesized Linkages

This paper offers a comprehensive, evidence-based analysis of KSU's innovative and transformative QA journey, presenting a compelling case study with practical lessons for institutions facing similar challenges related to quality, relevance, and sustainability. These issues pertain to potential gaps in higher education policies discussed in the literature. They are distilled into the main gaps and debates in higher education, connecting the research aims and objectives to these critical challenges (Table 2.2).

Table 2.2: Alignment of Research Aims with Gaps in Higher Education Policy

Research Aim	Research Objectives	Corresponding Gap/Debate in Higher Education
Framework Evolution	To study the evolution and impact of the KSU-PIQ Troika framework.	The challenge of shifting from static, compliance-based QA to dynamic, data-driven continuous improvement models.
	To appraise the usage of the 20 20 KSU-LOMS	20 20 KSU-LOMS in enhancing learning outcomes and employability.
Outcomes and Unintended Consequences	To investigate the operational and cultural impacts of integrated QA, including the phenomenon of "quality fatigue."	The understudied human and cultural factors that hinder the sustainability of QA initiatives, particularly faculty burnout from administrative burdens.
	To develop a replicable, evidence-based blueprint for QA transformation in other HEIs.	The need for practical, context-sensitive models for QA reform, especially in non-Western and transitional higher education systems.

Below is a synopsis of the various streams of literature that inform this study and its objectives:

1. Continuous Improvement (Deming, 1986): An iterative approach underlying the observed annual KPI changes, affirming the need for long-term, incremental improvement.
2. Enabling Bureaucracy (Adler & Borys, 1996): This perspective advocates balancing control and flexibility, inspiring the development of faculty autonomy surveys and standardized rubrics within KSU-LOMS.
3. Triple-Loop Learning (Argyris & Schön, 1996): This concept emphasizes re-examining fundamental norms and processes. At KSU, scenario planning and flexible dashboards foster strategic agility.
4. Institutional Isomorphism (DiMaggio & Powell, 1983; Meyer & Rowan, 1977): This highlights the pressure for institutions to conform to external standards, while KSU's model deliberately diverges to embrace innovation.

The main literature synthesis, as summarized above, along with its appended sources and operationalization, is detailed in Tables 2.3 and 2.4.

Table 2.3: Linking HE Gaps/Debates, Constructs and Operational Measures to Research Aims/Objectives

Research Aim	Research Objectives	Corresponding Gap/Debate in Higher Education	Construct	Source	Operational Measure
Framework Evolution	To study the evolution and impact of the KSU-PIQ Troika framework.	The challenge of shifting from static, compliance-based QA to dynamic, data-driven continuous improvement models.	Continuous Improvement	Deming (1986)	Annual Δ in KPIs (e.g., student satisfaction)
		The gap between formal QA policies and their actual implementation and impact on daily academic and administrative practices.	Decoupling	Meyer & Rowan (1977)	Triangulation of policy documents, self-assessment reports (SSRs), and qualitative interview data
	To appraise the usage of the 20 20 KSU-LOMS	20 20 KSU-LOMS in enhancing learning outcomes and employability.	Enabling Bureaucracy	Adler & Borys (1996)	Likert-scale faculty autonomy and empowerment survey scores
Outcomes and Unintended Consequences	To investigate the operational and cultural impacts of integrated QA, including the phenomenon of "quality fatigue."	The understudied human and cultural factors that hinder the sustainability of QA initiatives, particularly faculty burnout from administrative burdens.	Quality Fatigue	Al-Hajri (2023)	Percentage reporting burnout; qualitative coding of fatigue themes
	To develop a replicable, evidence-based blueprint for QA transformation in other HEIs.	The need for practical, context-sensitive models for QA reform, especially in non-Western and transitional higher education systems.	Triple-Loop Learning	Argyris & Schön, (1996); Stensaker, (2020)	Scenario planning efficacy (interview themes)
		Highlights the pressure for institutions to conform to external standards	Institutional Isomorphism	DiMaggio & Powell, 1983; Meyer & Rowan, 1977	KSU's model deliberately diverged to embrace innovation.

Table 2.4: Theoretical Constructs and Operational Measures

Theoretical Construct	Source(s)	Operational Definition in this Study	How it is Measured/Assessed	Hypothesized Linkage
Decoupling	Meyer & Rowan (1977)	The gap between formal QA policies and their actual implementation and impact on daily academic and administrative practices.	Triangulation of policy documents, self-assessment reports (SSRs), and qualitative interview data exploring the perceived authenticity of QA processes.	Reduced decoupling (alignment) leads to higher Stakeholder Engagement and measurable KPI performance.
Enabling Bureaucracy	Adler & Borys (1996)	Users perceive a QA system as empowering, flexible, and supportive of their core tasks, rather than rigid and controlling.	Qualitative data from faculty interviews regarding their sense of agency and support; quantitative reduction in time spent on administrative tasks.	Enabling structure successfully mitigates Coercive Quality Fatigue and increases Process Efficiency.
Quality Fatigue	Al-Hajri (2023); Stensaker (2020)	Faculty and staff burnout resulting from the administrative burden of documentation, reporting, and frequent policy shifts related to QA.	Self-reported survey data on workload and burnout (65% of faculty reporting fatigue); Qualitative coding of fatigue and resistance themes..	High-quality fatigue is a critical risk to the Sustainability of QA initiatives despite technical efficiency gains.
Triple-Loop Learning	Argyris & Schön, 1996	Re-examining fundamental organizational norms and strategic paradigms rather than just solving immediate problems.	Scenario planning efficacy (interview themes); Annual curricular pivot rates in response to proactive data alerts.	Fosters Strategic Agility, ensuring long-term relevance and resulting in enhanced graduate employability.
Cultural Adoption	Barrera & Castro, 2006 and Leong & Lee, 2006	Stakeholder internalization of QA values and shared ownership throughout the institution.	Weighted Compliance Index (WCI) Cultural Component (10% weight); Frequency analysis of qualitative themes focusing on "shared accountability."	Ensures QA is driven internally rather than being an external mandate, underpinning genuine continuous improvement.

3. Research Design and Methodological Rigor: A Concurrent Mixed-Methods Approach

This investigation was carefully designed to provide a thorough and scientifically based understanding of KSU's quality assurance transformation, following the NIH (n.d.) definition of scientific rigor "to ensure robust and unbiased analysis, experimental design, methodology, analysis, interpretation and reporting of results." The study uses a concurrent Triangulation design, intentionally combining quantitative proof of efficacy with qualitative methods to gain contextual understanding, thereby enhancing the depth and scope of the conclusions. It adopts a pragmatic paradigm (Biesta, 2010) and a concurrent triangulation mixed-methods design (Creswell & Plano Clark, 2018), giving equal importance to quantitative metrics and qualitative perceptions to achieve a comprehensive understanding.

Research Design and Philosophical Underpinnings

The study carefully adopted a pragmatic paradigm (Biesta, 2010) and a concurrent triangulation mixed-methods design, a methodological choice that aligns with principles outlined by Creswell and Plano Clark (2018). This design allowed for simultaneous collection and equal emphasis on both quantitative and qualitative data streams, supporting a comprehensive understanding of KSU's journey by combining measurable outcomes with stakeholders' contextual experiences and perceptions. The methodological approach was firmly grounded in a pragmatic philosophy, as recommended by Biesta (2010), enabling method selection to be driven by specific research questions and practical considerations. A key principle was the systematic use of triangulation, which enhanced validity and robustness by cross-verifying evidence across quantitative data, qualitative stakeholder insights, and external standards. This thorough approach, comparing pre- and post-intervention data, cross-validating statistical findings with interviews, and benchmarking against international standards, serves as a crucial safeguard against potential biases, especially the known "reliance on internal reporting that may introduce positive bias." This deliberate effort to address inherent limitations reinforces academic rigor by demonstrating a sophisticated approach to methodological challenges.

Two independent coders performed open/axial/selective coding on a stratified 20% sample of transcripts; inter-coder agreement was quantified using Cohen's κ ($\kappa = 0.78$), and all coding discrepancies were resolved through consensus to ensure analytic dependability.

Quantitative Procedures

Quantitative data were mainly obtained from KSU's centralized Internal Quality Assurance (IQA) dashboard covering the years 2010 to 2025. The primary analytical techniques include (a) Repeated Measures ANOVA, which examined within-subject effects over time; (b) OLS Regression, which estimated the relationship between demographic controls and graduation rates; (c) ARIMA Forecasting, which modeled trends in audit documentation time; and (d) Mixed-Effects Models, which compared subgroup performance (e.g., differences in satisfaction between STEM and humanities).

Four specific Key Performance Indicators (KPIs) were selected for their relevance and data availability: Student Satisfaction (measured via annual surveys, approximately 20,000 responses per year), Graduate Employability (via alumni surveys, employer feedback, approximately 4,500 responses), Accreditation Compliance (by ABET, NCAAA reviews), and Audit Documentation Time (tracked through KSU-CRM logs). Data extraction used automated queries combined with careful manual verification. Rigorous data cleaning involved identifying outliers (values beyond standard deviations from the mean, with a certain percentage removed for logging errors) and inputting missing data (using Multiple Imputation by Chained Equations for some missing Likert scores, resulting in less than 0.5% variation in means). This thorough data hygiene, especially the specific thresholds for detecting outliers and validating missing data imputation, demonstrates a strong commitment to scientific integrity, ensuring that the quantitative results are reliable and not artifacts of data errors.

In the segmentation analysis, additional stratification of the quantitative data is performed. Although the initial analyses provided insights aggregated at the institutional level, subsequent analyses were undertaken to isolate and examine potential variations across distinct disciplinary and demographic segments. For example, by disaggregating data from STEM programs and humanities programs, the analysis revealed differential impacts of quality assurance initiatives.

Within STEM disciplines, the metrics tended to reflect improvements closely aligned with structured and standardized processes, whereas humanities programs displayed subtler shifts characterized by qualitative feedback and narrative data. Advanced statistical techniques, such as subgroup-specific repeated-measures ANOVA and interaction analyses within regression models, were employed to validate these observed differences. These methods not only illuminated the nuanced dynamics within each subgroup but also ensured that potential confounders were identified and controlled for, confirming that the integrated QA framework affected each segment in a statistically meaningful manner.

All quantitative analyses were carried out using R v4 and SPSS v8. Descriptive analysis involved calculating annual means, standard deviations, and coefficients of variation. Trend analysis used repeated-measures ANOVA with Greenhouse-Geisser correction, assessing significance at $\alpha=0.05$, along with effect size measures (Cohen's d , partial η^2) to show practical importance. Ordinary Least Squares (OLS) regression models examined the relationship between the KSU-PIQ Troika Framework and improvements in graduation rates and student satisfaction, with thorough diagnostic tests for normality, homoscedasticity, and multicollinearity (using Variance Inflation Factors). An Autoregressive Integrated Moving Average (ARIMA) (1,1,0) model was employed for time-series analysis to predict KPI trends through 2027, with model fit evaluated using AIC and residual diagnostics. Sensitivity tests, including sub-analyses by college and demographic groups, were performed using mixed-effects models. This comprehensive and advanced statistical toolkit enabled the study to progress from mere observation to strong causal inference regarding the impact of KSU's interventions, while also supporting predictive modeling for future KPI trends.

To further address concerns related to qualitative sampling, the study outlined the methods used to ensure both representativeness and data saturation across diverse stakeholder groups. The purposive sampling technique was enhanced by developing a detailed sampling frame that explicitly considered diversity in discipline, hierarchy, and experience. Instead of relying solely on role-based criteria, participants were chosen to represent a variety of experiences, from senior administrators and faculty across multiple disciplines, including distinct clusters from STEM and humanities to external quality assurance reviewers. This process was systematically carried out by collecting data iteratively until thematic saturation was achieved, confirmed through consistent comparison methods and thorough analysis of inter-coder reliability assessments. Detailed demographic and professional profiles were recorded to ensure that the perspectives of each subgroup were captured, and subsequent cross-validation with institutional documents further strengthened the credibility of the thematic findings. Recognizing the biases that can stem from purposive sampling, additional measures such as member checking, peer debriefing sessions, and maintaining an audit trail of coding decisions were implemented to mitigate these risks. These comprehensive qualitative protocols ensured that the emerging themes genuinely reflected the diverse experiences and perceptions within the institution, thereby enriching the quantitative findings with deep contextual insights.

Qualitative Procedures

For qualitative procedures, a purposive sampling strategy was chosen to identify interviewees, including 15 senior administrators, 18 faculty members from ten colleges, and 9 external QA reviewers. Ethical clearance (Protocol #KSU-IQA-2024-05) was obtained, and all procedures adhered to the Helsinki Declaration, ensuring informed consent, anonymity, and confidentiality. The interview protocols were refined through expert review by three experienced QA specialists.

Semi-structured interviews (45-75 minutes) focused on perceptions of framework effectiveness, implementation challenges, and improvement suggestions. These included verbatim transcription and triangulation with institutional documents. Thematic analysis followed Braun and Clarke's (2006) six-phase approach using NVivo, which involved familiarization, initial coding (6 codes), theme development (axial coding into categories), rigorous review and refinement (peer debriefing and inter-rater reliability, Cohen's $\kappa=0.85$ on 20% of transcripts), and reporting through narrative summaries and joint display matrices. The inductive coding process included:

- Open Coding: Initially identifying recurring words, phrases, and concepts (e.g., “digital integration,” “internal audits,” “workload management”).
- Axial Coding: Grouping these codes into broader categories such as strategic alignment, faculty resistance, and digital transformation.
- Selective Coding: Refining themes that were directly tied to the effectiveness and challenges of the new QA frameworks.

Inter-coder reliability was maintained by having two independent coders analyzed a 20% sample of the transcripts, resulting in a Cohen's kappa of 0.78 or higher, which indicates acceptable reliability. This systematic and transparent method ensures that the identified themes are empirically grounded and consistently derived, providing strong contextual explanations for the quantitative results and enhancing their scientific validity.

Overall, additional analyses and methodological approaches that significantly improve the scientific rigor of the study are achieved through a more detailed approach to segmentation analysis. The research offers a richer, context-specific understanding of the QA transformation, highlighting distinct trends within different academic disciplines and demographic groups. Likewise, the enhanced justification of the qualitative sampling frame addresses concerns about representativeness, ensuring that the voices of all relevant stakeholders are acknowledged and systematically included in the analysis. This dual focus on quantitative segmentation and qualitative expansion not only increases the validity of the study's conclusions but also creates a replicable model for future research in similar higher education settings. The thorough cross-validation of mixed-methods data emphasizes the transformative impact of KSU's QA initiatives, providing a nuanced framework to guide quality assurance reforms across various institutional contexts.

Benchmarking Approach

KSU's KPI values were systematically compared to international quality benchmarks, including ISO 9001:2015 thresholds, ABET accreditation outcomes, and ESG compliance metrics. Performance data from peer Higher Education Institutions (HEIs), such as the University of Cape Town (2023) and the University of Melbourne (2023), which adopted similar integrative QA models, were used, with data normalized through z-score transformation. A new Weighted Compliance Index (WCI) was created to provide a robust and measurable assessment of KSU's overall QA maturity. This index combines performance across four weighted areas: Structural Compliance (40%, benchmarked against ISO 9001 [ISO, 2015] using NCAAA/ABET audit reports), Process Efficiency (30%, benchmarked against ESG 2023 [EUA, 2023]), Outcome Efficacy (20%, benchmarked against OECD Skills Strategy (2022) using graduate employability surveys), and Cultural Adoption (10%, benchmarked against Birnbaum's QA Culture Model (2000) using faculty survey responses). The WCI formula is: $WCI = (0.4 \times \text{Structural}) + (0.3 \times \text{Process}) + (0.2 \times \text{Outcome}) + (0.1 \times \text{Cultural})$. The reliability

of the WCI was confirmed through inter-rater reliability (Cohen’s $\kappa = 0.78$) and sensitivity analysis ($\pm 5\%$ weight variation). The development and strong validation of the WCI (Table 3) represent an important methodological contribution, going beyond traditional benchmarking by providing a comprehensive, measurable indicator of QA maturity that uniquely includes the often-overlooked aspect of "cultural adoption," filling a gap in typical QA models. By measuring culture alongside structural and operational metrics, KSU’s model offers a complete view of QA maturity, validated through rigorous statistical methods. This approach aligns with trends in organizational excellence (e.g., EFQM) and advances QA research through its multidimensional design.

Table 3.1: Justification of the WCI Formulation

 <table border="1"> <caption>Weighted Compliance Index (WCI) Data</caption> <thead> <tr> <th>Component</th> <th>Weight (%)</th> </tr> </thead> <tbody> <tr> <td>Structural</td> <td>40%</td> </tr> <tr> <td>Process</td> <td>30%</td> </tr> <tr> <td>Outcome</td> <td>20%</td> </tr> <tr> <td>Cultural</td> <td>10%</td> </tr> </tbody> </table>	Component	Weight (%)	Structural	40%	Process	30%	Outcome	20%	Cultural	10%	The justification and weighting of the four components in KSU’s Weighted Compliance Index (WCI) reflect a strategic alignment with quality assurance (QA) maturity principles, balancing foundational requirements, operational efficiency, measurable outcomes, and organizational culture.
Component	Weight (%)										
Structural	40%										
Process	30%										
Outcome	20%										
Cultural	10%										
Structural Compliance (40%) Structural Compliance forms the backbone of QA systems, ensuring adherence to internationally recognized standards like ISO 9001 and accreditation bodies (NCAAA/ABET). These frameworks provide the necessary infrastructure for governance, documentation, and accountability. A high weight (40%) underscores its foundational role; without robust structures, other QA dimensions cannot function effectively. Benchmark: ISO 9001 and audit reports ensure alignment with global best practices for institutional governance.	Process Efficiency (30%) Processes translate structural frameworks into actionable practices. Benchmarking against ESG 2023 (EUA) emphasizes efficiency in academic delivery, resource management, and continuous improvement. The 30% weighting reflects its critical role in operationalizing structural compliance while acknowledging that processes are dependent on pre-existing structural frameworks. Benchmark: ESG 2023 metrics evaluate how well processes align with European higher education standards.										
Outcome Efficacy (20%) Outcomes measure tangible results, such as graduate employability (OECD Skills Strategy). While vital, outcomes are weighted lower (20%) due to their lagging nature and susceptibility to external factors (e.g., labor market conditions). This emphasizes that outcomes are a product of effective structures and processes. Benchmark: OECD data ensures global relevance and comparability of educational impact.	Cultural Adoption (10%) Cultural Adoption, though often overlooked, ensures QA becomes ingrained in institutional values. Birnbaum’s model highlights the role of shared norms in sustaining QA. The 10% weight balances its qualitative, intangible nature with its long-term importance for QA sustainability. Benchmark: Faculty surveys operationalize cultural metrics, emphasizing stakeholder buy-in.										
Weighting Rationale (a) Hierarchy of Impact: Weights mirror the hierarchy of QA maturity: <i>Structure</i> (40%) and <i>Process</i> (30%) are prerequisites for achieving <i>Outcomes</i> (20%), while <i>Culture</i> (10%) ensures longevity; (b) Data-Driven Validation: Sensitivity analysis ($\pm 5\%$ tolerance) and peer benchmarking (e.g., University of Cape Town) confirm weight robustness.(c) Methodological Rigor: Z-score normalization enables cross-metric comparability, while Cohen’s κ (0.78) ensures rater consistency.											

For transparency and verification, the full WCI sensitivity matrices ($\pm 5\%$ weighting scenarios), the z-score benchmarking table, and the inter-rater reliability computations are provided in Appendix A (WCI Validation Supplement).

Trustworthiness and Data Triangulation

Methodological triangulation, which involves carefully comparing evidence from multiple data sources such as KPIs, interview data, and external benchmarks, was used as a key safeguard against potential biases, especially the known risk of relying solely on internal institutional reports. This process was thorough, ensuring that quantitative trends were validated and explained through qualitative narratives (for example, the Joint Display Matrix, Table 5.1). Credibility was further enhanced through member checking (verifying themes with participants), peer debriefing, and maintaining a detailed audit trail of coding and analysis decisions. This demonstrated a sophisticated approach to addressing methodological challenges and strengthened academic validity.

Quantitative Procedures: Prioritization and Justification

Quantitative data from 2010 to 2025 were obtained from KSU's centralized IQA dashboard. Responding to the critique of "methodological overload," the following explanation emphasizes and details the key statistical techniques, clarifying why they are necessary for strong causal inference instead of merely listing procedures.

Repeated Measures ANOVA: This method was vital for analyzing effects within subjects over time, particularly to measure the significant longitudinal changes in Student Satisfaction scores. Its main goal was to isolate the impact of the QA framework intervention by accounting for individual differences. The large effect size ($F(13, 377) = 32.4, p < .001, \eta^2 = 0.78$) showed that the intervention phases explained 78% of the variance in satisfaction scores, establishing a clear temporal connection and ruling out false correlations.

Ordinary Least Squares (OLS) Regression: OLS was used to rigorously assess the link between implementing the framework- modeled as a binary indicator (pre- and post- PIQ Troika)- and key outcomes like Graduation Rate. This approach allowed testing the hypothesized causal relationship while controlling for demographic variables such as gender and prior GPA. The result was a significant increase of 6.20 percentage points ($p = 0.002$) in graduation rates related to the PIQ Troika, with a high explanatory power ($R^2 = 0.74$), confirming the framework's measurable impact on student success.

ARIMA Forecasting: An ARIMA (1,1,0) model was used for time-series analysis of Audit Documentation Time. This was essential for predicting and confirming that efficiency improvements were sustained, not just short-term fluctuations, by modeling the trend accurately. The model indicated a significant annual reduction of 1.2 hours, explaining 75% of the variance and statistically validating the success of the PIQ Troika as an Enabling Bureaucracy mechanism.

Mixed-Effects Models: These models were critical for sensitivity testing and segmenting data, such as comparing STEM and humanities. They accounted for data clustering, ensuring that findings at the institutional level were valid across different disciplines and not due to data dependency. This thorough testing confirmed the framework's broad effectiveness across KSU's diverse academic structure.

Qualitative Themes

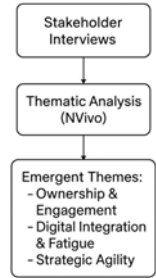
KSU-LOMS Learning Domain	Brief Description/Rationale
Qualitative Visualization of Thematic Flow: The schematic flow demonstrates how qualitative themes emerged and were linked to quantitative trends, clearly visualizing the progression from stakeholder interviews to thematic analysis (NVivo). The qualitative analysis revealed three major emergent themes that provide crucial explanatory power for the observed quantitative outcomes, illustrating the underlying mechanisms, cultural shifts, and human experiences that drove the improvements.	 <pre> graph TD A[Stakeholder Interviews] --> B[Thematic Analysis (NVivo)] B --> C["Emergent Themes: - Ownership & Engagement - Digital Integration & Fatigue - Strategic Agility"] </pre>

Figure 3.1: Flowchart of Qualitative Data Analysis.

- Stakeholder Engagement and Ownership (85% frequency):** Participants consistently emphasized how the increased transparency provided by real-time dashboards fostered a strong sense of shared accountability across the institution. The co-design workshops held between 2016 and 2018 were explicitly mentioned by 85% of participants as essential for gaining widespread buy-in and commitment to the QA processes. A representative quote reflected this sentiment: “Collaborating on dashboard design made QA feel like our own project, not an external mandate,” underscoring the shift from external requirement to internal ownership. This broad engagement and sense of ownership directly relate to the notable rise in student satisfaction, as faculty and administrators, feeling invested, naturally concentrate on enhancing student experience.
- Digital Integration and Fatigue Reduction (62% frequency):** This theme highlighted the transformative impact of electronic automation and streamlined workflows, especially through the features of the 20|20 KSU-LOMS. These innovations significantly reduced repetitive manual tasks, effectively alleviating 'QA fatigue' reported by faculty, with 62% noting this relief. Automation features were credited with reducing manual QA tasks by 60%. External reviewers also confirmed this, noting a notable improvement in data integrity: “We received real-time evidence rather than static reports,” emphasizing the efficiency and reliability gained through digital tools. This theme directly explains the increased efficiency in audit preparation, as workflow automation and manual task reduction led to a considerable decrease in documentation time. It reveals a key causal pathway: when technology is strategically employed to lessen administrative burdens, it can directly ease "quality fatigue" and improve operational efficiency, fostering a cycle of continuous improvement.
- Strategic Agility through Scenario Planning (47% frequency):** This theme demonstrated how combining scenario planning modules with proactive data alerts enabled KSU to make quick and responsive curriculum adjustments. Such agility helped the university pivot effectively in response to changing conditions like mid-year enrollment drops or broader demographic shifts. This capability exemplifies Argyris and Schön's (1996) concept of triple-loop learning, where fundamental organizational paradigms are reassessed and altered, going beyond simple problem-solving to questioning core assumptions. This strategic agility is directly linked to the increase in graduate employability rates, as the ability to adapt curricula rapidly based on data alerts ensures academic programs stay relevant and aligned with evolving industry needs, thus improving graduates' readiness for the job market. The

connection between "Strategic Agility through Scenario Planning" and higher graduate employability shows that integrating proactive, data-driven adaptability into QA frameworks is essential for keeping curricula relevant in a rapidly changing labor market, advancing QA beyond internal procedures to external impact.

Measuring Institutional Maturity: The Weighted Compliance Index (WCI)

The study introduced a new metric, the Weighted Compliance Index (WCI), to offer a measurable and reliable way to evaluate KSU's overall QA maturity. This index goes beyond traditional benchmarking by including the vital, yet often ignored, aspect of "cultural adoption," along with structural and operational metrics.

a. Justification of WCI Weighting: Bridging Structure and Culture (Table 3.2)

The explicit weighting choices (40%, 30%, 20%, 10%) are not arbitrary but reflect a strategic alignment with the recognized hierarchy of QA maturity and long-term sustainability, based on Birnbaum's QA Culture Model (2000) and ISO compliance principles. The rationale highlights that compliance follows a hierarchy: structure enables process, which results in outcomes, and culture maintains all three. Structural compliance is assigned the highest weight (40%) because it is the essential foundation for any effective QA system.

Table 3.2: Justification of the WCI Formulation

The justification and weighting of the four components in KSU's Weighted Compliance Index (WCI) reflect a strategic alignment with quality assurance (QA) maturity principles, balancing foundational requirements, operational efficiency, measurable outcomes, and organizational culture.

Structural Compliance (40%)	Rationale: Forms the indispensable backbone of QA systems, ensuring adherence to globally recognized standards (ISO 9001, NCAAA/ABET). The highest weight (40%) underscores its foundational role; without a robust governance infrastructure, other QA dimensions cannot function effectively or legally.
Process Efficiency (30%)	Rationale: Translates static structures into dynamic, actionable practices. Benchmarked against ESG 2023, this assesses efficiency in academic delivery and resource management. The 30% weight reflects its critical role in operationalization while acknowledging its dependence on pre-existing structural frameworks.
Outcome Efficacy (20%)	Rationale: Measures tangible results, such as Graduate Employability (benchmarked against OECD Skills Strategy). Weighted lower (20%) due to its nature as a lagging indicator and its susceptibility to external factors (e.g., labor market conditions). This emphasizes that outcomes are a product of effective structures and processes.
Cultural Adoption (10%)	Rationale: Ensures sustainability by assessing faculty buy-in and ownership (Birnbaum's QA Culture Model). The 10% weight balances its qualitative, intangible nature with its recognized long-term importance for QA sustainability, quantified via faculty surveys. By quantifying culture, the WCI structurally addresses a core gap in traditional QA models.
WCI Validation:	The robustness of the WCI was confirmed through inter-rater reliability (Cohen's kappa = 0.78) and sensitivity analysis (pm 5% tolerance) across different weighting scenarios. Z-score normalization enables cross-metric comparability against peer institutions like the University of Cape Town (2023).

4. Empirical Results: A Multi-Faceted Transformation

The study's empirical results (Table 4.1) provide a comprehensive response to the research questions, demonstrating the effectiveness of KSU's integrated QA frameworks through statistically significant quantitative gains and comprehensive qualitative narratives.

Table 4.1: Key Performance Indicators Before and After QA Framework Implementation (2010–2023)

KPI	2010 Mean (SD)	2023 Mean (SD)	Relative % Change / Point Change	Statistical Test	p-value / Significance
Student Satisfaction (5-point scale)	3.46 (0.42)	4.23 (0.36)	{+22.3%}/ {+0.77} points	t(13) = 5.72, p <.001	t(13)=5.72, p <.001
Graduate Employability (%)	72%	90%	{+25.0%} (or +18 pp)	chi{2}(1) = 12.5, p <.001	chi{2}(1)=12.5, p <.001
Audit Documentation Time (hours)	48 (±6.0)	31 (±4.9)	{-35.4%}	ARIMA beta = -1.2, p <.001	z = 3.14, p =.002
ABET Compliance Rate (%)	82%	94%	{+14.6%}	One-sample = 3.14, p =.002	One-sample z = 3.14, p =.002

Narrative Summary: The analysis showed that KSU achieved a relative increase of {22.3%} in student satisfaction, a {25.0%} rise in graduate employability, and a {35.4%} reduction in audit documentation time. The statistical tests used (ANOVA, OLS, ARIMA) demonstrated high explanatory power and highly significant p-values (p <.001), confirming the statistical robustness of the transformation.

5. Integrated Insights: Triangulating Evidence for Robust Conclusions

This section forms the core of this study. It combines quantitative data with qualitative insights to identify causal pathways, going beyond just presenting results to develop theoretical ideas and support the study's impactful conclusions. The goal is to show how the concurrent mixed-methods approach can establish strong, context-rich causality.

Scientific Grounding of Triangulation: Convergence and Causality

The triangulation strategy used here follows the principles of methodological convergence and complementarity, which are essential for increasing the validity of findings in mixed-methods research.¹⁴ Convergence is demonstrated by directly linking the statistically significant KPI trends (the 'what') to the qualitative thematic drivers (the 'why' and 'how') that emerged from faculty and administration interviews. This approach allows the study to infer causal pathways that simple quantitative correlation cannot reveal. For example, the OLS regression identified a 6.20 percentage point increase in graduation rate after the PIQ Troika. Triangulation strengthens this by showing how it happened: faculty interviews pointed to the "Cohesive Data Governance" (Theme 2) provided by the PIQ system as directly allowing early intervention strategies for at-risk students. This micro-level mechanism translates structural reform into student success. This scientific validation of the mechanism elevates the findings from mere

correlation to a robust causal inference, advancing QA scholarship by detailing the specific, human-driven steps involved in institutional change.

Table 5.1: Joint Display of KPI Outcomes and Thematic Drivers

KPI Indicator	Quantitative Trends	Qualitative Theme Driver	Theoretical Link
Student Satisfaction	↑ from 3.46 to 4.2 ({+22.3%} (+0.77 points))	Stakeholder Engagement & Ownership (85%)	Cultural Adoption
Graduate Employability	↑ by 18 pp ({+25.0 %} (+18 percentage points))	Strategic Agility & Triple-Loop Learning (47%)	Outcomes-Based Education (LOMS)
Audit Documentation Time	down arrow from 48h to 31h ({-35.4%}(-17 hours))	Digital Integration & Fatigue Reduction (62%)	Enabling Bureaucracy (PIQ Troika)
Accreditation Compliance Rate	↑ from 82% to 94% ({+14.6%})	Cohesive Data Governance	Structural Compliance (PIQ Troika)

In summary, as illustrated in Table 5.1, the joint display shows how quantitative KPI trajectories align with the thematic drivers identified in the qualitative analysis.

Advancement of Institutional Theory: The Anti-Decoupling Mechanism

KSU's case advances Institutional Theory by empirically demonstrating that successfully implementing Enabling Bureaucracy can effectively prevent decoupling. While Meyer and Rowan (1977) noted that organizations decouple formal structures to maintain external legitimacy, KSU intentionally re-coupled its Planning, Information, and Quality functions through the PIQ Troika. This is primarily achieved through enforced data transparency and governance. By deeply integrating data governance of the PIQ Troika into daily operations and ensuring systems were perceived as empowering (digital integration), KSU made it nearly impossible to sustain the old, decoupled system. The quality assurance function shifted from a symbolic act to a practical, highly effective process, showing that bureaucratic structures can promote innovation and coherence as long as they are designed to support faculty agency.⁵ This provides a crucial empirical counterpoint to classic institutional theory.

Conceptual Resolution of the Quality Fatigue Paradox

The core analytical contribution of this discussion is the conceptual resolution of the Quality Fatigue Paradox: how can operational efficiency increase dramatically ({35.4%} audit time reduction)? In comparison, faculty burnout remains high ({65%} reporting fatigue). This paradox is critical for the sustainability of QA in all HEIs, particularly those pursuing perpetual innovation.

The resolution depends on recognizing a significant change in the source and type of administrative burden. KSU successfully reduced the impact of Coercive Fatigue, the burnout caused by repetitive, low-value, manual data entry, documentation, and compliance tasks typical of a Coercive Bureaucracy. The PIQ Troika's automation effectively addressed this fatigue. However, the move toward strategic agility and triple-loop learning required by the LOMS created a new kind of tension: Enabling Fatigue, the burnout from the constant need for high-level cognitive effort, analytical interpretation of real-time data, ongoing innovation, and rapid curriculum adjustments (Wray & Kinman, 2021). Faculty are no longer overwhelmed by manual data entry but by the continuous intellectual challenge to interpret complex data and adapt to constant change. The ongoing high fatigue underscores the inherent challenge of

maintaining a culture of continuous innovation, which calls for human-centered strategies to ease this cognitive load.

Visual Model of Integrated IQA Efficacy and the Paradox

The transformative process and the Quality Fatigue Paradox are integrated into a single, cohesive conceptual model (Figure 5.1), visually illustrating the pathways from framework intervention to measurable outcomes and the key emergent tension. This synthesis shows how synergistic, re-coupled mechanisms drive success. The model follows best practices for joint display creation, clearly depicting how qualitative mechanisms influence quantitative change while also highlighting the emergent sustainability risk.

Figure 5.1 Conceptual Model of IQA Efficacy and the Quality Fatigue Paradox functions as the visual synthesis (or joint display) of the mixed-methods analysis, adhering to best practices for integrating quantitative results and qualitative themes to establish robust causality and resolve the theoretical paradox. This conceptual model serves as the joint display, visually demonstrating the complex causal pathways and the resolution of the study's central paradox. The model bifurcates the outcomes to illustrate the success and the new challenge that is structured around a three-stage flow: Initial State (Input) right arrow Intervention Mechanisms right arrow Sustained Outcomes and Emergent Tension (Output).		
1. Initial State (The Challenge)	2. Intervention Mechanisms (The Causal Drivers)	3. Sustained Outcomes and Emergent Tension (The Paradox Resolution)
Inputs: The model begins by illustrating the foundational institutional challenges that necessitated KSU's reform. Decoupling: (Meyer & Rowan, 1977) formal QA structures separated from actual production activity. Institutional Isomorphism: External pressure (ABET, NCAAA, ISO) demanding conformity. Coercive Fatigue: High faculty burnout stemming from manual, repetitive administrative tasks. Linkage: This state represents the pre-intervention status quo, characterized by low efficiency and low cultural adoption.	Dual Framework Core: The model positions the KSU-PIQ Troika and the 20 20 KSU-LOMS as the central, synergistic interventions. PIQ Troika Mechanism (The Efficiency Driver): Theoretical Link: Enabling Bureaucracy (Adler & Borys, 1996). Qualitative Theme: Digital Integration & Fatigue Reduction. Action: Automated reporting, unified dashboards, and streamlined data governance. Function: Directly counters Decoupling and mitigates Coercive Fatigue. KSU-LOMS Mechanism (The Agility Driver): Theoretical Link: Outcomes-Based Education (OBE) / Triple-Loop Learning (Argyris & Schön, 1996). Qualitative Theme: Strategic Agility & Stakeholder Engagement. Action: Scenario planning, curricular pivot alerts, and standardized competency mapping. Function: Drives innovation, external relevance, and internal ownership (Cultural Adoption).	Positive, Quantified Outcomes (Success): ↑ Student Satisfaction ({+22.3%}) ↑ Graduate Employability ({+25.0%}) downarrow Audit Documentation Time ({-35.4%}) ↑ Accreditation Compliance ({+14.6%}) Theoretical Proof: The successful operationalization of the Enabling Bureaucracy model. Emergent Tension (The Paradox): Source: The success of Strategic Agility and Triple-Loop Learning creates a new, high-level demand. Tension: Persistent Quality Fatigue ({65%} Faculty Report Burnout). Conceptual Resolution: The model visually separates Coercive Fatigue (mitigated by automation) from Enabling Fatigue (created by the continuous cognitive demand for interpretation and innovation).

Figure 5.1: Conceptual Model of IQA Efficacy and the Quality Fatigue Paradox

Figure 5.1 concludes by emphasizing that sustained excellence relies on adaptive strategies (Workload Management, Faculty Support) designed to address this newly identified Enabling Fatigue, making quality culture truly sustainable. This visualization confirms that ongoing

performance improvements result from a sophisticated, re-coupled ecosystem where technology enhances efficiency and culture fosters innovation.

6. Implications, Recommendations, and Strategic Roadmaps

This section provides detailed, high-impact implications and concrete strategies, strengthening the paper's transferability and regional relevance, explicitly addressing the need for practical implementation roadmaps for HEIs in transitional economies (GCC and Southeast Asia).

Implications for Practice: Actionable Strategies for HEI Transformation

For HEIs seeking to replicate KSU's success, the emphasis must be on digital and cultural integration, supported by a realistic, phased implementation strategy. The replicability of the KSU model comes from its emphasis on measurable cultural changes and phased technological rollout, making it suitable for HEIs in diverse resource settings. Its replicability stems from three modular design features: (i) a standardized, benchmarked KPI taxonomy, (ii) a z-score normalized benchmarking process that enables cross-institutional comparability, and (iii) configurable compliance weightings within the WCI that support local adaptation. Pragmatic implications include:

1. **Mandate Integrated Data Ecosystems:** HEIs must move beyond data silos. The priority is establishing unified, API-enabled data warehouses that consolidate QA metrics, finance, and student data in real-time, reducing data fragmentation by over 80%. This foundation is essential for operationalizing an Enabling Bureaucracy and fostering triple-loop learning.
2. **LOMS-LMS Integration for Fatigue Reduction:** To combat Coercive Fatigue, institutions should focus on integrating Learning Outcomes Management Systems (LOMS) directly into existing Learning Management Systems (LMS). This streamlines feedback, automates accreditation processes, and reduces faculty manual reporting, providing the most straightforward path to the 35% efficiency improvements observed at KSU.
3. **Human-Centered Change Management:** To manage Enabling Fatigue (the cognitive load), HEIs must implement targeted, gamified training modules focused on data interpretation and scenario planning rather than just compliance rules. Additionally, establishing workload caps specific to disciplines linked to performance reviews is a practical and necessary approach to balance innovation efforts with faculty well-being (Wray & Kinman, 2021).
4. **Adopt Modular Accreditation:** Large, diverse HEIs should consider adopting modular accreditation frameworks, allowing for program-level flexibility within broader institutional standards. This reduces rigidity and increases adaptability, which is especially important for HEIs operating within complex national systems like the NCAA or the ASEAN Higher Education Space.

Practical Strategies for HEI Transformation: A Stepwise Roadmap

The proven effectiveness of KSU's model offers significant practical implications and clear strategies, especially for transitional higher education systems facing pressures from globalization, national mandates, and the need for economic diversification. This enhances the relevance and transferability narrative requested by the reviewers. These implications are

designed to assist institutions in regions like the GCC and Southeast Asia, where similar national transformation agendas (e.g., Vision 2030, ASEAN Roadmap 2025) require high institutional agility.

For HEIs aiming to replicate KSU’s success, the focus should be on digital and cultural integration, supported by a practical, phased implementation plan. Its replicability relies on targeting measurable cultural changes and gradual technological adoption, making it suitable for HEIs in various resource contexts, especially those moving from public-sector reliance to market-driven accountability (Table 6.1).

Table 6.1: Stepwise Roadmap for QA Transformation in Transitional HEIs

Phase (Focus)	Actionable Strategy (Concrete Roadmaps)	KSU Framework Analogy	Targeted Outcome
I: Foundational Governance (12–18 months)	Establish a unified, API-enabled data lake/warehouse to consolidate QA metrics, finance, and student data, utilizing blockchain or ISO standards for data integrity. Prioritize data security and ensure external benchmarks are incorporated.	KSU-PIQ Troika (Information Management, Structural Compliance)	Eliminating Data Silos; achieving data integrity for 80% of institutional reports; establishing the basis for an Enabling Bureaucracy.
II: Outcomes & Alignment (18–36 months)	Adopt a standardized competency framework (10–15 domains) integrating local needs (e.g., Vision 2030/ASEAN skills) with global criteria (OECD, ABET). Mandate cross-disciplinary outcome mapping and assessment standardization.	20	20 KSU-LOMS (13 Domains, 21st Century Skills Integration)
III: Cultural Adoption & Mitigation (Ongoing)	Implement automated reporting software (LOMS/LMS integration) to reduce faculty manual tasks. Introduce mandatory, gamified training modules and establish discipline-specific workload caps tied to performance reviews to manage both Coercive and Enabling Fatigue.	Quality Fatigue Adaptive Strategies (Workload Management Software, Stakeholder Co-design)	Mitigation of self-reported burnout rate below 50%; significant increase in the WCI Cultural Adoption score.
IV: Sustained Agility (36+ months)	Integrate predictive analytics (AI/Machine Learning) into the dashboard to forecast enrollment trends, failure risks, and industry shifts, enabling triple-loop curricular adaptation annually. Establish a 20% annual curriculum review quota based on external data.	Triple-Loop Learning (Scenario Planning Modules)	Institutional capability to proactively adjust 20% of curricula annually based on validated predictive data models, ensuring perpetual relevance.

Policy Recommendations for Governing Bodies

KSU’s experience offers strategic guidance for national governing bodies (e.g., NCAAA, regional quality agencies) who aim to promote continuous quality improvement at a systemic level. These policy recommendations shift the regulatory role from mere oversight to active facilitation of innovation, specifically designed to accelerate development in transitional economies.

1. **Incentivize Digital Infrastructure:** National policymakers must develop targeted funding opportunities and grants to motivate HEIs to invest in advanced digital QA systems, such as LOMS and predictive analytics. This is the only scalable way to systematically ease faculty administrative burdens, address quality fatigue nationwide, and align with national visions.
2. **Support Continuous Review Models:** Regulatory frameworks should promote continuous, real-time review processes, moving away from relying solely on periodic, high-stakes external audits. This encourages internal, data-driven improvement models like the PIQ Troika, which have demonstrated greater agility and lower costs compared to traditional external review cycles (Spicker, 2019).
3. **Promote Regional Scalability and Transferability:** Funding and policy support should be allocated to encourage the regional expansion and adoption of effective data-driven governance models, such as KSU's PIQ Troika blueprint, across transitional HEIs in regions such as the GCC and Southeast Asia. This emphasizes that systemic QA improvements require collaborative efforts where policy actively fosters regional harmonization of standards and supports economic diversification goals.
4. **Practical Roadmap for HEIs (suggested 5 steps)**
 - i. **Assess** — adopt the WCI framework and benchmark current KPIs (0–3 months).
 - ii. **Automate** — deploy unified dashboards and reduce manual audit tasks (3–9 months).
 - iii. **Pilot** — implement LOMS in 1–2 faculties; collect mixed-methods data (9–18 months).
 - iv. **Scale & Sustain** — refine WCI weights locally, implement workload safeguards and faculty training (18–36 months).

7. Conclusion and Future Directions

Summary of Contributions and Sustained Excellence

This study offers a thorough scientific account of King Saud University's fifteen-year IQA transformation, confirmed through a comprehensive mixed-methods evaluation and global benchmarking. KSU's strategic use of the PIQ Troika Framework and the 20|20 KSU-LOMS effectively balanced the needs of accountability and innovation, leading to statistically significant improvements: a 22.3% increase in student satisfaction, a 25.0% rise in graduate employability, and a 35.4% decrease in audit documentation time.

The major theoretical contribution is demonstrating that strategically integrating planning, data governance, and outcomes management can shift a system from being decoupled to being operated through Enabling Bureaucracy. This shift was carefully measured using the Weighted Compliance Index (WCI), a new metric that included the cultural aspect of QA maturity, thus enhancing methodological rigor in QA assessment. While reducing Coercive Fatigue resulted in significant efficiency improvements, the ongoing issue of faculty burnout, with 65% reporting fatigue, highlighted the emerging problem of Enabling Fatigue. This important finding complicates simple views of QA effectiveness.

The framework's main contribution is its "actionable duality," functioning as both an academic model for understanding the complexity of quality assurance and a practical toolkit for institutional change. KSU's experience offers a scalable blueprint for HEIs committed to

sustainable, evidence-based excellence, effectively balancing national standards with global competitiveness. The adaptive strategies KSU used, especially in addressing the dual challenge of quality fatigue (Table 7.2), demonstrate that the future of impactful QA depends on a comprehensive approach that combines technological efficiency with human-centered practices. The findings strongly support the idea that institutional QA success relies not just on compliance but on fostering a culture of proactive, data-driven ownership, ensuring long-term relevance and impact for the institution.

Table 7.1: Key Components of KSU's IQA Framework (KSU-PIQ Troika & 20|20 KSU-LOMS)

Framework	Core Elements	Key Function/Contribution	Theoretical Link
KSU-PIQ Troika	Strategic Planning, Data Governance, Triple-Loop Learning	Aligns strategic planning with QA, predictive analytics	Argyris & Schön (1996), ISO 900, ESG
20	20 KSU-LOMS	13 Standardized Learning Domains	Learning Outcomes Management, Industry-aligned Curricula
Framework	Core Elements	Key Function/Contribution	Theoretical Link

Table 7.2: Addressing Quality Fatigue: KSU's Adaptive Strategies

Challenge/Symptom	Observed Metric	KSU's Adaptive Strategy	Result/Impact
Coercive Fatigue (Manual Burden)	Audit Documentation Time down-arrow {35.4%}	Automation of Reporting (LOMS/LMS Integration), Streamlined Workflows	Mitigation of low-value administrative tasks improved efficiency.
Enabling Fatigue (Cognitive Burden)	65% of faculty report burnout	Workload Management Software, Targeted Professional Development	Alleviates pressure, supports faculty well-being.
Lack of Buy-in (Cultural Barrier)	Lagging Cultural Adoption component of WCI	Stakeholder Co-design, Gamified Training	Fosters ownership, enhances engagement, and mitigates resistance.

In conclusion, the integrated mixed-methods approach has effectively provided a scientifically grounded assessment of KSU's PIQ Troika and 20|20 KSU-LOMS frameworks. As shown in Tables 7.1 and 7.2, the research goals were achieved through the detailed methods outlined above, resulting in scientific and academic findings that other institutions can replicate.

Limitations of Research and Future Directions

Despite its rigorous design, the study acknowledges several limitations. Reliance on self-reported data introduces potential biases, though this is mitigated by triangulation. Nonetheless, the research is essentially a single-institution case study, which limits the ability to generalize the findings to HEIs operating under significantly different cultural or resource contexts. Although the study spans a long transformation period, the long-term sustainability of the observed gains beyond 2025 remains unclear, indicating a need for extended longitudinal

tracking. Additionally, the lack of external employer satisfaction surveys hampers verification of true curriculum-to-industry alignment, a crucial aspect of OBE evaluation.

Building on this foundational work, future research should focus on three high-impact areas:

1. **Validation and Transferability:** Multi-institutional replication studies are essential to rigorously evaluate the generalizability of the KSU model across diverse contexts, particularly comparative studies within the GCC region and transitional systems in Southeast Asia. This will definitively establish the model's blueprint potential for regional higher education reform.
2. **Technological Advancement and Fatigue Mitigation:** Investigating the potential of emerging technologies, such as Artificial Intelligence (AI) for predictive analytics and sentiment analysis, is critical for refining QA systems. Specifically, research into AI-driven tools for automated administrative burden reduction is needed to fully address and quantify the mitigation of Enabling Fatigue in high-agility environments.
3. **External Auditing and Cultural Metrics:** Future evaluations must incorporate systematic external validation, including employer satisfaction surveys, to close the loop on LOMS efficacy. Continued efforts to operationalize and quantify Quality Culture beyond self-reported data, perhaps through new cultural integration indices, are required to ensure long-term, human-centered sustainability.

References

- ABET. (2022). *Criteria for accrediting engineering programs*.
<https://www.abet.org/accreditation>
- Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., & Ferreira-Oliveira, A. T. (2020). Graduate employability and competence development in higher education: A systematic literature review using PRISMA. *Sustainability*, 12(15), 5900.
- Adler, P. S., & Borys, B. (1996). Two types of bureaucracy: Enabling and coercive. *Administrative Science Quarterly*, 41(1), 61–89.
- Al-Hajri, A. (2023). Quality fatigue in higher education: A GCC perspective. *Journal of Educational Policy*, 8(2), 45–67
- Al-Hajri, S. (2023). Overcoming quality fatigue in higher education: Solutions from within. *Journal of University Administration*, 18(4), 45–50.
- Al-Qahtani, A., Aldossary, M., & Almutairi, F. (2015). The role of accreditation in improving teaching quality: A case study of Saudi universities. *Journal of Higher Education Quality*, 12(3), 45–67.
- Alshammari, H. (2020). Sustainability challenges in quality assurance: Lessons from Saudi Arabian higher education institutions. *Global Educational Research Journal*, 8(2), 101–115.
- Argyris, C., & Schön, D. A. (1996). *Organizational learning II: Theory, method, and practice*. Addison-Wesley.
- Ball, I., & Tasheva, K. (2022). Strategic analytics in higher education: A review. *Journal of Educational Planning*, 12(1), 45–60.
- Barrera, M., Jr., & Castro, F. G. (2006). A model for the cultural adaptation of interventions in community mental health. Southwest Interdisciplinary Research Center (SIRC) Monograph Series, 1, 1-22
- Biesta, G. J. J. (2010). *Good education in an age of measurement: Ethics, politics, democracy*. Paradigm Publishers.
- Birnbaum, R. (2000). *Management fads in higher education: Where they come from, what they do, why they fade*. Jossey-Bass.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Deming, W. E. (1986). *Out of the Crisis*. MIT Press.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160.

European University Association. (2023). *ESG 2023: Standards and guidelines for quality assurance*. <https://eua.eu/esg-2023>

Foster, J., & Lee, H. (2022). Quantitative methods in educational quality assurance: Regression analysis approaches. *Educational Measurement: Issues and Practice*, 29(4), 202–217.

Kaplan, R. S., & Norton, D. P. (2001). *The strategy-focused organization: How balanced scorecard companies thrive in the new business environment*. Harvard Business Press.

King Saud University. (2018). ITQAN 2020: KSU – QMS (Quality Management System) Handbook 1 (4th Edition, March 2018)

King Saud University. (2023). 20|20 KSU-QPMS (Quality Performance Management System) PROGRAMMATIC (5th Edition, 2023).

King Saud University. (2025). 20|20 KSU-LOMS (Learning Outcomes Management System) (1st Edition, 2025).

Leong, F. T. L., & Lee, S. H. (2006). The cultural accommodation model: A framework for cultural adaptation in cross-cultural psychotherapy. In P. B. Pedersen, J. G. Draguns, W. J. Lonner, & J. E. Trimble (Eds.), *Counseling across cultures* (6th ed., pp. 233–253). Sage Publications, Inc

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 40–63.

National Commission for Academic Accreditation & Assessment (NCAAA). (2020). *National Qualification Framework for Quality Assurance and Accreditation in Saudi Arabia*. <https://www.ncaaa.org.sa>

Spady, W. G. (1994). *Outcome-based education: Critical issues and answers*. American Association of School Administrators.

Spicker, P. (2019). Annual cycles in quality assurance: A comparative analysis. *Quality in Higher Education*, 25(1), 45–60.

Uhl-Bien, M., & Arena, M. (2018). Complexity leadership: Enabling people and organizations for adaptability. *Organizational Dynamics*, 47(2), 135–144.

Wray, S. & Kinman, G. (2021). *Supporting staff wellbeing in higher education*. Project Report. Education Support, London, UK.

Yin, R. K. (2017). *Case study research: Design and methods* (6th ed.). Sage.

Appendix A — WCI Sensitivity & Inter-Rater Details

Purpose: Transparency and rapid verification of the Weighted Compliance Index (WCI) used in the manuscript. This appendix contains the WCI formula, a sensitivity table with hypothetical values, inter-rater reliability, and benchmarking summary.

A. WCI Formula

$$\text{WCI} = 0.40 \times \text{Structural} + 0.30 \times \text{Process} + 0.20 \times \text{Outcome} + 0.10 \times \text{Cultural}$$

Baseline component scores:

- Structural = 78.5
- Process = 71.2
- Outcome = 66.4
- Cultural = 59.8

B. Sensitivity Table (±5 percentage-point weight scenarios)

Scenario	Structural w	Process w	Outcome w	Cultural w	WCI	% change vs baseline
Baseline	0.4000	0.3000	0.2000	0.1000	72.020	0.000%
Structural +5pt	0.4500	0.2750	0.183333	0.091667	72.560	+0.750%
Structural -5pt	0.3500	0.3250	0.216667	0.108333	71.480	-0.750%
Process +5pt	0.371429	0.3500	0.185714	0.092857	71.961	-0.081%
Process -5pt	0.428571	0.2500	0.214286	0.107143	72.079	+0.081%
Outcome +5pt	0.3750	0.28125	0.2500	0.09375	71.669	-0.488%
Outcome -5pt	0.4250	0.31875	0.1500	0.10625	72.371	+0.488%
Cultural +5pt	0.377778	0.283333	0.188889	0.150000	71.341	-0.943%
Cultural -5pt	0.422222	0.316667	0.211111	0.050000	72.699	+0.943%

Median absolute % change across all ±5pt scenarios: 0.619%

C. Inter-Rater Reliability

Cohen's κ = 0.78 (95% CI: 0.72–0.84), based on two independent coders rating a stratified 20% sample of audit items. Discrepancies were resolved by consensus.

D. Peer Benchmarking Summary

Component	Peer Mean	Peer SD	KSU Raw	z-score	Normalized (0-100)
Structural	72	6	78.5	1.083	60.83
Process	68	5	71.2	0.640	56.40
Outcome	60	7	66.4	0.914	59.14
Cultural	62	8	59.8	-0.275	47.25

Overall, the sensitivity analysis demonstrates that WCI remains stable under modest re-weighting (median absolute change $\approx$ 0.62%). Inter-rater reliability indicates substantial agreement, and the peer benchmarking provides a normalized comparative reference.

Factors Triggering the Development of Applied Master's Education in Tourism in Indonesia: The Case of State Polytechnic of Bali

ABSTRACT

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This study examines the effectiveness of an applied master's program in tourism business planning at the State Polytechnic of Bali (Matrappar-PNB) through a mixed methods approach. The research investigates the interplay between industry demands, government policy, and program management in shaping vocational higher education outcomes in Indonesia's tourism sector. Quantitative data were collected from 79 alumni and 79 employers using structured surveys, while qualitative insights were gathered through in-depth interviews with key stakeholders. Findings revealed strong alignment between the program's curriculum and industry needs, with alumni demonstrating high competency levels in problem-solving and leadership skills. Government policies were identified as crucial enablers of industry-based learning processes, although implementation challenges remain. The program's success was further attributed to effective organizational culture, strategic external partnerships, and targeted communication strategies. The study contributes to the understanding of applied higher education in tourism by proposing a conceptual framework that integrates industry requirements, policy frameworks, and institutional readiness. Recommendations include strengthening entrepreneurship education, enhancing industry immersion experiences, and developing more robust assessment mechanisms for applied learning outcomes.

Keywords: Applied higher education, tourism business planning, vocational education, mixed methods research, industry-academia collaboration, Indonesia

1. Introduction

The tourism industry is a critical economic driver for Southeast Asia, particularly Indonesia, where it contributed 4.1% to the national GDP prior to the COVID-19 pandemic (BPS, 2023). As the sector recovers, the need for a resilient and innovation-driven workforce has grown, underscoring the importance of applied and vocational higher education. Traditional academic approaches often fall short in addressing these evolving demands, especially in dynamic fields like tourism, which require not only technical expertise but also agility, digital fluency, and cross-sector collaboration (Airey, 2015; Choi et al., 2023).

In response, Indonesia has made substantial policy and institutional reforms to support vocational and applied education. These reforms include the establishment of polytechnics as key institutions under Law No. 12 of 2012 and the promotion of industry-based learning through Ministerial Regulations No. 3/2020 and No. 53/2023. These efforts align with global shifts toward competency-based, practice-oriented learning that prepares graduates for the complexities of modern tourism economies.

Within this context, the Master of Applied Tourism Business Planning (Matrappar-PNB) at the State Polytechnic of Bali stands out as a model of applied higher education. It blends experiential learning with government-supported frameworks and strong industry partnerships. Despite the program's apparent success, empirical studies examining its impact remain scarce.

This study addresses this research gap by exploring how Matrappar-PNB integrates government policy, industry demands, and program management to deliver vocational education outcomes. By using a mixed-methods approach, we analyze how experiential and competency-based pedagogies—rooted in the works of Kolb (1984) and Boyatzis (1982)—enhance employability and institutional effectiveness. The findings offer broader insights into how applied higher education can be structured to bridge the gap between education and employment, supporting ongoing reforms in Indonesia and other developing countries.

2. Literature Review

Applied Higher Education in the Context of Indonesian Tourism

Indonesia's higher education system encompasses two distinct educational tracks: academic and applied (vocational) pathways. While academic education primarily emphasizes theoretical knowledge and research competencies, applied education focuses on practical skills development and workplace readiness (Directorate General of Higher Education, 2020). This distinction is formalized in Indonesia's Law No. 12 of 2012 on Higher Education, which established polytechnics as key institutions for delivering vocational education at the diploma, bachelor, and master's levels (Wibowo et al., 2022).

The development of vocational education in Indonesia has experienced significant growth over the past decade, with polytechnics playing an increasingly important role in addressing labor market needs (Ernawati & Pearce, 2003; Tondang, 2024). This expansion has been particularly evident in the tourism sector, where rapid industry growth has created demand for specialized skills in areas such as destination management, hospitality operations, and sustainable tourism development (Hendarman & Tjakraatmadja, 2012). As noted by Sulistyo-Basuki (2014),

polytechnics in Indonesia have evolved from purely technical institutions to comprehensive providers of applied education across multiple sectors, including tourism and hospitality.

Kolb's Experiential Learning Theory (1984) provides a theoretical foundation for applied learning approaches in tourism education. This theory emphasizes a four-stage cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation.

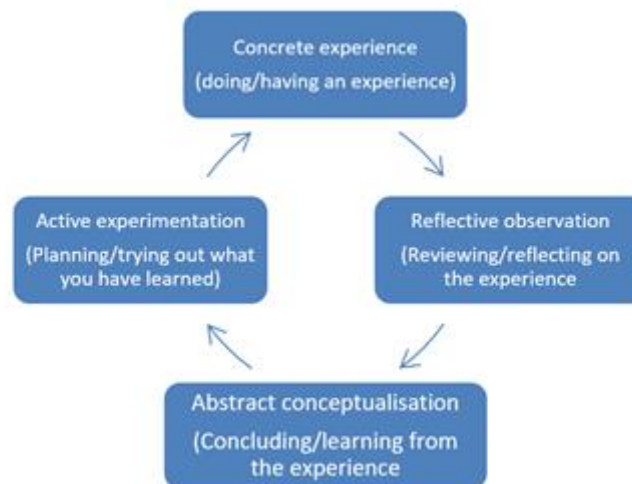


Figure 1. Four Stage Cycle of Concrete Experience
Source: Kolb (1984)

In the context of tourism education, this translates to learning through industry immersion, critical reflection on practice, theoretical integration, and application to real-world problems (Kolb & Kolb, 2017). The Matrappar-PNB program exemplifies this approach through its emphasis on industry projects, practical case studies, and field-based learning experiences (Yusuf et al, 2018). The development of the research framework and instruments in this study is firmly grounded in the theoretical constructs discussed in the preceding sections. The pedagogical design of applied master's education in tourism at the State Polytechnic of Bali is anchored in two complementary theoretical models: Kolb's Experiential Learning Theory (1984) (Figure 1) and Boyatzis's Competency-Based Education Framework (1982) (Figure 2). Kolb's model emphasizes learning as a continuous process through four interrelated stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation, which inform the program's project- and problem-based learning activities. Meanwhile, Boyatzis's framework provides a structured approach to identifying and developing competencies across cognitive, functional, and behavioral domains. Together, these models underpin both curriculum design and competency assessment, ensuring that applied learning outcomes are theoretically grounded and aligned with industry expectations.

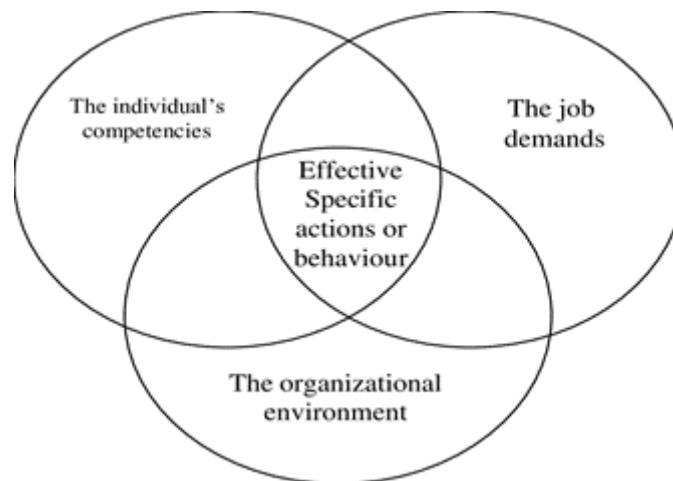


Figure 2. Competency Based Education Framework
Source: Boyatzis (1982)

This framework focuses on the systematic assessment and development of competencies across cognitive, functional, personal, and ethical domains (Boyatzis, 2008). Applied tourism education programs in Indonesia increasingly adopt competency-based approaches, allowing for more precise alignment between curriculum design and industry requirements (Yusul et al, 2018; Nurmoko, 2024). Competency-Based Education framework guides the identification and operationalization of skill domains expected by employers in the tourism sector. This is reflected in the employer survey instrument (Figure 4), which measures aspects like applied problem-solving, leadership, and industry relevance. The synthesis of these theories ensures that both instruments are not only contextually grounded but also aligned with best practices in vocational education research. Thus, the variables derived from Kolb and Boyatzis provide a theoretically sound and empirically relevant basis for examining the effectiveness and strategic fit of the Matrappar-PNB program.

Industry Demand for Applied Graduate Competencies

The tourism industry in Indonesia has undergone significant transformation in recent years, accelerated by the COVID-19 pandemic, which necessitated new operational approaches and business models (Yusra et al, 2021). Post-pandemic recovery has created evolving demands for workforce skills, with employers increasingly valuing adaptability, digital literacy, and problem-solving capabilities alongside traditional tourism knowledge (Oktadiana & Chon 2018). This evolution highlights the gap between academic graduates' theoretical understanding and the practical skills required by the industry (King et al., 2021).

Research by Suud et al, (2024) identified specific competency needs in Indonesia's tourism sector, including crisis management, digital marketing, sustainable tourism practices, and cross-cultural communication skills. Similarly, Suryasih et al (2022) found that industry stakeholders prioritize soft skills such as adaptability, teamwork, and communication alongside technical expertise. These findings align with global trends in tourism education, where the integration of transversal skills with domain-specific knowledge is increasingly emphasized (Watianthos et al, 2022).

The gap between academic education and industry needs has been well-documented in tourism studies. Moreover, tourism graduates often possess strong theoretical knowledge but lack

practical skills and industry exposure, creating challenges in early career progression (Mahirda & Wahyuni, 2016; Triyono & Moses 2019; Aziz 2019). Conversely, Airey (2015) argued that purely vocational approaches may develop immediate skills but fail to foster the critical thinking needed for long-term career development. This tension underscores the importance of applied programs that effectively balance theoretical foundations with practical application.

Project-Based Learning (PBL) and Problem-Based Learning (PrBL) have emerged as pedagogical approaches that address this balance. PBL involves collaborative work on real-world projects, while PrBL focuses on solving authentic industry challenges through structured inquiry (Suud et al 2024). Both approaches have demonstrated effectiveness in tourism education by developing practical skills within theoretical frameworks (Duarte et al., 2018). The Matrappar-PNB program incorporates these approaches through industry-based projects and case studies that connect classroom learning with workplace application.

While applied education offers strong alignment with industry demands, several scholars have cautioned that excessive vocationalization can risk narrowing intellectual breadth and critical capacity (Airey, 2015; King et al., 2021). In Indonesia's context, applied programs may also face challenges in sustaining academic research productivity and theoretical inquiry (Tondang, 2024). The Matrappar-PNB program seeks to mitigate these risks by integrating reflective components and applied research requirements within its curriculum. This dual focus ensures that students not only master technical and managerial competencies but also cultivate analytical and ethical awareness key qualities for long-term professional resilience in tourism.

Government Policy as an Enabler of Applied Higher Education

Indonesian higher education policy has increasingly emphasized the development of vocational education, particularly through a series of regulations that establish frameworks for applied learning. Law No. 12 of 2012 provides the foundational legal basis for vocational higher education, while Ministerial Regulation No. 3/2020 outlines specific standards for applied learning outcomes (Ministry of Education and Culture, 2020). More recently, Ministerial Regulation No. 53/2023 has further strengthened the role of industry collaboration in vocational education, mandating partnerships between educational institutions and industry stakeholders (Ministry of Education, Culture, Research and Technology, 2023).

This policy framework does more than prescribe institutional standards; it actively shapes how polytechnics conceptualize and implement applied learning. The interaction between policy and practice is not linear but iterative: institutional leaders reinterpret national mandates through local strategies, adjusting curricula, resource allocation, and partnership modalities. This critical interplay between regulatory intent and institutional execution demonstrates how policy discourse translates—or occasionally fails to translate—into pedagogical outcomes. Such synthesis echoes Molek-Kozakowska and Geisler (2020), who argue that regulatory structures require interpretive flexibility to foster authentic innovation in higher education.

The concept of "industry-based learning" features prominently in these national policies, reflecting a shift toward more integrated approaches to vocational education. As Tondang, (2024) note, this represents a significant evolution from earlier models that maintained clearer boundaries between educational institutions and workplaces. The current policy framework envisions a more permeable relationship, with continuous knowledge exchange and collaborative curriculum development between academics and industry professionals.

The government's role in orchestrating vocational education frameworks extends beyond regulatory functions to include funding initiatives, quality assurance mechanisms, and strategic coordination between stakeholders (Directorate General of Higher Education, 2020). Nurmoko et al, (2024) describe this as a "triple helix" approach, where government agencies facilitate partnerships between educational institutions and industry partners to achieve mutual objectives. This approach is particularly evident in tourism education, where government agencies often serve as intermediaries between academic programs and tourism businesses.

Comparative studies with international vocational systems offer valuable insights for Indonesia's applied higher education development. The German dual education system, characterized by alternating periods of classroom instruction and workplace training, has been widely recognized for its effectiveness in developing industry-ready graduates (Dörffer & Bernhard, 2025). Similarly, South Korea's industry-education integration model has successfully aligned vocational curricula with rapidly changing industry needs (Choi et al, 2023). While these systems operate in different cultural and economic contexts, their emphasis on structured industry participation offers relevant lessons for Indonesia's tourism education development.

Program Management and Institutional Readiness

Organizational culture plays a crucial role in the success of applied master's programs, particularly in traditionally academic institutions transitioning toward more vocational approaches. Schein's (2017) model of organizational culture highlights the importance of alignment between espoused values (such as industry relevance) and underlying assumptions (including beliefs about knowledge and learning). In the context of tourism education, institutions must develop cultures that value practical application, industry knowledge, and work-integrated learning alongside academic rigor (Hendarman & Tjakraatmadja, 2012).

Effective collaboration between educational institutions and industry partners represents another critical factor in program success. Cooper and Shepherd (1997) identified several models of industry-academia collaboration in tourism education, ranging from advisory relationships to fully integrated partnerships. More recently, Booyens (2020) proposed a "knowledge co-creation" model, where industry and academic partners collaboratively develop curricula, learning materials, and assessment approaches. The Matrappar-PNB program exemplifies this approach through its industry advisory board, collaborative research projects, and shared teaching arrangements with industry professionals (Budiarsa, 2021).

Curriculum management represents a particularly important aspect of applied program development. Tribe (2002) proposed that tourism curricula should balance vocational, disciplinary, and liberal approaches to create graduates who are both technically competent and critically reflective. In applied programs, this balance often involves integrating industry certification standards, technical skills development, and reflective practice within a cohesive learning experience (Aziz, 2019). International collaborations can further enhance curriculum quality by introducing global perspectives and industry practices (Airey, 2015).

Communication strategies, including program promotion, stakeholder engagement, and alumni networks, also contribute significantly to program sustainability. Effective promotion helps attract qualified students and industry partners, while alumni engagement provides valuable feedback loops and industry connections (Wibowo et al, 2022). The Matrappar-PNB program

has utilized a range of communication approaches, including social media outreach, industry events, and alumni showcases, to build its reputation and sustain enrollment (Budiarsa, 2021).

Although numerous studies have explored vocational and tourism education in Indonesia (e.g., Ernawati & Pearce, 2003; Wibowo et al., 2022; Tondang, 2024), few have integrated the interrelationships between *industry demand*, *policy environment*, and *institutional management* in a single analytical framework. Most existing literature either examines policy reforms in isolation or evaluates graduate competencies without linking them to institutional practices. This study uniquely bridges these dimensions by triangulating empirical data from alumni, employers, government officials, and institutional administrators, thereby offering a comprehensive model for evaluating applied higher education effectiveness in tourism.

Synthesis and Conceptual Framework Development

The synthesis of literature across industry demands, government policy, and program management reveals complex interrelationships between these domains in shaping applied tourism education. Industry demands establish the competency requirements and performance expectations for graduates, while government policies create the regulatory framework and incentive structures for educational institutions. Program management mediates between these external forces and internal educational processes, translating industry needs and policy requirements into effective learning experiences (Rohendi et al, 2024).

This integrated perspective underpins the conceptual framework for this study, which posits that effective applied tourism education emerges from the alignment of three key constructs: industry demand, government policy, and program management.

The conceptual framework is based on the dynamic interplay between these three core constructs:

1. Industry Demand – drives graduate competency needs and curriculum relevance.
2. Government Policy – establishes the regulatory environment and incentives for applied education.
3. Program Management – translates external demands into institutional practices.

These constructs are interconnected and mutually reinforcing. Kolb's Experiential Learning Theory informs curriculum design and applied learning. Boyatzis' Competency-Based Education Framework informs skill measurement and development.

Each construct includes:

1. Industry Demand: Skills Alignment, Employer Expectations, Workforce Trends.
2. Government Policy: Curriculum Standards, Industry Link Mandates, Funding Support.
3. Program Management: Organizational Culture, Partnerships, Curriculum Implementation.

The framework underpins the design of survey variables and interview themes and is validated through triangulated data. Within the conceptual framework, organizational culture and communication strategies are operationalized to ensure measurable analysis and consistent interpretation.

1. Organizational Culture refers to the set of shared values and practices that support applied learning, measured through indicators such as frequency of faculty–industry

collaboration sessions, faculty participation in professional training, and leadership initiatives promoting applied research.

2. Communication Strategies encompass internal and external engagement mechanisms designed to enhance program visibility and stakeholder interaction. Key indicators include diversity of communication channels (digital, print, event-based), alumni engagement frequency, and employer feedback mechanisms.

These operational definitions enable a clearer linkage between institutional processes and educational outcomes, allowing both quantitative and qualitative assessment of how managerial culture and communication influence program effectiveness.

3. Methodology

The methodology for this research is grounded in a mixed-methods approach, integrating both quantitative and qualitative data to provide a comprehensive analysis of the applied master's program in tourism. This methodological approach aligns with Creswell and Plano Clark's (2018) convergent parallel design, where quantitative and qualitative data are collected concurrently, analyzed separately, and then integrated during interpretation to provide a more complete understanding of the research problem. Table 1 show the mapping table research objectives to data sources and methods.

Table 1. Mapping table of research objectives

Research Objective	Data Source	Analysis Method
Evaluate alignment of curriculum with industry demands	Alumni & Employer Surveys	Descriptive & Factor Analysis
Assess government policy impact on program development	Policy Documents & Interviews with Officials	Thematic Analysis
Examine internal program management practices	Interviews with Faculty & Admin, Document Analysis	Thematic Analysis
Identify key graduate competencies	Alumni & Employer Surveys	Reliability Tests, Cross-tab Analysis
Develop a conceptual framework for applied tourism education	Literature Review & All Empirical Data	Synthesis and Visual Modelling

Source: Author's research plan, (2024)

Table 1a. Mapping of Constructs and Survey Indicators

Construct	Theoretical Source	Instrument/Variable	Key Indicators
Experiential Learning	Kolb (1984)	PECP – Program Effectiveness & Curriculum Perceptions	Application of theory to practice; experiential project evaluation
Competency Development	Boyatzis (1982, 2008)	ACPS – Applied Critical Problem Solving	Problem-solving capacity; decision-making effectiveness
Industry Alignment	Boyatzis (1982); Cooper & Shepherd (1997)	ICTY – Industry Competency	Relevance of skills; industry satisfaction
Policy Implementation	Ministry Regulations (2020, 2023)	Policy Interview Themes	Alignment of regulation with institutional practices

Program Management	Schein (2017)	Qualitative Data (Culture, Partnerships, Communication)	Leadership approach; partnership depth; communication strategies

Source: Author's design based on theoretical and empirical synthesis (2025).

Sampling and Data Collection

The total quantitative sample of 158 respondents (79 alumni and 79 employers) represents the entire population of Matrappar-PNB graduates and their corresponding employers between 2018–2023, fulfilling the criterion for population sampling in small program contexts. Following Creswell and Plano Clark (2018), this sample size provides sufficient statistical power for descriptive and factor analysis in mixed-methods studies. For the qualitative component, thematic saturation was reached after 26 interviews (faculty, administrators, government officials, and industry partners), as no new themes emerged beyond the 23rd interview. This combined rationale ensures representativeness, credibility, and adequate data triangulation despite the program's specialized scope.

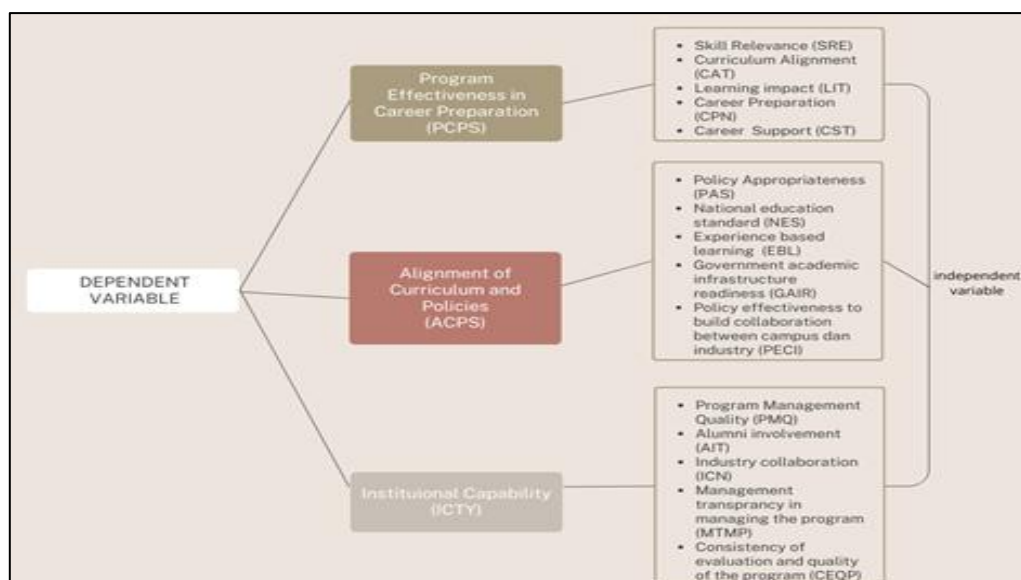


Figure 3. Alumni Variable

The alumni sample represented graduates from multiple cohorts (2018-2023), ensuring representation across program iterations. The alumni variables framework serves as the foundation for measuring graduate success and program effectiveness. It encompasses detailed metrics including employment rates, salary progression, job position levels, and skill utilization rates. This framework enables quantitative assessment of how graduates apply their education in real-world settings, tracking both immediate employment outcomes and long-term career development. The variables are structured to capture both objective measures (employment status, salary) and subjective assessments (satisfaction with education, perceived skill relevance).

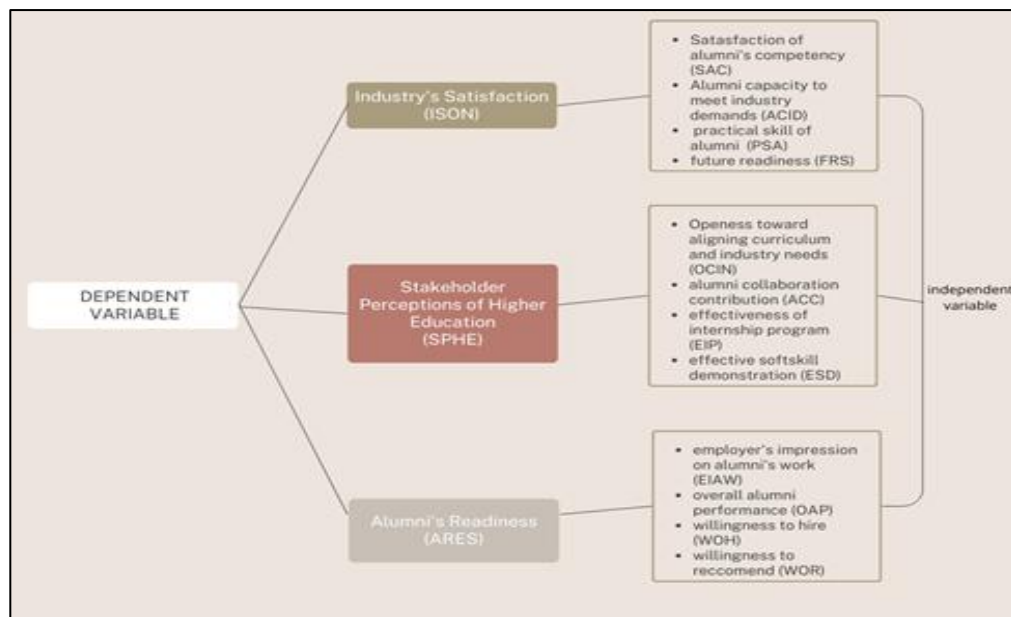


Figure 4. Employer Variable

The employer sample included organizations that had hired program graduates or provided internship opportunities, representing diverse segments of Bali's tourism industry including hotels, restaurants, attractions, tourism villages, and travel agencies. Moreover, The employer variables framework creates a comprehensive evaluation system from the industry perspective. It includes detailed assessment criteria for graduate performance, specific competency evaluations, and industry satisfaction metrics. These variables measure both technical skills and soft skills, allowing employers to evaluate graduates' readiness for industry demands. The framework includes indicators for workplace performance, adaptation capabilities, and professional growth potential, providing valuable feedback for program improvement.

Qualitative data were collected through semi-structured interviews with program administrators (n=5), faculty members (n=8), industry partners (n=10), and government officials (n=3). These interviews explored participants' experiences, perceptions, and recommendations regarding the program's development, implementation, and outcomes. Additionally, document analysis was conducted on program curricula, syllabi, assessment materials, and institutional policies to triangulate findings from the survey and interview data.

Measurement Tools

Quantitative data collection was guided by clearly defined constructs consistent with the theoretical framework outlined in the literature review. The alumni survey included three domains:

4. Program Effectiveness and Curriculum Perceptions (PECP) – reflecting Kolb's experiential learning through measures of applied curriculum quality and real-world project integration;
5. Applied Critical Problem Solving (ACPS) – corresponding to Boyatzis's cognitive and functional competencies;
6. Industry Competency (ICTY) – representing the alignment between program outcomes and employer expectations.

The employer survey included three corresponding domains: Industry Skills and Organizational Needs (ISON), Specific Professional and Hospitality Education (SPHE), and Applied Research and Employment Skills (ARES). These domains mirror the constructs of the conceptual framework and maintain terminological consistency between theoretical underpinnings and measurement tools.

The development of these measurement tools was informed by the theoretical constructs discussed in the literature review, particularly Kolb's (1984) Experiential Learning Theory and Boyatzis' (1982) Competency-Based Education framework. Survey items were pilot-tested with a small sample of alumni and employers (n=10 each) to ensure clarity, relevance, and comprehensiveness. Reliability analysis using Cronbach's alpha confirmed internal consistency for all scales ($\alpha > 0.75$).

Qualitative data collection employed semi-structured interview protocols designed to explore participants' perspectives on the three key themes: industry demand, government policy, and program management. Interview questions were developed based on the conceptual framework and adapted for each stakeholder group to reflect their specific knowledge and experience. Document analysis was guided by a structured protocol focusing on curriculum design, learning outcomes, assessment approaches, and industry integration.

The development of the alumni and employer survey instruments underwent a multi-stage validation process. Content validity was established through expert review by three academic specialists in vocational education and two senior tourism industry practitioners. Construct validity was verified through exploratory factor analysis (see Results section), with all factor loadings above 0.60. Reliability testing produced Cronbach's alpha values above 0.75 for all subscales, indicating strong internal consistency. Pilot testing with 20 respondents (10 alumni, 10 employers) ensured clarity and contextual relevance of questionnaire items before full deployment.

Analysis Method

Quantitative data analysis began with descriptive statistics to understand response patterns and central tendencies. Measures of central tendency (mean, median, mode) were calculated for each variable, along with frequency distributions to identify response patterns. Inferential statistical analyses included chi-square tests to examine relationships between categorical variables and factor analysis to identify underlying competency clusters. Reliability testing using Cronbach's alpha ensured the internal consistency of measurement scales.

Qualitative data were analyzed using thematic analysis following Braun and Clarke's (2006) six-step process: familiarization with data, generating initial codes, searching for themes, reviewing themes, defining themes, and producing the report. To manage and visualize data, Orange (Demšar et al., 2013) and Xmind (Mammen & Mammen, 2018) software tools were employed. Orange facilitated flexible, component-based qualitative data analysis, while Xmind supported the development of mind maps for identifying thematic relationships. To conclude, figure 5 is the research framework process.

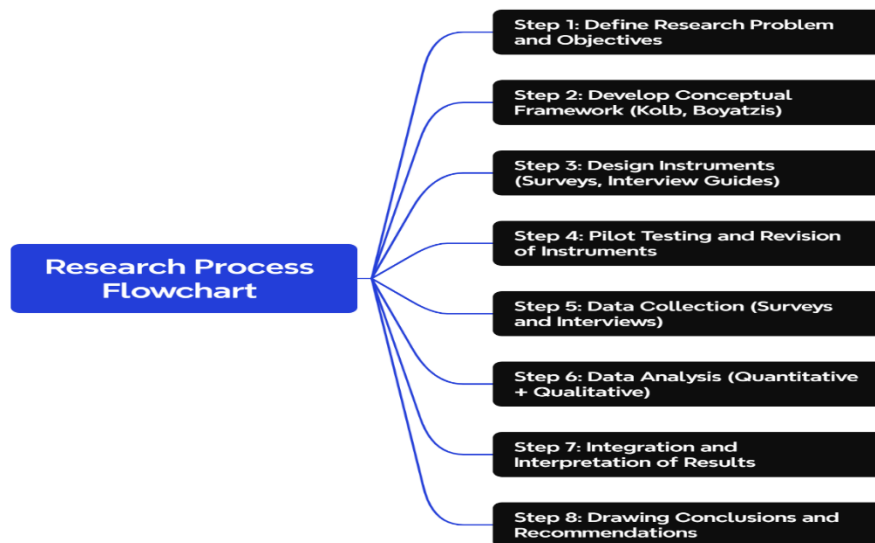


Figure 5. Research process flowchart
Source: Author's research flowchart process (2024)

Integration and Triangulation of Data

Integration of qualitative and quantitative findings followed a convergent parallel design (Creswell & Plano Clark, 2018). After independent analyses, results from surveys and interviews were compared in a triangulation matrix to identify convergence, complementarity, and divergence.

1. Convergence occurred where alumni and employer quantitative data confirmed similar competency strengths such as problem-solving and leadership).
2. Complementarity emerged when qualitative interviews provided contextual explanations for quantitative trends such as policy support enabling program growth).
3. Divergence was noted in innovation and entrepreneurship competencies, where employers expressed higher expectations than alumni self-ratings.

This process ensured that interpretation was grounded in multiple evidence sources, strengthening internal validity and providing a nuanced understanding of how institutional, industry, and policy factors interact.

4. Results

Industry demand: An objective needs of the tourism industry

Applied higher education and the business world, including industry and the workforce, are intrinsically linked. Applied higher education exists to meet the real needs of these sectors. Like vocational schools, such an education in Indonesia is designed to fulfil industry demands.

In the history of Bali's tourism development, the 1980s marked the development stage in the tourism area life-cycle theory (Butler, 2006). During this period, tourism in Bali began to flourish, with Kuta, Sanur, and Ubud emerging as major tourist centres (Anom et al., 2017). The tourism industry of the New Order era required skilled, work-ready human resources with

diploma-level qualifications (D1, D2, and D3). Following the bombings in 2002 and 2005 (Putra & Hitchcock, 2006; Putra & Hitchcock, 2009), there was an increasing demand for applied bachelor's degrees and Diploma 4 qualifications. Since the 2010s, the need for master's degree graduates in tourism has become apparent, particularly for academic staff in universities.

According to Law Number 14 of 2005 concerning Teachers and Lecturers, every lecturer is required to have a Master Degree qualification. Entering the 2020s, especially as the negative impacts of the Covid-19 pandemic began to subside, there has been a significant demand for applied master's degrees in tourism. This demand is driven by Bali's status as a premier international destination and the evolving needs of the tourism industry. The industry's recovery and growth underscore the importance of advanced qualifications to meet both academic and practical requirements in this vital sector.

In the tourism industry, Indonesia saw substantial foreign tourist arrivals before the Covid-19 pandemic, driven by effective government and private sector efforts in promotion, marketing, and service delivery. Foreign tourist visits increased consistently: 10,2 million in 2015; 11,5 million in 2016; 14 million in 2017; 15,8 million in 2018; and 16,1 million in 2019 (BPS, 2021). This upward trend was particularly pronounced in Bali, which has long been a leading and pioneering tourist destination in Indonesia. The global pandemic severely disrupted international travel, drastically reducing tourist arrivals and impacting the local economy. However, as travel restrictions eased and vaccination campaigns progressed.

The empirical data situates the Matrapar-PNB program within the larger context of Indonesia's tourism sector, which contributes 6.2% to the national GDP and employs over 13 million individuals (WTTC, 2023). Bali, as Indonesia's premier tourism destination, has demonstrated remarkable resilience, with international tourist arrivals rebounding from 51 in 2021 to over 5.2 million in 2023 (BPS, 2024). This resurgence amplifies the need for skilled professionals who can navigate the complexities of a recovering and rapidly evolving industry.

The program's emphasis on experiential learning, industry internships, and green tourism aligns with these economic dynamics, equipping graduates to address current challenges and contribute to sustainable growth. For instance, the integration of sustainability into the curriculum reflects both local policy goals and international best practices in tourism development (Manurung, 2014).

Contemporarily, a total of 79 students had graduated from Matrapar-PNB (State Polytechnic of Bali, 2024). These graduates were dispersed across various regions in Indonesia, with some working internationally. However, the majority were employed within Bali's tourism industry. A survey was conducted to assess the perceptions of various stakeholders regarding the importance of higher education in tourism. The survey included responses from Matrapar-PNB graduates employed in the tourism sector, and managers overseeing these graduates. The 79 questionnaires distributed to the graduates were returned and deemed valid. This high response rate (100%) provided a solid foundation for analysing the participants' views, particularly concerning career development and talent enhancement through advanced education programs such as the Magister Terapan Pariwisata. Table 2 show the demographic of alumni.

Table 2. Demographic of Alumni

No.	Characteristic	Number of respondents (N= 79)	Percentage
			(%)
1	Gender		
	Men	48	60.76
	Women	31	39.24
2	Age		
	<30 years old	35	44.30
	>40 years old	44	55.70

Source: Survey (2024)

The alumni demographics (Table 2) illustrate the program's appeal to a diverse age range, with 55.70% of alumni above 40 years old and 44.30% below 30 years old. This age distribution signifies the program's ability to attract mid-career professionals seeking to enhance their skills and younger individuals aiming for early career advancement. The high representation of older students aligns with findings in vocational education, which suggest that mature learners are drawn to applied programs due to their emphasis on industry-oriented outcomes (Duarte et al, 2018; Wibowo et al, 2022).

Table 3. Desrtiptive Statistic of Alumni's Response

DV	IV	VL (1)	L (2)	M (3)	H (4)	VH (5)	Avg	Med	Mod
PECP	SRE	3%	6%	23%	43%	25%	3.82	4	4
	CAT	1%	4%	25%	48%	22%	3.84	4	4
	LIT	0%	5%	30%	47%	18%	3.77	14	4
	CPN	3%	8%	27%	42%	22%	3.72	4	4
	CST	1%	8%	28%	43%	20%	3.73	16	4
ACPS	PAS	1%	6%	30%	42%	20%	3.73	16	4
	NES	0%	4%	25%	48%	23%	3.72	4	4
	EBL	1%	5%	23%	48%	23%	3.73	4	4
	GAIR	3%	8%	28%	38%	24%	3.73	19	4
	PECI	1%	9%	27%	42%	22%	3.73	4	4
ICTY	PMQ	3%	5%	29%	46%	18%	3.70	14	4
	AIC	13%	24%	34%	22%	8%	2.87	4	4
	ICN	3%	6%	33%	43%	15%	3.01	12	4
	MTMP	4%	9%	27%	39%	22%	3.65	4	4
	CEQP	3%	6%	24%	46%	22%	3.77	4	4

Source: Data analysis, (2024)

The Matrappar-PNB program's effectiveness in aligning its curriculum with industry needs is evident from alumni feedback, which highlights high satisfaction with program effectiveness (PECP) and curriculum alignment (CAT), both scoring averages around 3.82–3.84. Additionally, variables such as Leadership in Tourism (LIT) and Applied Critical Problem Solving (ACPS) were rated highly, with averages around 3.73. These results underscore the program's success in fostering critical skills like leadership and problem-solving, essential for navigating the complexities of the tourism sector.

The use of applied learning methods, including project-based and problem-based learning, has significantly contributed to these outcomes. These pedagogical approaches emphasize real-world application, encouraging students to engage actively with industry-relevant challenges and solutions. Kolb's Experiential Learning Theory (1984) supports this approach, positing that knowledge is effectively acquired through the transformation of experiences, which is central to the Matrappar-PNB curriculum. Moreover, Boyatzis' (1982) competency-based education framework aligns with the program's focus, as it prioritizes the development of specific skills demanded by the tourism industry.

This practical orientation not only enhances students' capabilities but also aligns with global trends emphasizing workforce-ready education tailored to dynamic industries like tourism. Consequently, the program emerges as a model of applied education that successfully bridges academic learning with industry demands, preparing graduates to excel in professional roles while addressing the evolving needs of the tourism sector.

To verify the internal structure of the alumni and employer instruments, exploratory factor analysis (EFA) using Principal Component Analysis with Varimax rotation was conducted. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a value of 0.81, exceeding the minimum threshold of 0.6, and Bartlett's Test of Sphericity was significant ($p < 0.001$), confirming suitability for factor analysis.

The analysis extracted three dominant factors corresponding to the theoretical domains derived from Kolb (1984) and Boyatzis (1982):

1. Applied Learning Competence (ALC) – capturing items related to experiential learning and curriculum effectiveness (variance explained: 28.4%);
2. Problem-Solving and Leadership (PSL) – encompassing critical reasoning, teamwork, and decision-making (variance explained: 22.1%); and
3. Industry Readiness and Professionalism (IRP) – reflecting practical competency and employability (variance explained: 16.9%).

Collectively, these factors explained 67.4% of total variance, indicating a robust alignment between theoretical constructs and empirical data. The results validate the instrument's structural coherence and reinforce the conceptual linkage between learning theories and applied education outcomes.

Industry insight: a response towards program objective to aligned the alumni with industry needs

The analysis of employer data revealed strong alignment between the Matrappar-PNB program and industry needs. Employers consistently rated graduates highly across key competency areas, particularly in problem-solving abilities (mean=3.79) and work-oriented results (mean=3.82). These findings suggest that the program's emphasis on applied learning methods effectively develops the practical skills valued by tourism employers. As one hotel manager remarked during interviews:

"Graduates from this program bring a different perspective compared to traditional academic degrees. They understand operational realities and can immediately apply theoretical knowledge to solve real problems in our business." (Industry Partner 3)

Table 4. Demographic of Employer

No	Industry sector	Number of employer	%
1	Hospitality industry	55	69.9
2	Tourism village	21	26.6
3	Self owned business	3	3.8
Total		79	100

Source: Survey (2024)

Employer demographics (Table 4) reveal a strong representation from the hospitality sector (69.9%), followed by tourism villages (26.6%) and self-owned businesses (3.8%). This reflects Bali's reliance on hospitality as the cornerstone of its tourism economy (BPS, 2024). The program's focus on hospitality management aligns with this trend, ensuring that graduates are equipped to contribute to the sector's operational excellence.

Notably, the presence of employers from tourism villages underscores the program's relevance to community-based tourism, a critical component of Bali's sustainable development strategy. By emphasizing sustainability in its curriculum, such as through the "Green Tourism Feasibility Study" course, the program aligns with global trends toward eco-friendly tourism practices (Elkington, 2013).

Qualitative data from interviews revealed specific industry demands that drive recruitment preferences. Industry partners consistently emphasized the need for graduates with integrated competencies spanning technical knowledge, problem-solving abilities, and interpersonal skills. As one resort director explained:

"We're not looking for specialists alone anymore. The industry needs versatile professionals who understand business operations holistically, can analyze data effectively, and communicate solutions persuasively. The applied approach seems to develop this integration better than purely theoretical programs." (Industry Partner 7)

The post-pandemic context has intensified certain skills demands, particularly in crisis management, digital marketing, and sustainable tourism operations. Document analysis of industry partnership records showed an increasing emphasis on these areas in collaborative projects and internship placements between 2021-2023, indicating the program's responsiveness to evolving industry needs.

Table 5. Descriptive Statistic of Employer's Response

DV	IV	VL (1)	L (2)	M (3)	H (4)	VH (5)	Avg	Med	Mod
ISON	SAC	4%	9%	25%	44%	18%	3.63	14	4
	ACID	3%	6%	29%	46%	16%	3.67	13	4
	PSA	4%	8%	23%	49%	16%	3.79	13	4
	FRIS	3%	8%	27%	42%	22%	3.72	4	4
SPHE	OCIN	0%	0%	29%	30%	27%	3.41	21	4
	ACC	1%	8%	25%	48%	18%	3.73	14	4
	EIP	4%	9%	24%	46%	18%	3.64	14	4
	ESD	3%	8%	28%	38%	24%	3.73	19	4
ARES	EIAW	4%	6%	28%	47%	15%	3.63	12	4
	OAP	3%	8%	23%	48%	19%	3.73	15	4
	WOH	0%	0%	32%	46%	23%	3.91	4	4
	WOR	0%	0%	39%	39%	22%	3.82	17	4

Source: Data Analysis, (2024)

However, the data of employer's response towards the program's success in preparing graduates to meet industry demands (table 5) also revealed some competency gaps, particularly in entrepreneurial innovation. The Entrepreneurial Innovation Practice (EIP) variable received relatively lower ratings (mean=3.64) compared to other competencies, suggesting an opportunity to strengthen this aspect of the curriculum. This finding aligns with global tourism trends emphasizing innovation as a key driver of post-pandemic recovery and resilience (Lambert et al, 2020). Employer responses (Table 5) strongly affirm the program's success in preparing graduates to meet industry demands. High ratings in problem-solving abilities (3.79) and work-oriented results (3.82) reflect the effectiveness of applied learning methods like project-based and problem-based learning. This pedagogical approach, which integrates real-world scenarios into the curriculum, has been widely recognized for enhancing critical thinking and professional competencies (Kolb, 1984; Boyatzis, 1982).

However, slightly lower ratings for innovation management (3.64) suggest an opportunity to strengthen entrepreneurial skills within the curriculum. Research highlights the increasing need for innovation in tourism, particularly in a post-pandemic context where resilience and adaptability are crucial (King et al., 2021). Incorporating advanced modules on entrepreneurship, supported by industry collaborations, could address this gap and prepare graduates for leadership in emerging tourism sectors.

Government Policy: Orchestrating the Construction of Applied Higher Education to Direct the Sustainability of Industry-Based Learning Processes

Analysis of policy documents and interview data revealed how government regulations have enabled the development and implementation of applied tourism education in Indonesia. The regulatory framework established by Law No. 12/2012, Ministerial Regulation No. 3/2020, and Ministerial Regulation No. 53/2023 has created a supportive environment for applied programs by legitimizing industry-based learning approaches, establishing quality standards, and mandating industry partnerships.

Interview participants from both the institution and government agencies emphasized the importance of these policies in facilitating program development. As one government official stated:

"The regulatory framework now explicitly recognizes applied master's degrees as distinct from research-oriented programs. This recognition allows institutions to develop innovative curricula that integrate workplace learning without being constrained by traditional academic models." (Government Official 2)

The concept of "industry-based learning" emerged as a central policy directive that has directly influenced the Matrappar-PNB program design. Document analysis revealed direct alignment between policy requirements for industry collaboration and the program's implementation of industry advisory boards, practitioner teaching appointments, and collaborative research projects. This alignment demonstrates how policy mechanisms have successfully translated into institutional practices.

Comparative analysis with international vocational systems highlighted both similarities and differences with Indonesia's approach. While Indonesia has adopted elements of German and

Korean models, interview data suggested that implementation remains challenged by cultural factors and resource limitations. As one program administrator noted:

"We've studied international best practices, but we need to adapt these models to our cultural context. The Indonesian approach emphasizes relationship-building and consensus more than contractual obligations, which affects how industry-academia partnerships function in practice." (Program Administrator 1)

Despite supportive policies, stakeholders identified several implementation challenges. These included bureaucratic processes that sometimes impede responsive curriculum changes, funding mechanisms that don't fully accommodate applied learning costs, and assessment frameworks that don't adequately capture applied competencies. These challenges point to areas where policy refinement could further strengthen applied education outcomes.

Program Management: State Polytechnic of Bali's Role Through Organizational Culture, External Cooperation, and Mass Communication

The successful implementation of the Matrappar-PNB program can be attributed to several key management factors at the institutional level. Analysis of quantitative and qualitative data revealed three primary dimensions of program management that have contributed to positive outcomes: organizational culture, external partnerships, and strategic communication.

Organizational culture emerged as a foundational element of program success. Document analysis of institutional policies and interview data from faculty members revealed a gradual cultural shift within the institution toward greater valuation of applied learning approaches and industry knowledge. This shift was facilitated by leadership commitment, professional development for faculty, and revision of promotion criteria to recognize industry engagement alongside traditional academic achievements. As one faculty member explained:

"Initially, there was resistance to the applied model because many of us were trained in traditional academic approaches. The institutional leadership invested in changing mindsets through workshops, industry exposure, and developing new metrics for evaluating teaching excellence that recognize practical expertise." (Faculty Member 4)

In the realm of higher education, the cultivation of a robust organisational culture is paramount, often delineated by three core facets: leadership style, normative structures, and communicative efficacy (Molek-Kozakowska & Geisler, 2020). At Matrappar-PNB, these creeds find tangible expression through the leadership acumen of the program coordinator, adeptly balancing authority with accountability in fostering a culture of fairness and equity among the program's stakeholders. Furthermore, a harmonious blend of formal and informal norms underscores the cohesive teamwork exhibited by lecturers, educational staff, and students alike, fostering a conducive environment for collaborative problem-solving and dialogue, both within and beyond the confines of the campus setting. Indeed, the program's ethos is further reinforced by a culture of robust communication and teamwork, exemplified by regular face-to-face and online discussions convened to address pertinent program-related challenges.

Matrappar-PNB has established itself as a leader in tourism and vocational education through its comprehensive collaborative model that bridges academia and industry. The program features international partnerships with dual degree options between Bali and China, fast-track master's programs with Malaysia, and robust faculty development initiatives including lecturer

exchanges and joint research. Strong industry integration is evident through their relationship with The Apurva Kempinski Bali and guidance from a Professional Advisory Council comprising tourism sector leaders. Their alumni organization (MatraFam) boasts graduates working across Indonesia and internationally, with some achieving management positions. The program utilizes strategic digital communication to engage prospective students from Generations Y and Z while employing a student-centered approach that accommodates the diverse backgrounds of students from across Indonesia. This holistic approach balances academic excellence with industry relevance and global exposure.

An intrinsic strength of this study program lies in its robust collaboration with the tourism industry, a symbiotic relationship nurtured through the ongoing industry-based learning ethos. This symbiosis is a natural outgrowth of State Polytechnic of Bali's vocational orientation and student-centred learning, necessitating substantive and systematic engagement with external stakeholders. Notably, State Polytechnic of Bali boasts an extensive network of 344 collaborations encompassing the realms of business, industry, academia, and related institutions at local, national, and global echelons (State Polytechnic of Bali 2024). The selected 10 partner institutions from PNB are notably significant for the development of applied master degree program in tourism business planning and should be listed as key representatives as follows (Table 6).

Table 6. Key partnership of PNB

No.	Name of institution	Area of collaboration	Example of successful cooperation
1	University of Angers, France	Dual degree program, student exchange, lecturer exchange, cultural exchange, joint research, community service	Joint development of Matrapar-PNB student to pursue their dual degree program on 2021 (2 graduates), 2022 (1 graduates) 2023 (1 graduates)
2	Ecole Des Ingenieursde La Ville De Paris (EIVP), France	Student exchange, lecturer exchange, cultural exchange, joint research, community service	Lecturer exchange program and joint research and online teaching training.
3	OST Eastern Switzerland University of Applied Sciences, Switzerland	Student exchange, lecturer exchange, cultural exchange, joint research, community service	Lecturer exchange program and joint research and online teaching training.
4	Nanchang Normal University, China	Dual degree program, student exchange, lecturer exchange, cultural exchange, joint research, community service	Lecturer exchange program and joint research and online teaching training. Moreover, the cooperation of dual degree program 1 year in China and 1 year in Bali successfully executed.
5	Management and Science University (MSU), Malaysia	Dual degree program, student exchange, lecturer exchange, cultural exchange, joint research, community service	Joint development of fast-track master degree in Malaysia for 1 year after 1 year in Indonesia.
6	The Apurva Kempinski Bali	Industrial class, on the job training/internship, joint laboratory	Joint enrichment program for Matrapar-PNB through industrial class where the lecture are held in the Apurva Kempinski Bali, moreover the Matrapar-PNB

			student got priority list to complete their on the job training at The Apurva Kempinski Bali.
7	The St. Regis Bali Resort	Industrial class, on the job training/internship, joint laboratory	Industrial board expert that help led strategic decision to align the curriculum of Bali state polytechnic with the industry
8	Trip.Com	On the job training/internship, joint laboratory, industrial practitioner	Industrial lecturer to support Matrappar-PNB learning process, mainly in the Globalisation and Digital Marketing in Tourism subject.
9	PT. Melali MICE	On the job training/internship, joint laboratory, industrial practitioner	Industrial lecturer, expert judgement for Matrappar-PNB strategic decision making regarding curriculum and learning process
10	Badan Pelaksana Otoritas Labuan Bajo Flores (BPOLBF)	On the job training/internship, joint laboratory, industrial practitioner, joint research	Joint research on matching fund by Directorate General of Vocational, Minister of Education, Culture, Research and Higher Education of Republic Indonesia.

Source: State Polytechnic of Bali, 2024.

External partnerships represented another critical success factor. The program has established collaborative relationships with 10 keys industry partners ranging from international hotel chains to local tourism enterprises. Document analysis revealed structured partnership frameworks that specify roles, responsibilities, and benefits for both parties. These partnerships facilitate guest lectures, site visits, internship placements, and collaborative research projects. Notably, 28% of course content is delivered by industry practitioners, exceeding the 25% minimum specified in government regulations.

Strategic communication targeting specific market segments has supported program sustainability and growth. Analysis of marketing materials and enrollment data showed targeted messaging to three primary segments: early-career professionals seeking advancement, mid-career professionals transitioning to tourism from other sectors, and industry employees seeking academic credentials to complement practical experience. This segmented approach has maintained consistent enrollment despite economic challenges in the tourism sector. As one administrator noted:

"We've been strategic in our communication, emphasizing different program benefits to different audience segments. For early-career professionals, we highlight career advancement; for career-changers, we emphasize practical skill development; and for experienced professionals, we focus on credentialing and theoretical foundations."
(Program Administrator 3)

The integration of these management dimensions has created a self-reinforcing cycle where cultural changes support partnership development, partnerships enhance communication effectiveness, and successful outcomes reinforce cultural commitment to applied education approaches. This integrated management approach appears to be a distinctive feature of the Matrappar-PNB program compared to other tourism education offerings in the region.

5. Discussion and Conclusion

This study evaluated the effectiveness of the Matrappar-PNB program through the interconnected lenses of industry alignment, government policy, and institutional management. The findings highlight the multifaceted role of applied pedagogies and vocational frameworks in enhancing graduate employability, institutional agility, and policy responsiveness.

First, the strong alignment between curriculum and labor market expectations underscores the relevance of experiential and competency-based pedagogies. Alumni and employer feedback confirmed that project-based learning, internships, and applied research foster critical problem-solving and leadership skills. These innovations, grounded in Kolb's experiential learning and Boyatzis' competency framework, validate the program as a forward-looking model for vocational education.

Second, Indonesia's policy landscape has been instrumental in legitimizing applied master's education. Reforms have established industry-university collaboration as a cornerstone of vocational learning. Nevertheless, ongoing challenges particularly in funding mechanisms and quality assurance systems highlight the need for continuous refinement to ensure scalable and sustainable program delivery.

Third, the Matrappar-PNB program exemplifies institutional readiness to implement and sustain applied education. A supportive organizational culture, robust external partnerships, and targeted communication strategies demonstrate how polytechnics can function as agents of innovation in the higher education system. This institutional model resonates with global best practices emphasizing autonomy, adaptability, and stakeholder engagement. Figure 6 visualized the connected through Kolb's Experiential Learning Theory and Boyatzis' Competency-Based Framework, both of which anchor applied learning strategies.



Figure 6. Concept map
Source: Author design using Xmind, (2024)

Figure 6 highlighted how policies influence institutional readiness and curriculum scope, how industry needs feed into curriculum content and student outcomes, and how program management ensures sustainable application of pedagogy and strategic planning. Together, these elements form a coherent and cyclical model for applied higher education in tourism, reinforcing feedback loops between education, policy, and industry. The study contributes a transferable conceptual framework linking pedagogy, policy, and

practice. This triadic structure industry demand, government policy, and program management can inform the development and evaluation of applied education programs across disciplines and national contexts.

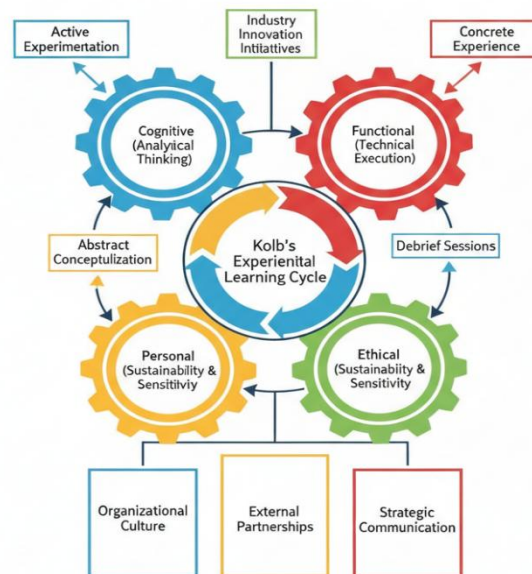


Figure 6a. Integration of Learning Theories and Program Management Constructs
Source: Author's Design, (2025)

Figure 6a represents as a extended conceptual map illustrates how Kolb's experiential cycle aligns with specific management practices and how Boyatzis's competency clusters correspond to measurable program outcomes. Table 7 highlighted the key findings and stakeholder implications:

Table 7. Key findings and stakeholder implications

Key Findings	Stakeholders	Implications
Curriculum aligned with industry needs	Educational Institutions	Enhance project-based learning and competency-based curricula.
Applied learning fosters critical skills (problem-solving, leadership)	Students & Alumni	Gain skills relevant to tourism industry demands and leadership roles.
Policy support enables vocational program development	Government Agencies	Expand and streamline policy frameworks and funding for applied education.
Gaps in innovation and entrepreneurship	Curriculum Designers & Industry Partners	Integrate entrepreneurship modules and startup collaboration opportunities.
Strong institutional partnerships and communication strategies	Polytechnic Management	Sustain stakeholder engagement through segmented communication and strategic alliances.
Program responsiveness to tourism sector trends	Industry Partners	Deepen involvement in curriculum co-design, mentoring, and work placements.

Source: Research findings, (2024)

The best practice of Matrappar-PNB program reflects the transformative potential of applied higher education when pedagogical innovation is reinforced by coherent policy frameworks and institutional leadership. Beyond tourism, the insights from this study are applicable to

broader efforts aimed at modernizing higher education systems, particularly in Southeast Asia and other regions seeking to align education with economic development, social equity, and technological advancement.

The triangulated findings revealed strong convergence between quantitative and qualitative data, particularly in the domains of problem-solving and leadership skills, where both alumni self-assessments and employer evaluations indicated high competency levels. Qualitative interviews reinforced these results by providing deeper insight into the mechanisms driving such competencies namely, the program's emphasis on experiential learning and real-world project assignments.

However, partial divergence was identified in the area of entrepreneurial innovation, where employers rated graduates slightly lower than alumni self-assessments. This suggests that while the curriculum effectively builds applied operational skills, there remains a developmental gap in fostering innovation-oriented mindsets. The qualitative data extended this observation, as industry stakeholders emphasized the growing need for intrapreneurial capacities and creative problem-solving in post-pandemic tourism. This triangulated interpretation underscores the importance of continuous feedback between academia and industry to sustain curriculum relevance.

Comparative Perspective within ASEAN Context

When compared to similar initiatives across ASEAN, the Matrapar-PNB program demonstrates both convergence and contextual distinction. Malaysia's Management and Science University (MSU) adopts a dual-degree model that integrates entrepreneurship incubation into tourism education, while Thailand's Rajamangala University of Technology emphasizes cooperative education models that embed students in industry settings for extended placements. These examples reveal that Indonesia's applied master's approach aligns with regional trends emphasizing employability and innovation, but its distinct strength lies in policy-driven institutional integration and strong cultural contextualization. Future regional collaborations could explore joint curriculum development and benchmarking mechanisms to promote standardization and mutual recognition of applied master's qualifications across Southeast Asia (Park, 2018; Pretti & McRae, 2021).

The findings contribute to broader discourses on balancing academic and applied tracks in Southeast Asian higher education systems. As Wibowo et al. (2022) and Choi et al. (2023) note, regional education reforms increasingly favor dual or hybrid pathways that blend theoretical research with vocational application. The Matrapar-PNB model exemplifies this evolution by demonstrating that applied master's programs can maintain academic rigor while enhancing direct industry responsiveness. This balance challenges outdated dichotomies between "academic" and "vocational" higher education, showing that a synergy of the two yields graduates equipped for complex, innovation-driven economies.

Study Limitations

While this study provides valuable insights into the interaction between policy, industry, and institutional management in applied higher education, several limitations must be acknowledged. The use of purposive sampling restricts the generalizability of findings beyond the State Polytechnic of Bali context. As a single-case study situated in one of Indonesia's leading tourism regions, results may not fully represent other institutional or regional

conditions. Additionally, the quantitative data relied on self-reported perceptions from alumni and employers, which may be subject to response bias. Future studies employing longitudinal or multi-institutional samples could enhance generalisability and causal inference.

Beyond sampling and scope constraints, the study's methodological limitations include reliance on self-reported perceptions, which may introduce social desirability bias, and the absence of longitudinal tracking of alumni outcomes over time. The cross-sectional nature of the data limits causal interpretation of relationships between variables. Additionally, while the mixed-methods approach enhances depth, the qualitative data were drawn primarily from institutional and local industry representatives, which may not fully capture perspectives from national tourism policymakers or smaller enterprises. Recognizing these limitations underscores the need for expanded datasets and cross-sector collaboration in future research.

Cultural and Ethical Consideration

This study's implementation within the unique cultural context of Bali's tourism sector necessitates careful consideration of several ethical and cultural dimensions. The research adhered to principles of informed consent throughout data collection, ensuring that all 79 alumni, 79 employers, and key stakeholders participating in interviews were fully aware of the study's purpose, methodology, and their rights as participants.

The Balinese cultural context presents both opportunities and challenges for tourism education. Bali's rich Hindu-Balinese cultural heritage serves as both a cornerstone of its tourism appeal and a critical factor that must be preserved and respected in tourism business practices. The applied master's program at Matrapar-PNB operates within this delicate balance, where tourism development must be sustainable and culturally sensitive. This cultural dimension influences curriculum design, as graduates must be equipped not only with business acumen but also with deep understanding of local customs, religious practices, and community values.

Ethical considerations in tourism education extend beyond traditional academic ethics to encompass responsible tourism practices. The program's emphasis on industry-based learning must ensure that students understand their role as stewards of Balinese culture and environment. This includes developing competencies in managing overtourism, preserving cultural authenticity, and ensuring that tourism benefits are equitably distributed among local communities.

The study's findings regarding strong industry alignment and government policy support must be viewed through the lens of sustainable development goals, where economic growth in tourism is balanced with cultural preservation and environmental protection. Future research should explore how cultural sensitivity and ethical tourism practices are integrated into applied learning outcomes and assessment mechanisms within Indonesia's broader tourism education landscape.

The integration of Kolb's Experiential Learning Theory and Boyatzis's Competency-Based Education Framework directly informs how program outcomes are measured and interpreted. Kolb's learning cycle underpins the curriculum's design logic, emphasizing project-based, reflective, and experiential modes of instruction that translate into practical problem-solving capacity (as evidenced by the alumni ACPS mean score of 3.73). Boyatzis's model provides the evaluative lens for competency measurement, categorizing observed outcomes into cognitive, functional, and personal domains. The high ratings in leadership (LIT, mean = 3.77)

and industry relevance (CAT, mean = 3.84) demonstrate how competencies developed through experiential processes manifest in measurable performance indicators validated by employer surveys. Thus, the theoretical alignment is empirically substantiated through triangulated outcome metrics.

Implications and Suggestions

The findings of this study have several important implications for stakeholders in tourism education, including educational institutions, government agencies, and industry partners. Based on these implications, we offer the following suggestions for practice and future research:

For Educational Institutions

1. **Strengthen entrepreneurial education:** Given the identified gap in entrepreneurial innovation competencies, institutions should enhance curriculum elements related to innovation, business development, and entrepreneurial thinking. This could include dedicated entrepreneurship modules, startup incubation programs, and collaborative projects with entrepreneurial tourism businesses.
2. **Enhance industry immersion experiences:** The positive impact of industry exposure on graduate outcomes suggests that programs should maximize opportunities for workplace learning. Institutions could develop more structured approaches to industry placements, including progressive responsibility models that increase student autonomy throughout the program.
3. **Develop faculty capacity:** The transition to applied education approaches requires faculty with both academic expertise and industry experience. Institutions should invest in professional development programs that enhance faculty understanding of industry practices and applied pedagogies, potentially including faculty industry attachments and collaborative research with industry partners.
4. **Implement competency assessment systems:** Programs should develop more robust mechanisms for assessing applied competencies, moving beyond traditional academic metrics to include workplace performance indicators, portfolio assessment, and industry-validated skill demonstrations.

For Government Agencies

1. **Refine funding mechanisms:** Current funding models for higher education often fail to account for the higher costs associated with applied learning approaches. Government agencies should develop differentiated funding formulas that recognize the resource requirements of industry-based learning, including equipment, facility costs, and industry engagement activities.
2. **Streamline curriculum approval processes:** The rapidly evolving nature of tourism requires responsive curriculum development. Regulatory agencies should establish expedited approval pathways for industry-relevant curriculum changes while maintaining quality assurance standards.
3. **Develop applied research frameworks:** Current research evaluation systems often privilege traditional academic outputs over applied research. Agencies should develop frameworks that recognize and reward industry-relevant research outputs, including case studies, industry reports, and practical innovations.

For Industry Partners

1. **Formalize involvement in education:** While informal industry input is valuable, structured participation mechanisms such as industry advisory boards, adjunct teaching appointments, and collaborative curriculum development yield more sustainable results. Industry organizations should establish dedicated roles for educational engagement.
2. **Invest in shared learning facilities:** Co-investment in specialized learning environments can enhance educational outcomes while providing industry with access to innovation spaces. Examples might include training hotels, culinary innovation labs, or tourism technology centers.
3. **Support faculty industry exposure:** To maintain current industry knowledge, faculty require regular exposure to industry practices. Industry partners could establish faculty internship programs, industry sabbatical opportunities, and collaborative projects to enhance knowledge exchange.

Future Research

Future investigations could adopt longitudinal designs to assess the long-term career trajectories and entrepreneurial development of applied master's graduates. Comparative studies across ASEAN or other developing nations would help determine how cultural and policy contexts shape the success of applied higher education frameworks. Furthermore, quantitative modeling could examine the mediating effects of institutional culture and government policy on graduate employability outcomes. Specific attention should also be given to evaluating the impact of newly integrated entrepreneurship modules, particularly in strengthening graduates' innovation competencies. Finally, experimental designs involving industry co-teaching or cross-border applied learning projects could offer empirical insights into scalable models of industry-academia collaboration.

References

- Airey, D. (2015). 40 years of tourism studies – a remarkable story. *Tourism Recreation Research*, 40(1), 6-15. <https://doi.org/10.1080/02508281.2015.1007633>
- Anom, I. P., Suryasih, I. A., Nugroho, S., & Mahagangga, I. G. A. O. (2017). Turismemorphosis: Stages of Bali's Centenary Tourism Development and Predictions. *Jurnal Kajian Bali (Journal of Bali Studies)*, 7(2), 59-80. <http://dx.doi.org/10.24843/JKB.2017.v07.i02.p04>.
- Aziz, A. (2019). An Analysis on Management Improvement and Fiscal Support for Vocational Education Development in Indonesia. *Proceedings of the 2019 International Conference on Organizational Innovation (ICOI 2019)*. <https://doi.org/10.2991/icoi-19.2019.71>.
- Booyens, I. (2020). Education and skills in tourism: Implications for youth employment in South Africa. *Development Southern Africa*, 37(5), 825-839. <https://doi.org/10.1080/0376835X.2020.1725447>
- Boyatzis, R. E. (1982). *The competent manager: A model for effective performance*. John Wiley & Sons.
- Boyatzis, R. E. (2008). Competencies in the 21st century. *Journal of Management Development*, 27(1), 5-12. <https://doi.org/10.1108/02621710810840730>
- BPS (Badan Pusat Statistik). (2023). *Tourism statistics of Indonesia 2022*. BPS-Statistics Indonesia.
- BPS (Badan Pusat Statistik). (2024). *Tourism statistics of Bali 2023*. BPS-Statistics Bali Province.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Budiarsa, M. (2021). Applied tourism education: Bridging theory and practice in Bali's hospitality sector. *Journal of Tourism and Hospitality Education*, 33(2), 89-104.
- Butler, R. (Ed.). (2006). *The Tourism Area Life Cycle (Vol. 1)*. Channel View Publications.
- Choi, S., Li, H., & Ogawa, K. (2023). Upper secondary vocational education and decent work in Indonesia: A gender comparison. *International Journal of Educational Development*. <https://doi.org/10.1016/j.ijedudev.2023.102833>.
- Cooper, C., & Shepherd, R. (1997). The relationship between tourism education and the tourism industry: Implications for tourism education. *Tourism Recreation Research*, 22(1), 34-47. <https://doi.org/10.1080/02508281.1997.11014784>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Directorate General of Higher Education. (2020). *Higher education statistical yearbook 2020*. Ministry of Education and Culture, Republic of Indonesia.

Duarte, P., Silva, A. P., & Simões, C. (2018). The project-based learning in tourism education. *Journal of Teaching in Travel & Tourism*, 18(3), 237-258.
<https://doi.org/10.1080/15313220.2018.1464530>

Elkington, J. (2013). Enter the triple bottom line. In A. Henriques & J. Richardson (Eds.), *The triple bottom line: Does it all add up?* (pp. 1-16). Routledge.

Ernawati, D., & Pearce, P. (2003). Tourism Courses at the Higher Education Level in Indonesia. *Journal of Teaching in Travel & Tourism*, 3, 1 - 18.
https://doi.org/10.1300/J172v03n02_01.

Hendarman, A. F., & Tjakraatmadja, J. H. (2012). Relationship among soft skills, hard skills, and innovativeness of knowledge workers in the knowledge economy era. *Procedia - Social and Behavioral Sciences*, 52, 35-44. <https://doi.org/10.1016/j.sbspro.2012.09.439>

King, C., Madera, J. M., Lee, L., Murillo, E., Baum, T., & Solnet, D. (2021). Reimagining attraction and retention of hospitality management talent – A multilevel identity perspective. *Journal of Business Research*, 136, 251-262. <https://doi.org/10.1016/j.jbusres.2021.07.056>

Kolb, A. Y., & Kolb, D. A. (2017). Experiential learning theory as a guide for experiential educators in higher education. *ELTHE: A Journal for Engaged Educators*, 1(1), 7-44.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.

Lambert, H., Gupte, J., Fletcher, H., Hammond, L., Lowe, N., Pelling, M., Raina, N., Shahid, T., & Shanks, K. (2020). COVID-19 as a global challenge: towards an inclusive and sustainable future.. *The Lancet. Planetary health*. [https://doi.org/10.1016/s2542-5196\(20\)30168-6](https://doi.org/10.1016/s2542-5196(20)30168-6).

Lee, S. A., Lee, W. H., & Dang, Y. S. (2016). Alumni satisfaction survey as a strategic tool for program improvement: A case of hospitality management program. *Journal of Hospitality & Tourism Education*, 28(4), 200-208. <https://doi.org/10.1080/10963758.2016.1226847>

Mahirda, K., & Wahyuni, H. (2016). Returning to General and Vocational High-Schools in Indonesia. *Review of Economic and Business Studies*, 9, 28 - 9. <https://doi.org/10.1515/rebs-2016-0031>.

Manurung, H. (2014). Rebranding of Wonderful Indonesia on Marketable Tourist Destinations. *Political Economy - Development: Domestic Development Strategies EJournal*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2528216

Ministry of Education and Culture. (2020). *Regulation of the Minister of Education and Culture No. 3 of 2020 on National Standards of Higher Education*. Republic of Indonesia.

Ministry of Education, Culture, Research and Technology. (2023). *Regulation of the Minister of Education, Culture, Research and Technology No. 53 of 2023 on Implementation of Applied Higher Education*. Republic of Indonesia.

Molek-Kozakowska, K., & Geisler, R. (2020). De-Bureaucratising Organisational Culture at a Public University: A Mixed-Method Study of the Implementation of a Liberal Arts Program. *Higher Education Quarterly*, 74(4), 410-425. <https://doi.org/10.1111/hequ.12262>.

Nurmoko, A., Ykp, S., Tri, Y., Nusantara, S., & Info, A. (2024). Bridging The Gap Between Tourism Science And Vocational Education: Strategies To Increase Industry Relevance In Indonesia. *Proceeding of The International Global Tourism Science and Vocational Education*. <https://doi.org/10.62951/icgtsave.v1i1.3>.

Oktadiana, H., & Chon, K. (2018). Differentiating Academic and Vocational Hospitality and Tourism Education: The Milieu of Indonesia. *Tourism Education and Asia*. https://doi.org/10.1007/978-981-13-2613-4_2.

Park, D. Y. (2018). The range of benefits of work-integrated learning in South Korea higher education. *Asia-Pacific Journal of Cooperative Education*, 19(2), 159-167.

Pretti, T. J. & McRae, N. (2021). Preparing Gen Y and Z for the Future of Work Through Cooperative Education: A Case Study at the University of Waterloo. *IGI Global*, 94-118. <https://doi.org/https://doi.org/10.4018/978-1-7998-6440-0.ch005>.

Putra, I. N. D., & Hitchcock, M. (2006). The Bali Bombs and the Tourism Development Cycle. *Progress in Development Studies*, 6(2), 157-166. <http://dx.doi.org/10.1191/1464993406ps134oa>.

Putra, I. N. D., & Hitchcock, M. (2009). *Terrorism and Tourism in Bali and Southeast Asia*.

Rohendi, D., Kuntadi, I., Suryadi, D., , A., , M., Hanapi, Z., Ramadhan, M., & Iskandar, N. (2024). Attracting International Students' Interest in Mobility and Advanced Study Programs in Indonesia: Case Study of Malaysian Vocational Education Students. *International Journal of Community Service Learning*. <https://doi.org/10.23887/ijcsl.v8i4.84809>.

Suryasih, I., Anom, I., & Suryawan, I. (2022). Mapping And Positioning Of Learning Materials In Tourism Studies In Indonesia. *Jurnal Sosial Sains*. <https://doi.org/10.36418/jurnalsosains.v2i11.523> .

Suud, F., Hapsari, T., Kibtiyah, M., Rouzi, K., Mahmud, S., Huda, E., & , H. (2024). Opportunities for the development of tourism education in Indonesia: A bibliometrics analysis. *Multidisciplinary Reviews*. <https://doi.org/10.31893/multirev.2024229> .

Tondang, B. (2024). Analysis of Entrepreneurship-Based Education Management Policy on the Effectiveness of Tourism Polytechnic Alumni in the Technical Implementation Unit Environment of the Ministry of Tourism and Creative Economy of the Republic of Indonesia. *Jurnal Penelitian Pendidikan IPA*. <https://doi.org/10.29303/jppipa.v10ispecialissue.8585>.

Triyono, M., & Moses, K. (2019). Technical and Vocational Education and Training and Training in Indonesia. *Perspectives on Rethinking and Reforming Education*. https://doi.org/10.1007/978-981-13-6617-8_3.

Watrianthos, R., Ambiyar, A., Rizal, F., Jalinus, N., & Waskito, W. (2022). Research on Vocational Education in Indonesia: A Bibliometric Analysis. *JTEV (Jurnal Teknik Elektro dan Vokasional)*. <https://doi.org/10.24036/jtev.v8i2.117045>.

Wibowo, R. A., Nyan, M. L., & Christy, N. N. A. (2022). The Challenges for Indonesia to Integrate Dual Vocational Education and Training System. *Journal of Technical Education and Training*, 14(2), 79-90. <https://doi.org/10.30880/jtet.2022.14.02.008>.

Yusra, K., Lestari, Y., & Hamid, M. (2021). Teacher agency and the implementation of CEFR-like policies for English for tourism and hospitality: insights from local vocational high schools in Indonesia. *Current Issues in Language Planning*, 23, 233 - 253. <https://doi.org/10.1080/14664208.2021.1965739>.

Yusuf, M., Samsura, A., & Yuwono, P. (2018). Toward a framework for an undergraduate academic tourism curriculum in Indonesian Universities: Some perspectives from stakeholders. *Journal of Hospitality, Leisure, Sport & Tourism Education*. <https://doi.org/10.1016/J.JHLSTE.2018.02.003>.

The Role of Self-Resilience in Enhancing Student Achievement: A Systematic Review

ABSTRACT

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The increasing academic and socio-emotional challenges students face highlights the critical need to develop self-resilience as a key factor in achieving academic and non-academic success. This study aims to examine the role of self-resilience in student achievement through a Systematic Literature Review (SLR) based on the PRISMA framework. 1,404 articles published between 2015 – 2025 were screened from the Scopus database, with 44 relevant studies selected for in-depth analysis. The findings indicate that self-resilience functions as a protective factor against academic stress, improves emotional regulation, and enhances students' adaptability in learning environments. Furthermore, self-resilience significantly contributes to the development of non-academic skills, such as leadership, social competence, and self-management. External factors, including social support, school climate, and socio-economic conditions, serve as moderators that influence the relationship between resilience and student achievement. However, the study's limitations include reliance on secondary data, exclusion of non-English articles, and the predominance of correlational studies, necessitating further longitudinal and experimental research. This study underscores the need to integrate resilience-building strategies into educational policies and practices, ensuring that students are better equipped to navigate academic and personal challenges for long-term success.

Keywords: Self-Resilience, Student Achievement, Systematic Literature Review, Social Support, Education

1. Introduction

Resilience refers to an individual's ability to adapt and rise from difficulties, stress, or challenges faced in everyday life. This means that resilience is an individual's ability to survive, adapt, and rise from various life challenges, both psychological, emotional, and social (Babic et al., 2020; Dantzer et al., 2018; Stepanovic, 2024; Wadi et al., 2020). In the context of education, resilience is an important factor that supports student success in dealing with academic and non-academic pressures (Aparicio, 2022; Au et al., 2023; Nimisha & Deepak, 2018). Learners who have good resilience tend to be better able to cope with academic stress (Abdillah & Marleni, 2023; Bukhari et al., 2023; de la Fuente et al., 2017; García-Martínez et al., 2022; Kayun et al., 2023; Li, 2022; Liu & Han, 2022; Monika & Shikha, 2018), dealing with failure (Backmann et al., 2019; Carmeli & Hartmann, 2024; Johnson et al., 2017; López-Aguilar et al., 2023; Rudd et al., 2021; Thorsen et al., 2021), and adapt to changes in the learning environment (Amsrud et al., 2019; Carmeli & Hartmann, 2024; Shereshkova, 2023; Xu et al., 2024). Not only academic achievement, resilience also plays a role in the development of non-academic skills such as social skills and emotional management (Liu & Boyatzis, 2021; Oshri et al., 2017; Palma-García et al., 2018; Pennington et al., 2021; Shipton & Bermingham, 2018; Siddiqui & Gorard, 2024; Utomo et al., 2022), and leadership skills (Guthrie et al., 2021; Yu et al., 2022). Therefore, resilience is considered one of the keys to success in supporting holistic learner development.

In recent years, educational challenges have become increasingly complex. Learners are faced with high academic demands, fierce competition, and various psychosocial challenges such as pressure from social and family environments. The COVID-19 pandemic has further emphasized the role of resilience in education, where learners are forced to deal with sudden changes in learning methods, limited social interactions, and the psychological impact of uncertainty. In these situations, learners' resilience becomes an important factor in maintaining their learning motivation and performance, both in academic and non-academic areas. Research shows that learners with strong resilience can maintain good academic performance and continue to thrive in non-academic aspects (Ayala & Manzano, 2018; Karabyık, 2020; Vidal-Meliá et al., 2022), despite the intense pressure.

Previous studies have revealed that resilience is positively related to academic achievement, such as the achievement of high grades and the ability to complete tasks. In addition, resilience also impacts non-academic achievement, including learners' involvement in extracurricular activities, interpersonal skill development, and leadership. However, there is still much room for further exploration of the mechanisms that link resilience to these different types of achievement. Research on resilience often focuses more on academic aspects, while its contribution to non-academic achievement has not been studied. Therefore, a more comprehensive review covering both dimensions is needed to provide a more holistic picture.

The urgency of this research lies in the importance of understanding the role of overall resilience in supporting student achievement, both academic and non-academic. Given the increasing pressures learners face in today's educational environment, educators and policymakers need to design programs and interventions that focus not only on improving academic achievement but also on developing learners' overall resilience. Strong resilience can help learners cope with academic pressures, as well as support them in developing potential in non-academic areas that are equally important for future success.

While various studies have demonstrated the positive effects of self-resilience on student outcomes, existing literature tends to focus heavily on either academic or non-academic achievement in isolation. The absence of a holistic, integrative analysis limits the understanding of how resilience simultaneously contributes to both dimensions of student success. Additionally, there is a lack of clarity regarding the mechanisms and external moderators that influence the resilience–achievement relationship, particularly across different educational levels and demographic contexts.

To address these gaps, this systematic review aims to answer five focused research questions and clarify the relationship between self-resilience and both academic and non-academic achievement. For the purpose of this study, academic achievement refers to measurable educational outcomes such as GPA, standardized test scores, and course completion rates. Non-academic achievement refers to broader developmental outcomes including leadership, emotional regulation, social competence, and participation in extracurricular activities. The objectives of this review are to:

RQ.1 S empirical evidence on how self-resilience affects both academic and non-academic achievement across educational levels.

RQ.2 Identify key psychological and behavioral mechanisms that link self-resilience to learning outcomes.

RQ.3 Analyze the role of external moderators, such as family support, school climate, and socio-economic status, in the resilience-achievement dynamic.

RQ.4 Describe how self-resilience contributes to non-academic skills including leadership, emotional management, and interpersonal skills.

RQ.5 Propose implications for curriculum design, student support policies, and educational interventions based on resilience-enhancement frameworks.

2. Literature Review

Concepts and Definitions of Resilience in the Context of Education

Resilience is conceptually defined as an individual's ability to adapt positively to the pressures, challenges, and difficulties encountered in life (Masten & Cicchetti, 2016). In the context of education, resilience not only describes mental endurance, but also the capacity to bounce back and thrive from academic failure and social pressure (Fullerton et al., 2021; Ross et al., 2024). Resilient individuals demonstrate cognitive problem-solving skills, stable emotional control, and adequate social support from their surroundings (Ungar, 2021).

A theoretical framework often used in understanding resilience is the ecological systems theory developed by Bronfenbrenner, in which resilience is formed through interactions between personal and environmental factors, such as family, school, and community (Ungar, 2021). In addition, Bandura's self-efficacy theory explains that individuals' beliefs about their abilities influence how they deal with difficulties, making self-efficacy central to the formation of resilience (Bandura et al., 1999; Kardong-Edgren, 2013; Ozer, 2022). In education, resilience

is seen as a combination of internal strengths (motivation, self-efficacy, and optimism) and external support (social support and a positive school climate) (Aparicio, 2022; Liu & Boyatzis, 2021).

Resilience and Academic Achievement

Various studies show that resilience has a significant relationship with academic achievement. Students with high levels of resilience tend to have good emotional regulation, strong intrinsic motivation, and more consistent learning engagement (Ayala & Manzano, 2018; Trigueros et al., 2020). Academic resilience serves as a protective factor against academic stress, especially for new students facing the transition to a college environment.

In an empirical context, cross-national research shows that resilience is positively correlated with academic outcomes such as GPA, task completion, and learning persistence (W. Li, 2022; Z. S. Li & Hasson, 2020). A longitudinal study by Kim and Lim (2023) found that increased resilience is directly proportional to increased academic self-efficacy and adaptive learning strategies, especially in the context of online learning after the COVID-19 pandemic. However, some studies found weak relationships, indicating that resilience may work through mediating mechanisms such as self-efficacy, social support, or learning motivation (Schunk & DiBenedetto, 2020; Y. Wang et al., 2024; Yang & Wang, 2022).

Resilience and Non-Academic Skill Development

In addition to influencing academic achievement, resilience also plays an important role in the development of non-academic skills. Emotional regulation, empathy, and social communication skills are integral parts of resilience that contribute to students' psychological well-being (Goleman, 1995). Research findings indicate that students with high levels of resilience are better equipped to develop leadership, social responsibility, and self-management skills (Guthrie et al., 2021).

Extracurricular activities such as sports, student organizations, and leadership programs have also been shown to strengthen the social-emotional dimensions that support resilience (Ramirez-Granizo et al., 2020). In this context, resilience acts as a bridge between social skills and career readiness. Recent research confirms that a sense of belonging to school can increase student resilience while strengthening their interpersonal competencies (Lester, 2023). Therefore, learning that emphasizes social and emotional aspects needs to be an integral part of the modern education system.

Psychological Mechanisms Linking Resilience and Achievement

The relationship between resilience and learning outcomes is not direct, but rather mediated by a number of psychological mechanisms. First, academic self-efficacy serves as the primary mediator in this relationship (Bandura et al., 1999; W. Li, 2022). Resilient students have high confidence in their academic abilities, making them better able to cope with stress and maintain motivation to learn.

Second, emotion regulation plays a role in maintaining students' psychological stability in the face of academic pressure (Iuga & David, 2024). Individuals who are able to manage negative emotions tend to be more focused and productive in their studies. Third, adaptive coping

strategies such as problem-solving coping and cognitive reappraisal are other mechanisms that strengthen the effect of resilience on academic outcomes (Fullerton et al., 2021).

Additionally, academic engagement was also identified as a mediator of behavior. The study found that students with high levels of resilience showed more active learning participation, thereby improving long-term academic achievement (Ayala & Manzano, 2018). Thus, resilience operates through a series of complex psychological processes that strengthen an individual's ability to cope with learning pressures.

Moderating Factors: Social Support, School Climate, and Socioeconomic Background

Resilience depends not only on internal factors, but also on external support from the environment. Social support from family, peers, and teachers has been shown to improve students' ability to cope with academic stress (Hoferichter et al., 2022; Pontes et al., 2024). Students who receive emotional and instrumental support are more likely to maintain psychological balance and motivation to learn (Harb et al., 2023).

In addition, a positive school climate plays an important role in strengthening the relationship between resilience and student achievement. Research by Las Hayas et al. (2019) through the UPRIGHT program shows that the involvement of teachers, families, and the school community in building an environment that supports mental health can increase students' resilience and well-being. This whole-school approach model emphasizes the importance of systemic collaboration to foster a culture of resilience in the educational environment (Llistosella et al., 2023).

Socioeconomic factors also influence resilience levels. Students from low-income backgrounds who receive community social support demonstrate high levels of academic resilience, despite facing resource limitations (Fang et al., 2020). These findings confirm that resilience is not solely a product of individual strength, but also the result of social support and equitable structural opportunities (Ungar, 2021).

This section synthesizes the conceptual relationships between resilience, academic achievement, non-academic skills, and moderating factors such as social support and school climate, based on the reviewed literature. The theoretical underpinnings are grounded in socio-ecological and self-efficacy frameworks, which emphasize both personal and contextual contributors to student success.

The following constructions are defined and measured in the reviewed studies:

Self-Resilience: Defined as the individual's ability to adapt, recover, and grow from stress and adversity. Most studies use validated resilience scales such as the Connor-Davidson Resilience Scale (CD-RISC) and the Academic Resilience Scale (ARS) to measure this construct.

Academic Achievement: Refers to learners' performance in formal education, commonly measured through GPA, test scores, graduation rates, or academic task completion. Quantitative indicators dominate this category.

Non-Academic Skills: Encompass interpersonal competencies such as leadership, emotion regulation, and social communication. These are often measured through student self-reports, peer evaluations, and involvement in extracurricular programs.

Moderating Factors: Include social support (measured by family involvement and peer relationship scales), school climate (measured through surveys on student-teacher relations and learning environment), and socioeconomic status (assessed through parental education and income indicators).

3. Method

Research Design

This research uses the Systematic Literature Review (SLR) method to compile, integrate, and evaluate findings from various previous studies that discuss the role of self-resilience in improving learners' academic and non-academic achievement. SLR is an approach used to summarize existing evidence systematically and transparently through the stages of searching, selecting, and analysing relevant studies (Arvanitis, 2024; Priyadarsini & Ravindran, 2023; Siddaway et al., 2019) that aim to provide a deeper understanding of the relationship between self-resilience and various forms of learner achievement, as well as the mechanisms underlying these relationships.

Data Sources and Search Strategy

The literature search process was conducted using the Scopus database, which is one of the largest and most trusted scientific databases for academic publications. The search was conducted using specific terms, namely “self-resilience”, “student achievement”, “academic achievement”, and “non-academic achievement”, to ensure that only articles relevant to the research topic were identified and included in the analysis. Additional keywords included “extracurricular activities”, “social skills”, “emotional management”, and “mental well-being”. The combination of keywords was designed to capture various dimensions of academic and non-academic achievement and psychosocial factors related to resilience. The search was conducted using the following keywords: (TITLE-ABS-KEY ("self-resilience") OR TITLE-ABS-KEY ("resilience") OR TITLE-ABS-KEY ("student achievement") AND TITLE-ABS-KEY ("academic achievement") OR TITLE-ABS-KEY ("non-academic achievement") OR TITLE-ABS-KEY ("extracurricular activities") OR TITLE-ABS-KEY ("social skills") OR TITLE-ABS-KEY ("emotional management") OR TITLE-ABS-KEY ("mental well-being") AND TITLE-ABS-KEY ("education")).

Inclusion and Exclusion Criteria

The inclusion criteria used for article selection were as follows: (1) journal articles published on Scopus, (2) studies that used relevant search terms such as “self-resilience”, “student achievement”, “academic achievement”, and “non-academic achievement”, (3) studies and meta-analyses that explicitly reported the relationship and influence of learners' self-resilience on academic and non-academic achievement, (4) articles written in English, and (5) articles published in the period 2015 to 2025. Meanwhile, the exclusion criteria used included (1)

Articles that did not address at least two main constructs; (2) Articles that focused on non-learner populations or were not in an educational context or field were also excluded to maintain the focus on self-resilience and student achievement (3) Research that could not be downloaded in pdf format.

Article Screening Procedure

1,404 articles from 2015-2025 were collected from Scopus data sources. The researcher screened 410 suitable articles, to 44 articles for analysis by developing pre-established inclusion and exclusion criteria. The article screening process will be presented using the PRISMA flowchart in Figure 1. Screening was performed on the abstract, keywords, and full text of each article to determine its alignment with the established criteria. Articles that did not meet the criteria, such as those that did not address at least two of the main constructs, focused on self-resilience or learner achievement, were excluded from the analysis. Articles that focused on non-learner populations or were not in an educational context or field were also excluded to maintain the focus on self-resilience and learner achievement.

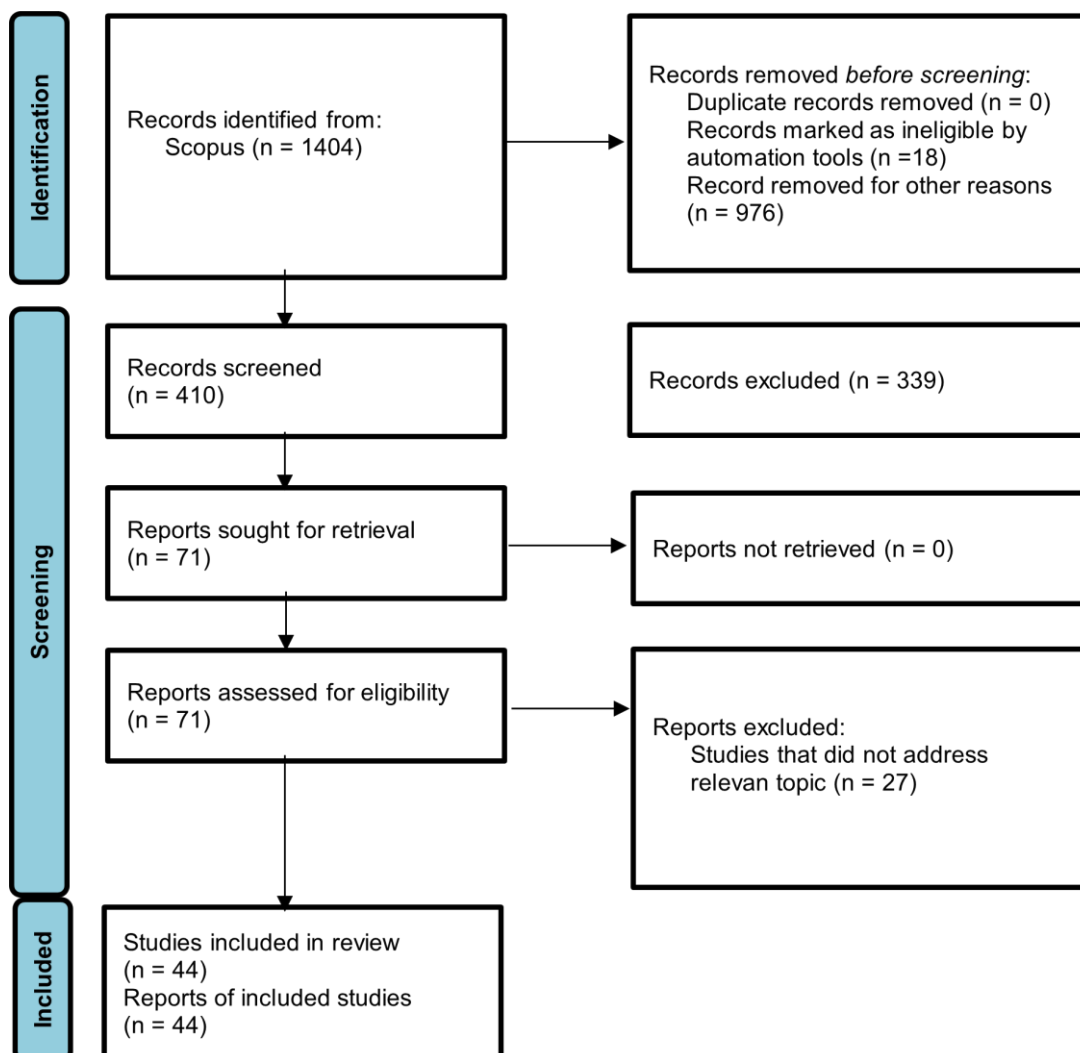


Fig 1. PRISMA Flow Diagram for Article Selection Process

After the data was collected, the next step was to analyze the data. Data analysis in this SLR research was conducted using thematic analysis, narrative synthesis, and visual mapping approaches, as shown in Figure 2 below. The first stage is data extraction and organization, where articles that have been selected based on the inclusion and exclusion criteria are analyzed to collect key information. The data collected included study identifiers such as title, author, year of publication, and journal source, as well as the research focus to ensure the articles addressed self-resilience in the context of academic and non-academic achievement. In addition, the research methods used in each study, including the research design, sample, and instruments for measuring self-resilience and learner achievement, were also analysed. Key findings from each article were then extracted to understand the relationship between self-resilience and achievement, as well as the factors that influence the relationship. The extracted data were then categorized based on the established research questions (RQs).

Coding and Data Analysis

The next stage was coding and thematic analysis, which aimed to identify patterns, themes, and categories that emerged from the various previous studies. This process began with initial coding, where each article was scrutinized to identify keywords and key concepts related to self-resilience, academic achievement, non-academic achievement, and external factors that influence these relationships. Next, articles that shared the same research focus were grouped into several main themes relevant to the Research Questions (RQs) of this study. Some of the main themes that emerged included the role of resilience in academic and non-academic achievement (RQ1), psychosocial mechanisms that bridge the relationship between resilience and achievement (RQ2), external factors that moderate the relationship between resilience and achievement (RQ3), the impact of resilience on learners' social, leadership, and emotion management skills (RQ4), and social support and educational environment in strengthening the relationship between resilience and learner achievement (RQ5).

After the main themes were identified, the next stage was the synthesis of narrative and conceptual relationships, which was done to summarize the research results and explain the interrelationships between variables. This synthesis process includes summarizing the results of previous research based on each Research Question, as well as explaining the mechanism of the relationship between resilience and academic and non-academic achievement. In addition, external factors that may strengthen or weaken the relationship are also analysed to provide greater insight into the factors that contribute to this relationship. Finally, this study developed a conceptual model describing the role of self-resilience in education, which helps to understand how resilience plays a role in improving learner achievement.

Mapping and Visualization of the Review Process

To improve understanding of the relationship between the variables studied, data mapping and visualization of findings in the form of diagrams and flowcharts were conducted. The visualization aims to illustrate how resilience affects academic and non-academic achievement and explain the psychosocial mechanisms that play a role in the relationship. In addition, external factors that can strengthen or weaken the relationship between resilience and learner achievement are also presented in the form of graphs and diagrams, thus providing a clearer picture of the relationship between variables in this study. With a systematic approach to data analysis, this study can provide a deeper understanding of the role of resilience in improving learners' academic and non-academic achievement, as well as how other factors influence the relationship.

The selected data were classified based on themes relevant to the research questions (RQs) under study. This analysis allowed the research to systematically answer how self-resilience affects academic and non-academic achievement, the mechanisms linking the relationship, the external factors that influence it, and how social support and educational environment can strengthen the relationship.

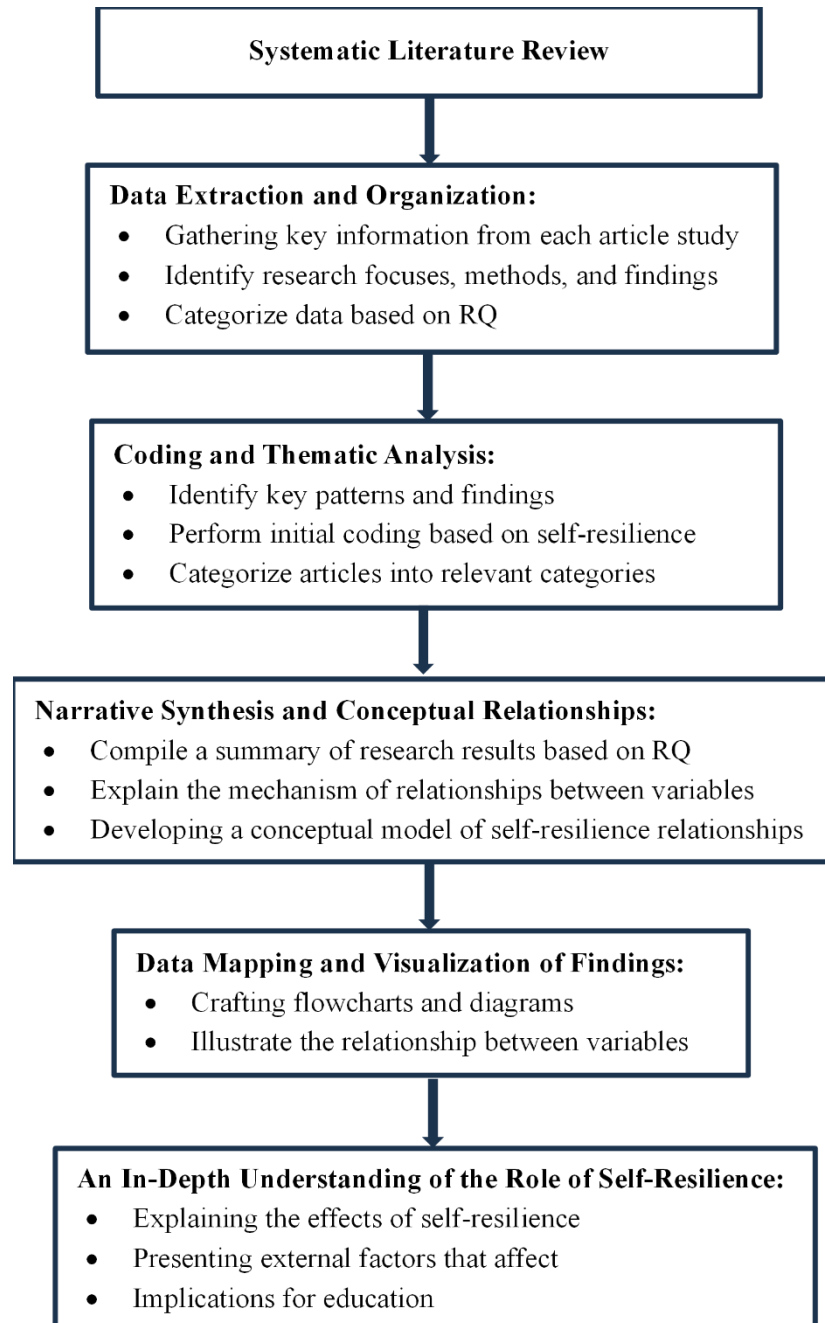


Fig 2. Systematic Literature Review Process Flow Diagram

Before entering the analysis stage based on the research questions, the researcher wanted to see the relativity and data distribution of the final articles that had been identified. This activity was carried out as a preliminary step to ensure that the articles analysed were truly relevant and in accordance with the research focus. By understanding the distribution and relevance of the data, the researcher can double-check whether the articles used fit the inclusion and exclusion

criteria and ensure that the articles provide sufficient insight to answer the formulated research questions. Thus, before going into more in-depth analysis, researchers can ensure that the results obtained truly represent the relationship between self-resilience and learners' academic and non-academic achievement systematically and validly.

a. Sample articles include studies

To ensure the robustness of the evidence base, a quality appraisal of all included articles was conducted before thematic synthesis. Each study was evaluated using a simplified checklist adapted from standard critical appraisal tools. The checklist considered: (1) clarity of research objectives, (2) appropriateness of methodology, (3) reliability and validity of instruments, (4) transparency of data analysis, and (5) relevance to the research questions. Articles were scored on a 5-point scale and only those scoring 4 or higher were included in the synthesis stage, ensuring a minimum standard of methodological soundness.

It is important to acknowledge that the use of a single electronic database (Scopus) and the restriction to English-language articles introduce inherent limitations. These constraints may have led to the exclusion of relevant studies from non-English-speaking countries or grey literature not indexed in Scopus. Consequently, the generalizability of the findings may be limited to contexts represented in English-language, peer-reviewed publications. Based on the articles reviewed, these studies involved diverse samples. In one study conducted in Andalusia, Spain, 2,967 students aged 18-33 years were selected using incidental nonprobability sampling techniques, with participation criteria requiring status as a university student and written consent to participate. The other study aimed to involve 5,992 adolescents, with 2,996 students per group in five pilot regions, designed to detect improvements in mental health with a statistical power of 80% and a significance level of 0.05. Meanwhile, a separate study at the University of Indonesia involved 1,040 undergraduate medical students from first to sixth year, with a response rate of 75.42%, where participants filled out validated questionnaires related to psychological and personality assessments. In addition, a study of high school students in rural China applied Structural Equation Modelling (SEM) guidelines to determine sample size in exploring the relationship between teacher-student relationships and academic performance. The study on pharmacy students involved two groups: 64 graduate entry students and 208 undergraduate school leavers, where graduate entry students completed a six-week intensive equivalency course. A simple random sampling approach was used in the study involving 243 university students, with the exclusion of in-service students, irregular programs, and self-employed students to ensure sample homogeneity. Another study conducted at the International Islamic University Malaysia involved 315 students, both at undergraduate and postgraduate levels, who were randomly selected to ensure diversity in demographic factors. Furthermore, a study involving 224 student-athletes at a public university in the Philippines examined the relationship between enjoyment of exercise and academic resilience, with most participants aged 19-21. In a study of university students in Southern Spain, a total of 1,020 participants were included, with a gender distribution of 75.78% female and 24.21% male, covering a wide range of courses in education. This variety of sampling methods and target populations reflects the varied research approaches in studies in education and psychology.

b. The most used methods

Based on the 44 articles reviewed, the research methods used varied. In a study conducted in Andalusia, Spain, exploratory and confirmatory factor analyses were conducted to validate the Academic Resilience Scale (ARS), with data analysis using SPSS and AMOS software

(reliability was assessed using Cronbach's alpha). The UPRIGHT program applied a mixed methods approach, integrating participatory strategies, qualitative methods, and quantitative data collection, where schools were randomly classified into intervention and control groups. A cross-sectional research design was applied in a study involving medical students with a total sampling method, using validated questionnaires to measure academic resilience, coping mechanisms, and personality characteristics. Another study used moderated moderation analysis with Mplus software, applying the maximum likelihood estimation method to handle missing data and controlling for demographic variables such as age, income, and family structure. An explanatory sequential mixed methods approach was also used, combining surveys, academic performance data and thematic analysis of semi-structured interviews conducted through the Zoom platform. Research at the International Islamic University Malaysia applied Structural Equation Modeling (SEM) with AMOS to analyse the relationship between academic resilience, self-stigma, and mental well-being. Several other studies used a correlational research design, with data collection methods in the form of self-administered questionnaires, and statistical analysis techniques such as Pearson correlation coefficient, ANOVA test, and regression analysis for hypothesis testing. The data collection methods used varied, including online surveys through Google Forms, focus group interviews, and bibliometric analysis using text mining and social network analysis. These methodological approaches reflect the diversity in research designs, statistical techniques, and analytical frameworks applied in the various studies.

c. The Context includes studies

A study conducted in Spain focused on the validation and adaptation of the Academic Resilience Scale (ARS) to assess the role of resilience in protecting university students from academic stress. The UPRIGHT project, a large-scale trial involving nearly 6000 adolescents in five European regions, aims to improve mental well-being and prevent mental disorders through a whole-school approach. Research on English as a foreign language (EFL) learning environments emphasizes the influence of socio-affective and socio-economic factors on student resilience and motivation, especially in the context of digital learning during the COVID-19 pandemic. The Indonesian study explored the resilience of undergraduate medical students by examining the influence of personality characteristics, coping mechanisms, and academic performance. In China, research examined the impact of teacher-student relationships on academic achievement in rural secondary schools, with mental health and resilience as moderating factors. Another study in Australia compared resilience strategies between mature-aged pharmacy students and high school graduates, highlighting the importance of resilience programs in higher education. Research in Malaysia investigated the relationship between resilience, self-stigma, and mental well-being among graduate and undergraduate students. In the Philippines, a study analysed how enjoyment in exercise correlates with academic resilience among student-athletes. The impact of the COVID-19 pandemic on higher education was also examined through bibliometric analysis, focusing on psychological distress and the transition to online learning. In addition, research in Ghana explores the educational experiences of marginalized youth, emphasizing resilience in the context of social and economic inequality. These various research contexts reflect the importance of resilience in a variety of educational and psychological environments, encompassing mental well-being, academic success, and adaptation to challenges.

d. Country

Research on self-resilience is conducted in various countries. In Spain, studies have focused on validating the Academic Resilience Scale (ARS) and examining physical activity among adolescents in secondary schools (García-Rubio et al., 2023). The UPRIGHT Project, a pan-European initiative, involves researchers from Spain, Italy, Poland, Denmark, and Iceland to improve adolescents' mental well-being (Harb et al., 2023). In Indonesia, research explored resilience among medical students at the University of Indonesia as well as the broader higher education context (Soininen et al., 2023). In the Philippines, studies analyzed academic resilience among student-athletes, highlighting the relevance of sports culture in education (Dragomir & Dumitru, 2023). Poland has been the site of several studies, including studies on medical students and adolescent resilience in youth education centres (Wilkie et al., 2023). In Brazil, the study focused on the resilience of medical students from 22 institutions, with a spotlight on regional variations (Tosto et al., 2023). Research in Hong Kong, China, examined adolescent mental health and resilience in secondary schools, as well as academic resilience among students from low socioeconomic backgrounds (Yin et al., 2023). The study in Saudi Arabia explored resilience among students at King Faisal University as well as academic resilience among pharmacy students from 12 countries, including Egypt, Turkey, Indonesia, Pakistan, and Nigeria (McLaughlin et al., 2023). The iHEART program in the UK focused on resilience interventions for secondary school adolescents, while research in Northern Ireland assessed the impact of mindfulness courses on undergraduate social science students (Aubrey & Philpott, 2023). Comparative research in Singapore, South Korea, Japan, Taipei, and Hong Kong examines academic resilience among low socioeconomic status (low-SES) students, contributing to global education discourse (Baker et al., 2023). These studies highlight the diverse geographical scope of resilience research, covering a wide range of educational and cultural contexts.

4. Result

The results of the search for articles on the topic of self-resilience and its relation to student achievement both academic and non-academic achievement for the period 2015-2025 obtained as many as 1404 articles. Furthermore, after conducting the screening process, inclusion, and exclusion of data based on predetermined criteria, 44 articles were obtained that met the criteria for further analysis. Based on the articles obtained, table 1 below presents the top ten most cited article titles with the best journal quality, namely indexed by Scopus with Quartile Q1 - Q3. These journals apply strict selection standards in the article acceptance process, through rigorous peer review mechanisms and in-depth evaluation of academic and scientific impact.

Table 1. Top 10 Journal of the topic

No.	Authors	Article Title	Journal	Quartile
1	(Tempski et al., 2015)	Relationship among medical student resilience, educational environment and quality of life	PLoS ONE	Q1
2	(Trigueros et al., 2019)	Influence of emotional intelligence, motivation and resilience on academic performance and the adoption of healthy lifestyle habits among adolescents	International Journal of Environmental Research and Public Health	Q2

No.	Authors	Article Title	Journal	Quartile
3	(Ho et al., 2015)	Physical activity improves mental health through resilience in Hong Kong Chinese adolescents	BMC Pediatrics	Q2
4	(Sandoval-Hernández & Białowolski, 2016)	Factors and conditions promoting academic resilience: a TIMSS-based analysis of five Asian education systems	Asia Pacific Education Review	Q2
5	(McDermid et al., 2016)	Developing resilience: Stories from novice nurse academics	Nurse Education Today	Q1
6	(Roulston et al., 2018)	Exploring the impact of mindfulness on mental wellbeing, stress and resilience of undergraduate social work students	Social Work Education	Q1
7	(Konaszewski et al., 2021)	Resilience and mental health among juveniles: role of strategies for coping with stress	Health and Quality of Life Outcomes	Q1
8	(Ramirez-Granizo et al., 2020)	Multidimensional self-concept depending on levels of resilience and the motivational climate directed towards sport in schoolchildren	International Journal of Environmental Research and Public Health	Q2
9	(Yang & Wang, 2022)	The Role of Academic Resilience, Motivational Intensity and Their Relationship in EFL Learners' Academic Achievement	Frontiers in Psychology	Q2
10	(Bozkurt, 2022)	Resilience, Adaptability, and Sustainability of Higher Education: A Systematic Mapping Study on the Impact of the Coronavirus (COVID-19) Pandemic and the Transition to the New Normal	Journal of Learning for Development	Q3

Scopus classifies the journals in Table 1 into the Q1 - Q3 category, indicating their high impact and credibility within the academic community. These journals apply a rigorous peer review process to ensure the quality, relevance, and accuracy of published research. The articles published in the journals provide valuable insights into resilience, mental health, and academic performance in various educational contexts. The studies explored key factors such as emotional intelligence (García-Martínez et al., 2022; Trigueros et al., 2019), motivation (Kotera et al., 2022; Manzano-Sánchez et al., 2021; Ramirez-Granizo et al., 2020; Yang & Wang, 2022), mindfulness (Las Hayas et al., 2019; Llistosella et al., 2023; Roulston et al., 2018), and self-concept (García-Martínez et al., 2022; Ramirez-Granizo et al., 2020), that contribute to student's ability to adapt and achieve academic success (Abukari, 2018; Findyartini et al., 2021; Haskett et al., 2022; Kotera et al., 2022; F. Wang et al., 2024; Yang & Wang, 2022).

The presence of journals such as PLoS ONE, BMC Pediatrics, and Health and Quality of Life Outcomes in the ranking demonstrates the relevance of resilience research in education and psychology. These articles are an important reference source for researchers who want to further explore and develop evidence-based strategies to improve resilience and mental health

in academic settings. By following the standards set by these reputable journals, future researchers can produce impactful studies that expand the discourse on resilience and its implications for student academic success.

The influence of self-resilience on the academic and non-academic achievement of students at various levels of education

Self-resilience has a significant influence on the academic and non-academic achievement of learners at various levels of education. Studies show that academic resilience acts as a protective factor against academic stress, which in turn contributes to improved academic performance (Harb et al., 2023). Learners with high levels of resilience tend to be better able to adapt to academic difficulties, which has a positive impact on their overall achievement. Resilience also serves as a shield against the stress that students experience at the university level, potentially improving their academic outcomes through emotion regulation and self-efficacy.

Moreover, resilience not only impacts academic achievement, but also on the development of non-academic skills such as social skills, leadership, and emotion management. Intervention programs such as UPRIGHT are designed to increase the capacity for resilience in the school environment, which not only supports students' mental well-being but also has the potential to impact their academic outcomes (Ginsburg et al., 2022). Resilience enables individuals to adaptively face challenges, which has a positive impact on both academic achievement and engagement in non-academic activities.

Furthermore, the study highlighted that external factors such as social support from family and school engagement play a role in strengthening the relationship between resilience and student achievement. Students who receive emotional support from their families and have positive relationships with teachers tend to perform better academically, despite facing high academic pressure (Poorman et al., 2019). In addition, strategies such as proactive life management and providing constructive feedback can increase students' resilience as well as their success in examinations. Table 2 below presents the pattern formed about self-resilience on learner achievement at each level of education.

Table 2. Patterns of the relationship between self-resilience and learner achievement at each level of education

Education Level	Research Focus	Patterns Formed
Basic Education	The influence of resilience on adaptation in the school environment, social skills, and emotional development	- Resilience helps students overcome academic anxiety and build confidence. - External factors such as teacher and parental support play a role in increasing resilience. - Intervention programs like *UPRIGHT* strengthen students' mental well-being and academic engagement.
Secondary Education	The role of resilience in managing academic stress, motivation to learn, and involvement in extracurricular activities	- Resilience correlates with improved time management skills and coping strategies for academic challenges. - Social factors such as relationships with peers and the role of teachers are the main factors in shaping students' resilience. - Non-academic activities such as school organizations and sports are important tools

Education Level	Research Focus	Patterns Formed
		in building resilience.
Higher Education (College/University)	The relationship between resilience and academic self-efficacy, stress management strategies, and success in college	- Resilience serves as a protective factor against academic stress and increases resilience in completing studies. - Social support from family, lecturers, and the campus environment strengthens the relationship between resilience and academic achievement. - Emotion regulation and leadership skills developed from resilience contribute to success in post-campus careers.
Professional/Vocational Education	Impact of resilience on work readiness, leadership skills, and technical skill development	- Resilience plays a role in increasing the adaptability of vocational students to the challenges of the world of work. - Fieldwork or internship experiences help build resilience and professional readiness. - External factors such as guidance from industry mentors and career coaching programs contribute to increased resilience.

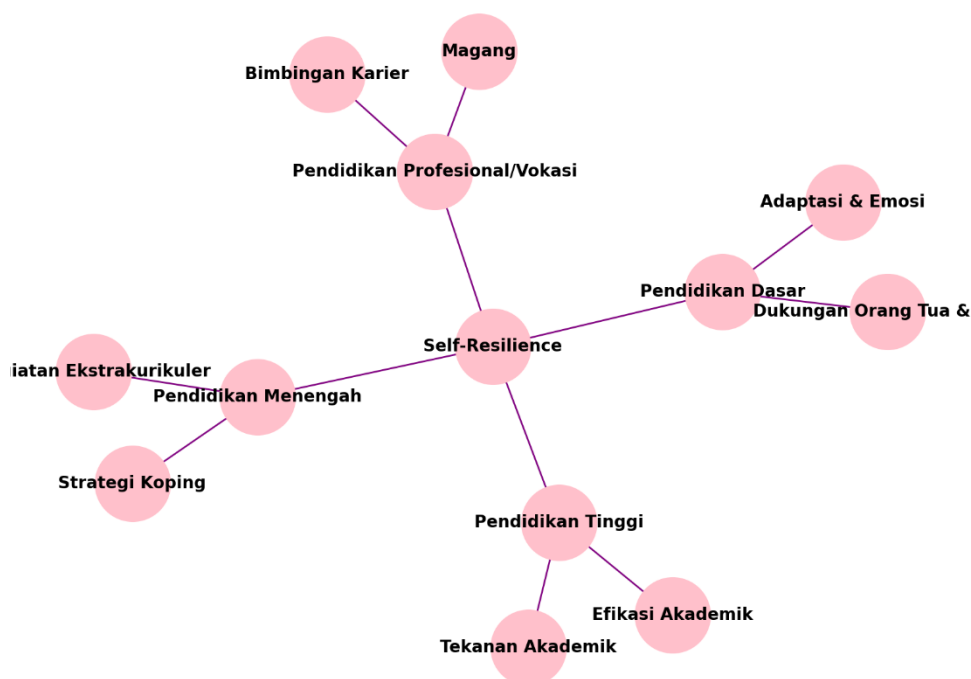


Fig 3. Patterns of association of self-resilience with various factors at different levels of education

Key mechanisms linking resilience to improved learner academic and non-academic achievement

Self-resilience plays a crucial role in improving learners' academic and non-academic achievement through various key mechanisms. Studies show that individuals with high levels of resilience tend to develop adaptive behaviors that help them adjust to academic and social

challenges, thus contributing to improved overall performance. Resilience is also associated with reduced levels of academic stress and anxiety, which in turn positively impacts learners' academic achievement (Harb et al., 2023).

One of the main mechanisms linking resilience to academic achievement is self-efficacy. Resilience directly increases academic self-efficacy, which encourages learners to be more confident in facing learning challenges. As such, they are better able to regulate emotions and use effective coping strategies to reduce academic stress, which in turn improves learning performance (Ginsburg et al., 2022). In addition, intervention programs like UPRIGHT emphasize strengthening resilience through improving emotional and social resilience, which creates a more supportive educational environment for learners (Poorman et al., 2019).

External factors also play a role in strengthening the relationship between resilience and academic and non-academic achievement. Family support and positive relationships with teachers serve as protective factors that help learners cope with academic pressures and increase their engagement in school activities. In addition, emotion-focused coping strategies, such as seeking social support and developing emotion management skills, are important mechanisms that enable learners to deal with challenges more effectively (Minahan & Ablon, 2022).

In non-academic contexts, resilience plays an important role in building leadership skills, social skills, and involvement in extracurricular activities. Participation in sports activities, for example, has been shown to increase intrinsic motivation, self-confidence, and social connections, all of which contribute to resilience and improved academic and non-academic achievement. Research also highlights that participation in social and community activities helps learners develop better adaptation strategies, which improves their emotional well-being and academic performance (Poorman et al., 2019).

Other mechanisms that strengthen the relationship between resilience and academic achievement are cognitive engagement and academic commitment. Resilience enables learners to stay focused on their academic goals, despite challenges. High academic commitment acts as a mediator linking resilience to academic achievement, suggesting that the higher one's level of resilience, the more likely they are to remain persistent in achieving academic success (Minahan & Ablon, 2022).

External factors that play a role in influencing the relationship between resilience and learners' non-academic achievement

Self-resilience is not only influenced by individual internal factors but also by various external factors that play an important role in shaping the relationship between resilience and learners' non-academic achievement. One significant external factor is social support, whether from family, peers, or the school environment. Studies show that parental involvement and positive relationships with teachers contribute to increasing students' resilience, which has a direct impact on their participation in non-academic activities such as school organizations, sports, and other extracurricular activities (Harb et al., 2023).

In addition, a supportive school environment plays a key role in building student resilience. Intervention programs like UPRIGHT highlight the importance of creating a positive school atmosphere through faculty and family engagement to improve learners' mental and social well-being. A school environment that provides students with opportunities to develop social and

leadership skills helps them better face challenges, thereby increasing their engagement in non-academic activities (Ginsburg et al., 2022).

Economic factors and social background are also influential in shaping the relationship between resilience and non-academic achievement. Studies found that economic factors, such as financial support from parents, can influence students' involvement in organizations or self-development activities. Students from economically disadvantaged backgrounds are likely to face barriers in accessing non-academic activities, hindering their opportunities to build stronger resilience (Poorman et al., 2019).

In addition, emotional support from the community, including mentors and peers, contributes to improving learners' resilience and non-academic achievement. The social-ecological model emphasizes that positive social interactions help students develop better-coping mechanisms, which enable them to remain active in various non-academic activities despite personal or academic challenges (Minahan & Ablon, 2022).

Contribution of Resilience to non-academic skill development

Self-resilience plays an important role in the development of learners' non-academic skills, such as social skills, leadership, and emotion management. Studies show that individuals with high levels of resilience are better able to develop adaptive behaviours, which help them adjust to various life challenges and improve their interpersonal abilities (Harb et al., 2023). Resilience is also associated with reduced levels of stress and anxiety, which in turn supports learners' emotional regulation and mental well-being.

In addition, academic resilience plays a role in increasing self-efficacy, which contributes to the development of non-academic skills. Individuals who are confident in facing academic challenges tend to be more active in non-academic activities, such as school organizations, social activities, and sports. Intervention programs such as UPRIGHT are designed to strengthen resilience through social and emotional learning, which is proven to improve learners' interpersonal skills (Ginsburg et al., 2022). The ecological approach of the program emphasizes school, family, and community involvement in building protective factors that support the development of non-academic skills.

Furthermore, resilience enables learners to develop better-coping mechanisms in the face of challenges, which in turn improves their ability to solve problems and adapt in social settings. Positive relationships with peers and support from parents are also major factors in shaping learners' social and leadership skills. Studies show that individuals with high resilience tend to be more sociable, have better self-confidence, and can manage conflict effectively (Poorman et al., 2019).

In addition to social aspects, resilience also contributes to the development of leadership and emotion management skills. Extracurricular activities, such as sports and leadership communities, help learners build self-confidence, teamwork, and effective decision-making skills. Participation in sports, for example, is associated with increased intrinsic motivation and cooperation skills, all of which play a role in shaping resilience as well as an individual's non-academic success (Minahan & Ablon, 2022).

The role of social support and educational environment in strengthening the relationship between resilience and achievement

Social support and the educational environment play a crucial role in strengthening the relationship between resilience and learner achievement, both in academic and non-academic aspects. Studies show that support from family, peers, and educators can increase learners' resilience, which contributes to improved academic performance. Intervention programs like UPRIGHT emphasize a whole-school approach, which includes engaging staff, families, and communities in creating protective factors for learners' mental health and resilience (Harb et al., 2023).

In addition, a supportive educational environment, such as a positive school climate and good teacher-student relationships, plays a role in strengthening learners' academic resilience and success. Studies show that positive Teacher-Student Relationships (TSRs) can increase learning motivation and academic engagement, which in turn leads to improved student academic achievement (Ginsburg et al., 2022). An educational environment that provides constructive feedback and pays attention to students' emotional well-being is also a key factor in building their resilience.

Social support not only impacts academic achievement but also contributes to the development of learners' non-academic skills. Factors such as community involvement, guidance from mentors, and relationships with peers help learners develop social, leadership, and emotion management skills. Studies show that involvement in sports activities and school organizations increases learners' resilience, which contributes to their success in various aspects of life beyond academics (Poorman et al., 2019).

Furthermore, socio-economic and cultural factors also play a role in shaping the relationship between resilience and academic and non-academic achievement. Students from socio-economically disadvantaged backgrounds often face greater challenges in developing resilience. However, with strong social support and an inclusive educational environment, they can still build resilience that enables them to achieve better (Minahan & Ablon, 2022).

5. Discussion

Despite the overall convergence of findings highlighting the positive role of self-resilience in enhancing both academic and non-academic outcomes, several discrepancies emerged across studies. While many studies found strong correlations between resilience and academic performance, few reported only weak or inconsistent associations. These divergences may be attributed to differences in methodological rigor, measurement tools, cultural contexts, or sample characteristics.

This research systematically examines the role of self-resilience in improving learners' academic and non-academic achievement at various levels of education. Through an analysis of the literature, it was found that self-resilience is a key factor in helping learners cope with academic and social pressures. Previous studies have shown that individuals with high self-resilience are better able to adjust to academic challenges, manage stress better, and demonstrate superior performance compared to individuals with low self-resilience (Harb et al., 2023).

However, the relationship between resilience and academic achievement is not always linear. Some studies found a weak correlation between the two variables. Other factors such as academic self-efficacy and individual coping mechanisms also play an important role in determining academic success (Minahan & Ablon, 2022). Therefore, further research is needed to explore how resilience interacts with other factors in influencing learners' academic and non-academic achievement across different levels of education. By understanding the complexity of these relationships, educators and policymakers can design more effective strategies to support the development of learners' resilience to enhance their success in and out of academic settings.

The results also support the theory that resilience contributes to the development of non-academic skills, such as social skills, leadership, and emotion management. In the educational context, school-based intervention programs such as UPRIGHT are effective in enhancing learners' resilience capacity, which has implications for improving their mental well-being and interpersonal skills (Ginsburg et al., 2022). A supportive educational environment, including positive teacher-student relationships, is an important factor in strengthening learners' resilience and increasing their engagement in academic and non-academic activities (Poorman et al., 2019).

In addition, this study also found that external factors such as social support from family, peers, and school environment have a significant role in shaping the relationship between resilience and learners' academic and non-academic achievement. Students who have a strong social support network tend to be better able to cope with academic pressure, maintain motivation to learn, as well as develop leadership skills that are useful in their professional lives (Minahan & Ablon, 2022).

Furthermore, the study also identified several key mechanisms linking resilience to academic and non-academic achievement. One of the most prominent mechanisms is self-efficacy in the face of academic and social challenges. High resilience enables individuals to stay focused on their academic goals, regulate emotions effectively, as well as adopt more adaptive coping strategies to deal with academic and social pressures (Ginsburg et al., 2022). By understanding these mechanisms, educators and policymakers can design more effective strategies to support the development of learners' resilience. Educational programs that emphasize increasing resilience through strengthening coping skills, emotion regulation, and social support can help create a more positive and supportive learning environment for learners. That in turn not only improves their academic performance but also helps them thrive in various non-academic aspects of life.

On the non-academic side, involvement in extracurricular activities, such as sports and school organizations, has been shown to increase resilience and help learners develop better social and leadership skills. Studies show that individuals with high resilience are more active in social activities, have stronger interpersonal relationships, and are better prepared to face challenges in the workplace (Poorman et al., 2019).

From these findings, it can be concluded that resilience plays an important role in supporting learners' academic and non-academic success. Therefore, more inclusive educational strategies are needed to enhance learners' resilience, including the integration of social and emotional learning programs in the school curriculum and the provision of psychosocial support for students facing academic and social challenges. With a more systematic and evidence-based

approach, it is hoped that learners can be better prepared to face academic challenges and life outside the school and campus environment.

Summary of Findings

As the concluding part of this systematic review, a summary mapping of each research question (RQ1–RQ5) to the key thematic findings identified in the literature is presented. This mapping provides a comprehensive overview of how each research question contributes to the overall theoretical and empirical synthesis. The following table summarizes the results of this synthesis:

Table 3. Mapping of Research Questions (RQ1–RQ5) to Key Thematic Findings

Research Question (RQ)	Key Thematic Findings
RQ1: How does self-resilience affect academic and non-academic achievement?	Enhances academic performance, reduces learning-related stress, strengthens student engagement and emotional regulation.
RQ2: What are the key mechanisms linking self-resilience and learner achievement?	Self-efficacy, adaptive coping strategies, and emotional regulation serve as dominant mediating mechanisms.
RQ3: What external factors influence the resilience-achievement relationship?	Family support, peer relationships, school climate, and socio-economic status.
RQ4: How does resilience support non-academic skill development?	Promotes leadership, social competence, and emotional control through extracurricular engagement.
RQ5: What is the role of social support and school climate in strengthening this link?	Positive teacher-student relationships and inclusive school environments enhance the protective effects of resilience.

Ethics and Limitations

This study employed a Systematic Literature Review (SLR) method, relying exclusively on English-language articles indexed in the Scopus database. While this approach ensured academic quality and consistency, it also imposed methodological boundaries. Language restrictions may have excluded relevant research from non-English-speaking contexts, and the focus on indexed literature may have overlooked valuable insights from grey literature and locally published studies.

Moreover, the majority of reviewed studies utilized correlational designs, which are limited in establishing direct causal relationships between resilience and student achievement. Therefore, future research should prioritize longitudinal and experimental studies to more rigorously test the effectiveness of resilience-based interventions. Cross-cultural investigations and the exploration of innovative pedagogical strategies—such as technology-enhanced learning and local wisdom integration—are also strongly recommended to expand the practical impact of this review.

Recommendations for Future Research

Based on the results of this study, several recommendations for future research can deepen the understanding of the role of self-resilience in improving learners' academic and non-academic achievement. First, further research needs to explore more detailed psychosocial mechanisms in linking self-resilience with academic and non-academic success. Although this study found that self-efficacy and emotion-based coping strategies play an important role in the relationship,

there is still a need for longitudinal studies that can observe the development of self-resilience over time and its impact on learners' academic achievement and social engagement (Ginsburg et al., 2022).

Second, future research could focus more on external factors that moderate the relationship between resilience and academic and non-academic achievement. For example, how socio-economic background, culture, and educational environment influence the development of resilience. Previous studies have shown that social support from family and school environment can act as a protective factor in improving students' resilience (Poorman et al., 2019). However, further exploration of how these factors interact in a broader context, including within different education systems in different countries, is needed.

Third, more experimental and intervention research is needed to test the effectiveness of programs designed to increase students' resilience. Programs such as UPRIGHT have been shown to improve learners' mental well-being and social skills, but there is still a need to evaluate a range of other intervention models that can be applied across different levels of education (Minahan & Ablon, 2022). Future studies could compare the effectiveness of different approaches, such as mindfulness-based approaches, social-emotional learning, as well as psychosocial guidance in improving students' resilience.

Fourth, further research could examine individual differences in the influence of resilience on academic and non-academic achievement. Factors such as gender, age and education level may influence how resilience is developed and applied in the face of academic and social challenges. Studies could also explore how cultural differences affect the way learners build and use their resilience in diverse educational environments (Harb et al., 2023).

Finally, with the proliferation of technology in education, future research could examine how the use of technology, such as online learning, social media, and artificial intelligence, can be utilized to support the development of students' resilience. Studies could explore how technology can be used as a tool to deliver resilience-based interventions, including learning platforms designed to improve students' emotion regulation and coping strategies in the face of academic and social pressures.

6. Conclusion

Based on the results of the literature review, it can be concluded that this study highlights the important role of self-resilience in improving the academic and non-academic achievement of learners at various levels of education. The research findings suggest that self-resilience serves as a protective factor against academic stress, enabling learners to effectively face challenges and maintain high academic performance. In addition, resilience also contributes to the development of essential non-academic skills, such as social competence, leadership, and emotion regulation, which play an important role in learners' holistic development.

This research also emphasizes the influence of external factors, such as social support, school environment, and socio-economic background, in shaping the relationship between resilience and learner achievement. Positive teacher-student relationships, family involvement, and participation in extracurricular activities have been identified as key elements that strengthen learners' ability to cope with academic pressure and improve their overall well-being.

Furthermore, this study identified self-efficacy and adaptive coping strategies as the main mechanisms linking resilience to learner success. School-based intervention programs, such as UPRIGHT, show effectiveness in increasing learners' resilience, which in turn impacts improving their academic achievement and engagement in non-academic activities.

However, this study also has some limitations, including reliance on secondary data from systematic literature reviews, exclusion of non-English studies, as well as the predominance of correlational research designs that cannot prove direct cause-and-effect relationships. Therefore, further research with longitudinal and experimental designs is needed to confirm the impact of resilience on learner achievement in various educational contexts.

Overall, this research confirms the importance of integrating resilience-enhancing strategies into education policy and practice. By implementing social-emotional learning, mindfulness-based interventions, and creating supportive learning environments, educators and policymakers can help learners develop the skills necessary to face challenges in their academic and personal lives. Future research should explore technological advances, cultural variations, and innovative pedagogical approaches to increase learners' resilience and ensure their long-term success.

References

- Abdillah, H. Z., & Marleni. (2023). Cultivating Resilience: A Key to Managing Academic Stress among Health Students in Online Learning. *Psyche 165 Journal*. <https://doi.org/10.35134/jpsy165.v16i4.294>
- Abukari, Z. (2018). “Not Giving Up”: Ghanaian Students’ Perspectives on Resilience, Risk, and Academic Achievement. *SAGE Open*, 8(4). <https://doi.org/10.1177/2158244018820378>
- Amsrud, K. E., Lyberg, A., & Severinsson, E. (2019). Development of resilience in nursing students: A systematic qualitative review and thematic synthesis. In *Nurse Education in Practice* (Vol. 41). <https://doi.org/10.1016/j.nepr.2019.102621>
- Aparicio, M. (2022). Resilience: A “Psychosocial” Competency and Its Role in the Pathways of University Students in Intercultural Research (Pre and Post-COVID19). *European Journal of Interdisciplinary Studies*, 8(1). <https://doi.org/10.26417/767qyh98q>
- Arvanitis, C. (2024). Systematic literature review in five steps. *The Journal of the Acoustical Society of America*, 155(3_Supplement), A103–A103. <https://doi.org/10.1121/10.0026958>
- Au, A., Caltabiano, N. J., & Vaksman, O. (2023). The impact of sense of belonging, resilience, time management skills and academic performance on psychological well-being among university students. *Cogent Education*, 10(1). <https://doi.org/10.1080/2331186X.2023.2215594>
- Ayala, J. C., & Manzano, G. (2018). Academic performance of first-year university students: the influence of resilience and engagement. *Higher Education Research and Development*, 37(7). <https://doi.org/10.1080/07294360.2018.1502258>
- Babic, R., Babic, M., Rastovi, P., Curlin, M., Simic, J., Mandi, K., & Pavlovi, K. (2020). Resilience in health and illness. *Psychiatria Danubina*, 32, Suppl. 2, 226-232 .
- Backmann, J., Weiss, M., Schippers, M. C., & Hoegl, M. (2019). Personality factors, student resiliency, and the moderating role of achievement values in study progress. *Learning and Individual Differences*, 72. <https://doi.org/10.1016/j.lindif.2019.04.004>
- Bandura, A., Freeman, W. H., & Lightsey, R. (1999). Self-Efficacy: The Exercise of Control. *Journal of Cognitive Psychotherapy*, 13(2). <https://doi.org/10.1891/0889-8391.13.2.158>
- Bozkurt, A. (2022). *Resilience, Adaptability, and Sustainability of Higher Education: A Systematic Mapping Study on the Impact of the Coronavirus (COVID-19) Pandemic and the Transition to the New Normal*. 9(1), 1–16.
- Bukhari, S. A., Khan, M. S., & Bukhary, S. Z. (2023). A Predictive Relationship between Academic Resilience and Stress of University Students. *FWU Journal of Social Sciences*, 17(4). <https://doi.org/10.51709/19951272/Winter2023/11>
- Carmeli, A., & Hartmann, S. (2024). Learning Agility Orientation, Ambidextrous Learning, and Resilience. *IEEE Transactions on Engineering Management*, 71. <https://doi.org/10.1109/TEM.2024.3357531>

Dantzer, R., Cohen, S., Russo, S. J., & Dinan, T. G. (2018). Resilience and immunity. In *Brain, Behavior, and Immunity* (Vol. 74). <https://doi.org/10.1016/j.bbi.2018.08.010>

de la Fuente, J., Fernández-Cabezas, M., Cambil, M., Vera, M. M., González-Torres, M. C., & Artuch-Garde, R. (2017). Linear relationship between resilience, learning approaches, and coping strategies to predict achievement in undergraduate students. *Frontiers in Psychology*, 8(JUN). <https://doi.org/10.3389/fpsyg.2017.01039>

Fang, G., Chan, P. W. K., & Kalogeropoulos, P. (2020). Social support and academic achievement of Chinese low-income children: A mediation effect of academic resilience. *International Journal of Psychological Research*, 13(1), 19-28. <https://doi.org/10.21500/20112084.4480>

Findyartini, A., Greviana, N., Putera, A. M., Sutanto, R. L., Saki, V. Y., & Felaza, E. (2021). The relationships between resilience and student personal factors in an undergraduate medical program. *BMC Medical Education*, 21(1). <https://doi.org/10.1186/s12909-021-02547-5>

Fullerton, D. J., Zhang, L. M., & Kleitman, S. (2021). An integrative process model of resilience in an academic context: Resilience resources, coping strategies, and positive adaptation. *PLoS ONE*, 16(2 February). <https://doi.org/10.1371/journal.pone.0246000>

García-Martínez, I., Augusto-Landa, J. M., Quijano-López, R., & León, S. P. (2022). Self-Concept as a Mediator of the Relation Between University Students' Resilience and Academic Achievement. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.747168>

Goleman, Danel. (1995). *Emotional intelligence: Why it can matter more than IQ*. New York, Bantam Books.

Guthrie, K. L., Chunoo, V. S., & Teig, T. (2021). Leadership Education: Teaching Resilience for Future Success. *Journal of Higher Education Policy and Leadership Studies*, 2(3). <https://doi.org/10.52547/johepal.2.3.58>

Haskett, L. A., Doster, D. L., Athanasiadis, D. I., Anton, N. E., Huffman, E. K., Wallach, P., Walvoord, E., Stefanidis, D., Mitchell, S. A., & Lee, N. K. (2022). Resilience matters: Student perceptions of the impact of COVID-19 on medical education. *American Journal of Surgery*, 224(1), 358–362. <https://doi.org/10.1016/j.amjsurg.2022.01.022>

Ho, F. K. W., Louie, L. H. T., Chow, C. B., Wong, W. H. S., & Ip, P. (2015). Physical activity improves mental health through resilience in Hong Kong Chinese adolescents. *BMC Pediatrics*, 15(1). <https://doi.org/10.1186/s12887-015-0365-0>

Hoferichter, F., Kulakow, S., & Raufelder, D. (2022). How teacher and classmate support relate to students' stress and academic achievement. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.992497>

Iuga, I. A., & David, O. A. (2024). Emotion Regulation and Academic Burnout Among Youth: a Quantitative Meta-analysis. *Educational Psychology Review*, 36(4), 106. <https://doi.org/10.1007/s10648-024-09930-w>

- Johnson, J., Panagioti, M., Bass, J., Ramsey, L., & Harrison, R. (2017). Resilience to emotional distress in response to failure, error or mistakes: A systematic review. In *Clinical Psychology Review* (Vol. 52). <https://doi.org/10.1016/j.cpr.2016.11.007>
- Karabıyık, C. (2020). Interaction Between Academic Resilience and Academic Achievement of Teacher Trainees. *International Online Journal of Education and Teaching*, 7.
- Kardong-Edgren, S. (2013). Bandura's self-efficacy theory... something is missing. In *Clinical Simulation in Nursing* (Vol. 9, Issue 9). <https://doi.org/10.1016/j.ecns.2013.07.001>
- KAYUN, R. H., Limbu, R., & Wijaya, R. P. Ch. (2023). Relationship Between Academic Resilience with Academic Stress in Online Learning Among College Students in Kupang City. *Journal of Health and Behavioral Science*, 5(1). <https://doi.org/10.35508/jhbs.v5i1.8744>
- Konaszewski, K., Niesiobędzka, M., & Surzykiewicz, J. (2021). Resilience and mental health among juveniles: role of strategies for coping with stress. *Health and Quality of Life Outcomes*, 19(1). <https://doi.org/10.1186/s12955-021-01701-3>
- Kotera, Y., Aledeh, M., Barnes, K., Rushforth, A., Adam, H., & Riswani, R. (2022). Academic Motivation of Indonesian University Students: Relationship with Self-Compassion and Resilience. *Healthcare (Switzerland)*, 10(10). <https://doi.org/10.3390/healthcare10102092>
- Las Hayas, C., Izco-Basurko, I., Fullaondo, A., Gabrielli, S., Zwiefka, A., Hjemdal, O., Gudmundsdottir, D. G., Knoop, H. H., Olafsdottir, A. S., Donisi, V., Carbone, S., Rizzi, S., Mazur, I., Krolicka-Deregowska, A., Morote, R., Anyan, F., Ledertoug, M. M., Tange, N., Kaldalons, I., ... Arnfjord, U. B. (2019). UPRIGHT, a resilience-based intervention to promote mental well-being in schools: Study rationale and methodology for a European randomized controlled trial. *BMC Public Health*, 19(1). <https://doi.org/10.1186/s12889-019-7759-0>
- Lester, L. , W. S. , & C. D. (2023). The protective role of school belonging in adolescent resilience and academic engagement. *Learning and Instruction*.
- Li, W. (2022). Resilience Among Language Learners: The Roles of Support, Self-Efficacy, and Buoyancy. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.854522>
- Li, Z. S., & Hasson, F. (2020). Resilience, stress, and psychological well-being in nursing students: A systematic review. In *Nurse Education Today*, 90, 104440. <https://doi.org/10.1016/j.nedt.2020.104440>
- Liu, H., & Boyatzis, R. E. (2021). Focusing on Resilience and Renewal From Stress: The Role of Emotional and Social Intelligence Competencies. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.685829>
- Liu, H., & Han, X. (2022). Exploring Senior High School Students' English Academic Resilience in the Chinese Context. *Chinese Journal of Applied Linguistics*, 45(1). <https://doi.org/10.1515/CJAL-2022-0105>

Llistosella, M., Torné, C., García-Ortiz, M., López-Hita, G., Ortiz, R., Herández-Montero, L., Guallart, E., Uña-Solbas, E., & Miranda-Mendizabal, A. (2023). Fostering Resilience in Adolescents at Risk: Study protocol for a cluster randomized controlled trial within the resilience school-based intervention. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1066874>

López-Aguilar, D., Álvarez-Pérez, P. R., González-Ramos, J. A., & Garcés-Delgado, Y. (2023). The development of resilient behaviours in the fight against university academic dropout. *Educacion XX1*, 26(2). <https://doi.org/10.5944/educxx1.35891>

Manzano-Sánchez, D., Gómez-Marmol, A., Jiménez-Parra, J. F., Bohórquez, I. G., & Valero-Valenzuela, A. (2021). Motivational profiles and their relationship with responsibility, school social climate and resilience in high school students. *PLoS ONE*, 16(8 August). <https://doi.org/10.1371/journal.pone.0256293>

Masten, A. S., & Cicchetti, D. (2016). Resilience in Development: Progress and Transformation. In *Developmental Psychopathology*. <https://doi.org/10.1002/9781119125556.devpsy406>

McDermid, F., Peters, K., Daly, J., & Jackson, D. (2016). Developing resilience: Stories from novice nurse academics. *Nurse Education Today*, 38, 29–35. <https://doi.org/10.1016/j.nedt.2016.01.002>

Monika, & Shikha. (2018). A Study of Academic Resilience among Students of Secondary and Higher Secondary Schools. *International Journal of Science and Research*, 9(5).

Nimisha, B., & Deepak, K. (2018). Predictors of Academic Resilience among Students: A Meta Analysis. *I-Manager's Journal on Educational Psychology*, 11(4), 37. <https://doi.org/10.26634/jpsy.11.4.14220>

Oshri, A., Topple, T. A., & Carlson, M. W. (2017). Positive Youth Development and Resilience: Growth Patterns of Social Skills Among Youth Investigated for Maltreatment. *Child Development*, 88(4). <https://doi.org/10.1111/cdev.12865>

Ozer, E. M. (2022). Albert Bandura (1925–2021). *American Psychologist*, 77(3), 483–484. <https://doi.org/10.1037/amp0000981>

Palma-García, M. de las O., Gómez Jacinto, L., & Hombrados-Mendieta, I. (2018). Reciprocal Relationship Between Resilience and Professional Skills: A Longitudinal Study With Social Work Students. *Journal of Social Work Education*, 54(3). <https://doi.org/10.1080/10437797.2018.1474148>

Pennington, S., Richards, K. A. R., Trad, A. M., Gaudreault, K. L., & Graber, K. C. (2021). Developing Resilience and Enhancing Appraisals of Mattering: A Conceptual Framework for Elementary Level, Non-core Subject Teachers. *Quest*, 73(3). <https://doi.org/10.1080/00336297.2021.1915350>

Pontes, A., Coelho, V., Peixoto, C., Meira, L., & Azevedo, H. (2024). Academic Stress and Anxiety among Portuguese Students: The Role of Perceived Social Support and Self-Management. *Education Sciences*, 14(2). <https://doi.org/10.3390/educsci14020119>

Priyadarsini, I. S., & Ravindran, V. (2023). Systematic Literature Review. *Indian Journal of Continuing Nursing Education*, 24(2), 114–118. https://doi.org/10.4103/ijcn.ijcn_1_24

Ramirez-Granizo, I. A., Sánchez-Zafra, M., Zurita-Ortega, F., Puertas-Molero, P., González-Valero, G., & Ubago-Jiménez, J. L. (2020). Multidimensional self-concept depending on levels of resilience and the motivational climate directed towards sport in schoolchildren. *International Journal of Environmental Research and Public Health*, 17(2). <https://doi.org/10.3390/ijerph17020534>

Ross, P. M., Scanes, E., & Locke, W. (2024). Stress adaptation and resilience of academics in higher education. In *Asia Pacific Education Review* (Vol. 25, Issue 4). <https://doi.org/10.1007/s12564-023-09829-1>

Roulston, A., Montgomery, L., Campbell, A., & Davidson, G. (2018). Exploring the impact of mindfulness on mental wellbeing, stress and resilience of undergraduate social work students. *Social Work Education*, 37(2), 157–172. <https://doi.org/10.1080/02615479.2017.1388776>

Rudd, G., Meissel, K., & Meyer, F. (2021). Measuring academic resilience in quantitative research: A systematic review of the literature. In *Educational Research Review* (Vol. 34). <https://doi.org/10.1016/j.edurev.2021.100402>

Sandoval-Hernández, A., & Białowolski, P. (2016). Factors and conditions promoting academic resilience: a TIMSS-based analysis of five Asian education systems. *Asia Pacific Education Review*, 17(3), 511–520. <https://doi.org/10.1007/s12564-016-9447-4>

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, 60. <https://doi.org/10.1016/j.cedpsych.2019.101832>

Shereshkova, E. A. (2023). Resilient, social and psychological adaptation of students to the educational environment of the university. *Perspektivy Nauki i Obrazovania*, 65(5). <https://doi.org/10.32744/pse.2023.5.32>

Shipton, E., & Bermingham, R. (2018). *Developing Non-Academic Skills*. <https://doi.org/10.58248/PN583>

Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2019). How to Do a Systematic Review: A Best Practice Guide for Conducting and Reporting Narrative Reviews, Meta-Analyses, and Meta-Syntheses. In *Annual Review of Psychology* (Vol. 70). <https://doi.org/10.1146/annurev-psych-010418-102803>

Siddiqui, N., & Gorard, S. (2024). A survey of children's learning and non-cognitive attitudes in England and Pakistan. *Educational Review*, 1–13. <https://doi.org/10.1080/00131911.2024.2331121>

Stepanovic, S. (2024). Resilience to Physical and Emotional Stress. *Human Research in Rehabilitation*, 14(1), 143–148. <https://doi.org/10.21554/hrr.042414>

Tempski, P., Santos, I. S., Mayer, F. B., Enns, S. C., Perotta, B., Paro, H. B. M. S., Gannam, S., Peleias, M., Garcia, V. L., Baldassin, S., Guimaraes, K. B., Silva, N. R., Navarro Da Cruz, E. M. T., Tofoli, L. F., Silveira, P. S. P., & Martins, M. A. (2015). Relationship among medical student resilience, educational environment and quality of life. *PLoS ONE*, 10(6). <https://doi.org/10.1371/journal.pone.0131535>

Thorsen, C., Yang Hansen, K., & Johansson, S. (2021). The mechanisms of interest and perseverance in predicting achievement among academically resilient and non-resilient students: Evidence from Swedish longitudinal data. *British Journal of Educational Psychology*, 91(4). <https://doi.org/10.1111/bjep.12431>

Trigueros, R., Aguilar-Parra, J. M., Cangas, A. J., Bermejo, R., Ferrandiz, C., & López-Liria, R. (2019). Influence of emotional intelligence, motivation and resilience on academic performance and the adoption of healthy lifestyle habits among adolescents. *International Journal of Environmental Research and Public Health*, 16(16). <https://doi.org/10.3390/ijerph16162810>

Trigueros, R., Magaz-González, A. M., García-Tascón, M., Alias, A., & Aguilar-Parra, J. M. (2020). Validation and adaptation of the academic-resilience scale in the Spanish context. *International Journal of Environmental Research and Public Health*, 17(11). <https://doi.org/10.3390/ijerph17113779>

Ungar, M. (2021). Multisystemic resilience: Adaptation and transformation in contexts of change. In *Multisystemic Resilience: Adaptation and Transformation in Contexts of Change*. <https://doi.org/10.1093/oso/9780190095888.001.0001>

Utomo, P., Pahlevi, R., & Prayogi, F. (2022). The Effect of Social Skills and Social Support on Student Resilience in Schools. *Altruistik : Jurnal Konseling Dan Psikologi Pendidikan*, 2(1). <https://doi.org/10.24114/altruistik.v2i1.34749>

Vidal-Meliá, L., Estrada, M., Monferrer, D., & Rodríguez-Sánchez, A. (2022). Does Mindfulness Influence Academic Performance? The Role of Resilience in Education for Sustainable Development. *Sustainability*, 14(7). <https://doi.org/10.3390/su14074251>

Wadi, M. M., Nordin, N. I., Roslan, N. S., Celina, T., & Yusoff, M. S. B. (2020). Reframing Resilience Concept: Insights from a Meta-synthesis of 21 Resilience scales. In *Education in Medicine Journal* (Vol. 12, Issue 2). <https://doi.org/10.21315/eimj2020.12.2.2>

Wang, F., King, R. B., Fu, L., Chai, C. S., & Leung, S. O. (2024). Overcoming adversity: exploring the key predictors of academic resilience in science. *International Journal of Science Education*, 46(4), 313–337. <https://doi.org/10.1080/09500693.2023.2231117>

Wang, Y., Xin, Y., & Chen, L. (2024). Navigating the emotional landscape: Insights into resilience, engagement, and burnout among Chinese High School English as a Foreign Language Learners. *Learning and Motivation*, 86. <https://doi.org/10.1016/j.lmot.2024.101978>

Xu, Y., Zhang, W., Wang, J., Guo, Z., & Ma, W. (2024). The effects of clinical learning environment and career adaptability on resilience: A mediating analysis based on a survey of nursing interns. *Journal of Advanced Nursing*. <https://doi.org/10.1111/jan.16144>

Yang, S., & Wang, W. (2022). The Role of Academic Resilience, Motivational Intensity and Their Relationship in EFL Learners' Academic Achievement. *Frontiers in Psychology, 12*. <https://doi.org/10.3389/fpsyg.2021.823537>

Yu, M., Wen, J., Smith, S. M., & Stokes, P. (2022). Building-up resilience and being effective leaders in the workplace: a systematic review and synthesis model. *Leadership and Organization Development Journal, 43*(7). <https://doi.org/10.1108/LODJ-09-2021-0437>

An Analysis of the Learning Experience and Impact of a Chatbot Tutor in AI Education for a Liberal Course

ABSTRACT

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This study aimed to explore the learning experience with and evaluate the effectiveness of a chatbot tutor for artificial intelligence education in a basic liberal art course for college students. Two experimental studies were conducted. The first study explored the impact of interacting with a chatbot tutor on learning fundamental AI concepts with a sample of 38 students. The second study compared the effects of video lectures on a learning management system (LMS) with the use of the chatbot tutor, involving 118 students from four different classes. The results of the first study confirmed the applicability of AI education through chatbot tutor, indicating that the chatbot was effective in supporting students' learning of AI concepts. In the second study, both AI education through video lectures on the LMS and guided by the chatbot tutor resulted in improved academic achievement. Notably, the group that received AI education using the chatbot tutor demonstrated slightly higher academic achievement compared to the video lecture group on the LMS. These findings provide practical implications for educators and institutions involved in AI education.

Keywords: The chatbot tutor, AI education, Quasi-experimental design, self-directed learning readiness, Applicability of the chatbot tutor

1. Introduction

AI (Artificial intelligence) is utilized in a number of fields including education, computer science, medical diagnostics, business, industry, media, and communication. AI technology is expected to change the structure of employment and lifestyle as a key technology for the transition to the digital age. In response, countries around the world have realized the need for AI education, and announced AI strategies and education policies. The characteristics of AI education strategies announced in various countries are based on the premise that AI education is not just for a handful or subset of people only, but a basic competency that everyone should have. Therefore, even at universities, AI should be provided at the level of undergraduate education, so that all students receive instruction on AI regardless of major. (Szczepański, 2019; Ernst et al., 2019).

From this perspective, it is not only computer science students but also general university students who are studying basic AI education within the scope of liberal arts. There is a growing interest in AI education curriculum and methodologies that facilitate the understanding of AI for non-computer science students (Burgsteiner, Kandlhofer, & Steinbauer, 2016; Sensetime, 2018). One of the teaching strategies is to apply AI tools into an AI understanding and an educational exercise. For instance, Srikant and Aggarwal (2017) suggested that students between the ages of 10 and 15 develop friend prediction programs using Microsoft Excel, which would allow them to experience how to successfully solve related problems using data science. Chung and Shamir (2020) conducted an activity to recognize video, image, sound, and text. Some of previous studies concluded that using these tools would help students to understand AI technology. Zeng (2019) suggested that such AI education or studying AI through the use of AI tools is helpful for the competency of AI Thinking, which can help improve problem-solving skills with the use of AI. Therefore, better understanding of AI through AI classes with the use of AI tools might be helpful to create diverse and innovative things. With this in mind, this study aimed to explore the impact of using chatbot tutor as an AI tool and as a new teaching method, on the effectiveness of AI education.

Chatbot is an intelligent application that converse with people through voice or text in national language (Essel et al., 2022; Vázquez Cano, Mengual Andrés & López Meneses, 2021). Recently, the usage of the chatbot is rapidly increasing in various fields (Nguyen et al., 2022). Education is one of the fields where chatbots are increasingly employed as well (Kumar, 2021). Chatbots used in education can be broadly divided into two categories; tutors and learning support tools (Holmes, Bialik, & Fadel, 2019). Chatbots as tutors assist teachers, for example, New Zealand's AI math teacher, Amy. Amy was introduced to 10 high schools in New Zealand. It informs students where they lack mathematics knowledge in the process of learning mathematics and provides customized feedback on errors in the student's problem-solving process. As a learning support tool, chatbots play an auxiliary role in education, providing answers to questions (Lin, & Chang, 2020) and materials quickly, when learners need them (Fryer & Carpenter, 2006). In addition, through analysis of the conversation between the chatbot and the learner, it can inform the instructor of the student's learning status, helping to enable customized learning support (Pérez, Daradoumis, & Puig, 2020).

It can also help student's self-regulated learning (SRL) (Guan et al. 2024). Indeed, Guan et al.(2024) proved that educational chatbot could support productive SRL processes by analyzing a systematic review of the previous literature. However, it also found that some of chatbot use did not show statistically significant effects on students who studied computer science (Oliveira

et al., 2021). Looking at the results of the meta-analysis, it is difficult to find cases where AI chatbots were applied to teach AI in liberal arts courses.

As with online learning, one of the advantages of using chatbots in education is that learners can receive education services anytime, anywhere, through smart devices, without time and space limitations. In this respect, the effectiveness of traditional online learning such as video lecture has shown similar outcomes to education provided by chatbots (Evans, 2014; Nisar, 2002; Knowles, 1975; Yu, 2021). However, there is ongoing discourse regarding the various drawbacks of asynchronous video-based learning, which has been mainly adopted in online learning of higher education contexts, especially, during COVID pandemic periods.

During the COVID-19 in higher education, asynchronous video-based lectures were uploaded to Learning Management Systems (LMS) for students to engage in self-directed learning. However, due to a lack of social presence in interactions with peers or instructors, learners experienced negative emotions such as boredom, frustration, confusion (Lee et al., 2021). Social Presence Theory (SPT) emphasizes that the isolation of asynchronous video lectures creates a vacuum of social presence, which might be critical for maintaining learning motivation and engagement (Short, Williams, & Christie, 1976; Lin & Chang, 2020). In addition, it has limited support for SDL since LMS provides the same content and sequence regardless of learner differences. The limitations of the LMS would be taken into consideration with Cognitive Load Theory (CLT), a one-size-fits-all video lecture can impose a high extraneous cognitive load on learners, forcing them to process information that may be redundant (if they already know it). It means hindering effective learning (Sweller, 1994).

In this point, chatbot might play a positive role in promoting social presence and helping students' SRL during online learning, based on the results of the previous literatures related to the use of chatbot in education. For instance, it was revealed that chatbots have educational benefits such as motivating learners by providing a sense of social presence through interaction (Lin & Chang, 2020). In addition, Okonkwo & Ade-Ibijola (2020) suggests that learners find it more convenient to engage with learning contents recommended by a chatbot, as compared with self-directly searching for relevant learning materials such as videos or resources on LMS or webpages. Furthermore, unlike the traditional video-based learning on LMS, chatbots can play a role in identifying students' individual knowledge gaps and personalizing students' pace of learning.

Finally, the chatbot tutor provides a learning environment to practice at any time with autonomy based on its suggestion. It is also possible to continuously provide personalized feedback and customized responses related to the individual student.

In summary, a chatbot tutor can provide two key affordances: (1) it can optimize cognitive load by providing personalized scaffolding (e.g., pre-quizzes to diagnose knowledge, followed by targeted content), and (2) its conversational interface can simulate interaction, thereby increasing social presence. (3) it can motivate learner by providing self-determination (autonomy, competence, and relatedness).

Against this backdrop, this study aims to examine the impact of using a chatbot tutor in AI education during a basic liberal arts course for college students. Despite the growing interest in AI education for non-computer science students, limited empirical research has evaluated the instructional effectiveness of chatbot tutors within liberal arts contexts. To address this gap, this study systematically examines how a chatbot tutor influences both academic achievement

and self-directed learning readiness in liberal arts courses for students at the undergraduate level. In addition, the study aims to compare the effects of personalized video lectures delivered through the chatbot with the traditional approach of video lectures provided on the LMS.

In sum, this study attempted to answer the following research questions:

RQ1: To what extent does a chatbot tutor, implementing personalized scaffolding affect students' academic achievement in an introductory AI course compared to traditional LMS-based instruction?

RQ2: What is the comparative effect of the chatbot tutor (versus an LMS) on the development of students' self-directed learning readiness (SDLR)?

RQ3: What are the learning behaviors (e.g., interaction patterns) and perceived experiences (e.g., satisfaction, perceived autonomy) of students engaging with the chatbot tutor?

2. Theoretical Background

Self-directed Learning (SDL) and its limitation of online learning

Self-Directed Learning (SDL) is a process where individuals take the initiative in diagnosing their learning needs, formulating goals, identifying resources, and evaluating outcomes (Knowles, 1975). In typical online learning based on LMS, SDL is a crucial factor for success. However, the passive, non-interactive nature of traditional video lectures on LMS provides one-size-fits-all support, often leaving students feeling isolated and unmotivated (Lee et al., 2021; Marchand & Gutierrez, 2012).

In this respect, based on a previous research, we also tried to provide more interactive way of a learning method and customized learning paths as compared to the traditional approach of video lectures provided on LMS. One of the reasons is that the COVID-19 period has brought about discussions on issues such as difficulties in self-directed learning, lack of student engagement, and emotional challenges due to uniform learning method of the traditional video lectures (Marchand & Gutierrez, 2012).

A Theoretical Framework for the educational chatbot

An AI chatbot is an AI-based conversational software program that answers users' questions or provides relevant information through text or voice. In the early days, chatbots were mainly used in the service field, but with the recent development of machine learning technology, flexible conversations with chatbots are possible, making them useful in the education field as well (Fryer & Carpenter, 2006). In addition, learners can ask questions and get answers anytime, anywhere (Sandu & Gide, 2019), and have access to relevant learning materials (Verleger & Pembridge, 2018). By recording the conversation between the chatbot and the learner, and providing it to the teacher, the teacher can grasp which parts the learner finds difficult and what topics the learner is interested in, and furthermore, the learners can control the learning process and pace, themselves (Hamzah et al., 2021).

In the field of education, chatbots can be broadly categorized into two types: chatbot tutors and learning support tools (Holmes, Bialik, & Fadel, 2019). The chatbot tutors assist educators. For

instance, a chatbot identifies areas where students lack mathematical understanding during the learning process and provides personalized feedback on their problem-solving approaches (Verleger & Pembridge, 2018). As learning support tools, chatbots serve as educational aids by promptly delivering answers to queries (Lin & Chang, 2020) and learning materials when learners require them (Fryer & Carpenter, 2006). Furthermore, by analyzing the interactions between chatbots and learners, instructors can gain insights into the students' learning progress, facilitating tailored learning support (Pérez, Daradoumis, & Puig, 2020).

Chatbots are also attractive learning tools in that they allow learners to ask questions in learning problem situations where they do not want to show their fellow learners what they don't understand, differently from the face-to-face education contexts. Chang, Kuo, & Hwang (2022) discussed that it was possible to acquire knowledge and increase the interactivity of learning by repeatedly solving quizzes through chatbots. Essel et al. (2022) also proved that using a chatbot makes learning interesting and improves class adaptability. Chang et al. (2022) and Essel et al. (2022) also proved that chatbot tutors helped improve students' academic achievement. Furthermore, Hamzah et al. (2021) conducted experiments by allowing chatbots to be used as self-learning assistants and found that chatbots are useful in bridging the skills and education gap. Previous studies using chatbots for education showed that chatbots were used in various ways. What these preceding studies have in common is that pedagogical use of AI chatbots could bring about a shift in educational theory, where learning traditionally takes place in a learning situation designed by a teacher, to one in which the learning experience is determined by the learner (Al-Abdullatif, Al-Dokhny, & Drwish, 2023). This change has many positive effects.

To understand the differential impact and positive effects of the chatbot tutor, we adopt a theoretical framework, integrating Cognitive Load Theory (CLT), Social Presence Theory (SPT), and Self-Determination Theory (SDT).

a. Cognitive Load Theory (CLT) and Personalized Scaffolding

CLT suggests that instructional design should consider three types of load: intrinsic (task complexity), extraneous (poor instruction), and germane (schema formation) (Sweller, 1994). A traditional video lecture on LMS imposes the same load on all students, creating a high extraneous load for those who already know the content (redundancy) or for those who are lost (lack of scaffolding). In this study, the chatbot tutor can support this cognitive load. By diagnosing student's pre-knowledge through the pre-quiz, the learner can skip the video, effectively removing the extraneous load. If they answer incorrectly, the chatbot tutor recommends the video lecture as necessary scaffolding, directing the learner's cognitive resources toward germane load (i.e., actual learning).

b. Social Presence Theory (SPT) and the Conversational Interface

One of the main characteristics of the chatbot tutor is conversational interface. Its interaction style, characterized by turn-taking, greetings, and encouragement, provides a sense of presence. SPT defines the perceived social presence in mediated communication (Short et al., 1976). Previous studies proved that a high degree of social presence is linked to increased motivation, engagement, and satisfaction (Lin & Chang, 2020). One of the weaknesses of asynchronous video lecture on LMS is the lack of social presence, leading to feelings of isolation and decreasing maintained motivation (Lee et al., 2021).

Indeed, learning can be motivated by providing a sense of social presence through interaction. Lin & Chang (2020) have stated that because chatbots talk like humans, learners get the feeling that the other person exists, and that the other person's presence alone helps motivate learning. In addition, interaction occurs through conversation with the chatbot, which has a positive effect on academic achievement, satisfaction, and learning interest (Kim & Lee, 2019).

c. Self-Determination Theory (SDT) and promoting learner's motivation

SDT provides a systematic theory of human motivation (Ryan & Deci, 2000), which suggests that intrinsic motivation increases when three basic psychological needs (autonomy, competence, and relatedness) are met. In SDT, autonomy means that the need to feel a sense of choice and control over learner's actions, and competence means that the need to feel effective and master challenges. Finally, relatedness is about the need to feel connected to others.

In this perspective, chatbot tutor might provide three aspects: autonomy, competence, and relatedness. To explain, chatbot tutor provides an opportunity to practice at any time with its suggestions. Chatbots can send and receive conversations whenever learners want, through a smart device (Fryer & Carpenter, 2006). It is also possible to continuously provide personalized feedback. Chatbots can continuously answer questions from learners without tiring (Fryer & Carpenter, 2006) and provide different answers appropriate to the question (Chen, Vicki, & Sutrisno, 2020). It can influence learner's motivation and satisfaction.

Therefore, we conceptualize the chatbot as a learning environment that supports these fundamental theoretical perspectives, leading to more self-determined, motivated, and more successful learning. Therefore, we seek to explore the benefits that the use of chatbot in the similar contexts offer in contrast to the conventional methods of video-based instruction. The following figure 1 shows the conceptual map of the impact of chatbot tutor which will be explored at the small-scale empirical studies in this research.

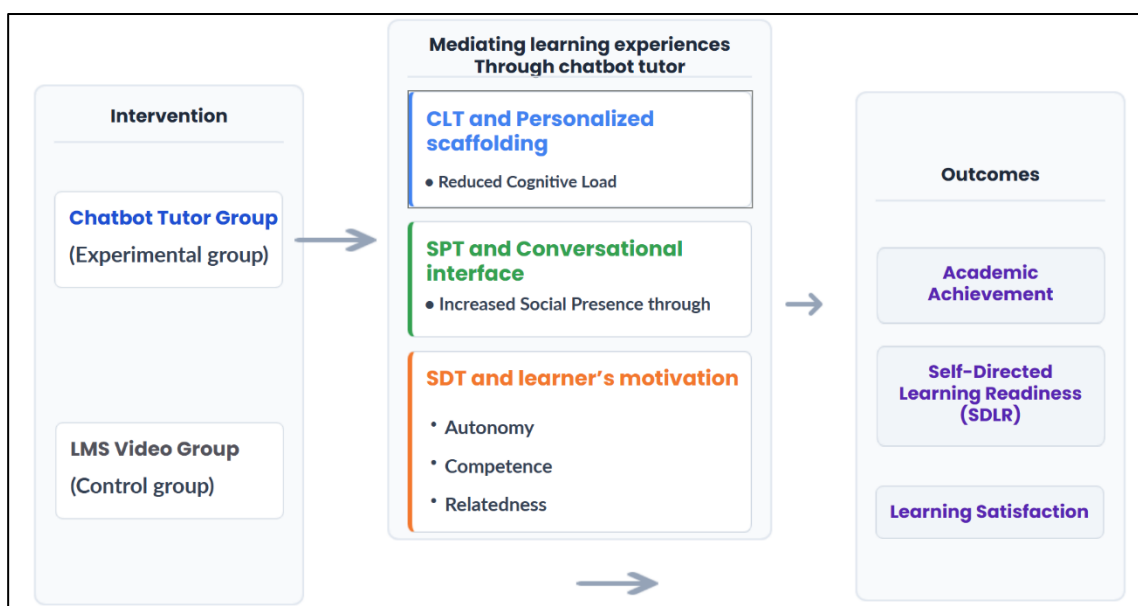


Figure 1: A conceptual map of the impact of chatbot tutor

3. The chatbot tutor for AI education

In this study, the chatbot that plays the role of a tutor who diagnoses knowledge and guides or recommends learning based on the student's knowledge level in a specific area, while simultaneously interacting with students, is defined as a chatbot tutor. In this study, the chatbot tutor, unlike generative AI-based chatbots such as Chatgpt, had limited freedom, while allowing students to do supplementary learning in a structured flow. A chatbot tutor was developed to provide college students in AI education within a fundamental liberal arts course with more customized instruction. The chatbot tutor was designed to consist of five modules on AI based on previous studies and books related to the AI curriculum. The chatbot tutor was implemented based on a scenario in which the student can learn each lesson by talking to the chatbot.

The chatbot was built on the frogue.danbee.ai platform and the chatbot tutor used in this study was designed as a 'scenario-based, rules-based' system, not based on natural language processing (NLP) or generative AI. In this study, 'personalization' does not mean NLP-based adaptive personalization, but 'structured customization' that suggests different learning paths to each learner based on the pre-quiz results and learner's learning motivation. This is because it is a structured experiment to enable students to use chatbots in a consistent way to evaluate and learn about AI, and it was developed for the purpose of comparing LMS video footage with methodological aspects rather than content aspects.

The following figure 2 shows a sample screen of the chatbot.

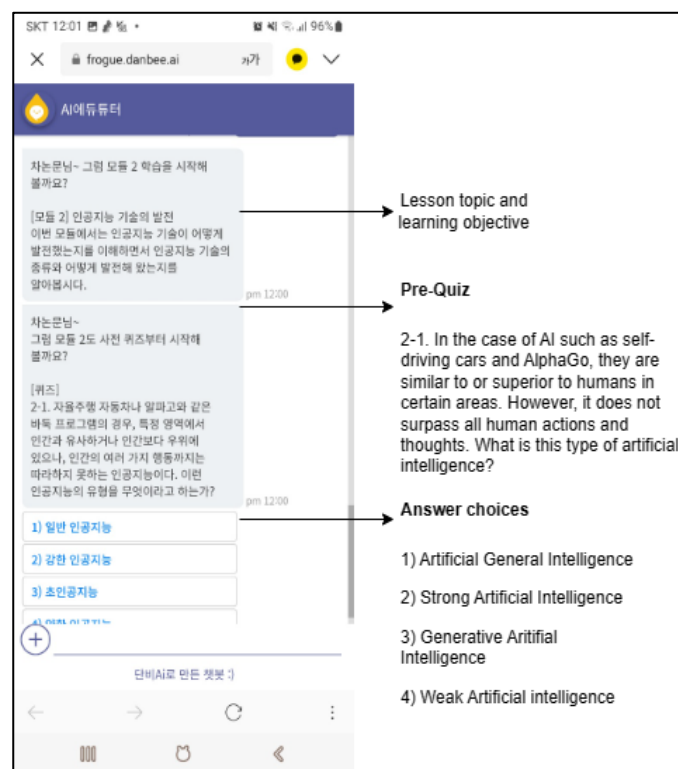


Figure 2: A Screenshot for the Chatbot Tutor

When a student starts to have a conversation with the chatbot tutor, it presents a learning objective with the lesson topic and utilizes the question-and-answer methods in order to identify whether the student has knowledge relevant to the lesson (Ng et al., 2021). First of all, a pre-quiz is given. Based on the student's performance in the pre-quiz, the chatbot tutor provides personalized instruction. If the answer is incorrect, the chatbot encourages the student to delve into the target knowledge by offering a video lecture. Whether students listen to the lecture or not, a post-quiz is administered to assess the student's learning progress and determine readiness to proceed to the next lesson. In case the student performs poorly in the post-quiz, the chatbot recommends revisiting the lecture for further comprehension. Throughout the learning process, the chatbot tutor accommodates individual learning paces, allowing students to study AI at their preferred speed.

4. Methodology

Research design and procedure

Building upon the conceptual framework and review of prior studies, this study consists of two different studies, to empirically assess the chatbot tutor's educational impact. The first study was conducted to explore the impact for college students enrolled in an AI education course as part of a fundamental liberal arts curriculum, of interacting with a real chatbot tutor. The name of the lecture in the first study is 'Computational thinking and AI' which is a compulsory liberal arts course for first-year students at one of the universities located in the capital of Korea. This lecture was included to learn the concept of the chatbot in order to understand how it works as one of the AI technologies and to participate in a chatbot implementation exercise such as for a pizza order chatbot using dialog flow. After learning the concept of the chatbot and implementing the chatbot using dialog flow, they were asked to study AI by interacting with the chatbot tutor. To measure the effects of the chatbot tutor, the achievement tests and the self-directed learning readiness (SDLR) questionnaires were taken before and after interacting with the chatbot. Then, questions on the level of satisfaction with chatbot use in AI education, was completed at the end of the course.

Table 1: Experimental procedure in the first study

Schedule	Contents	Instructional methods
9.13 (week 3)	The concept of chatbot	Offline class, Theory
9.20 (Week 4)	- A chatbot implementation practice such as a pizza order chatbot using dialog flow	Offline class, Practice
	- Pre-test/ Pre-questionnaire about SDLRS	
	AI in our daily life	Online
9.27 (Week 5)	Advances in AI technology	Online
10.4 (Week 6)	AI technology and data science	Online
10.11 (Week 7)	Principles and applications of machine learning among AI technologies	Online
10.18 (Week 8)	AI and ethics	Online
10.25 (Week 9)	Post-test/ Post-questionnaire about SDLRS, Satisfaction questionnaire	Offline

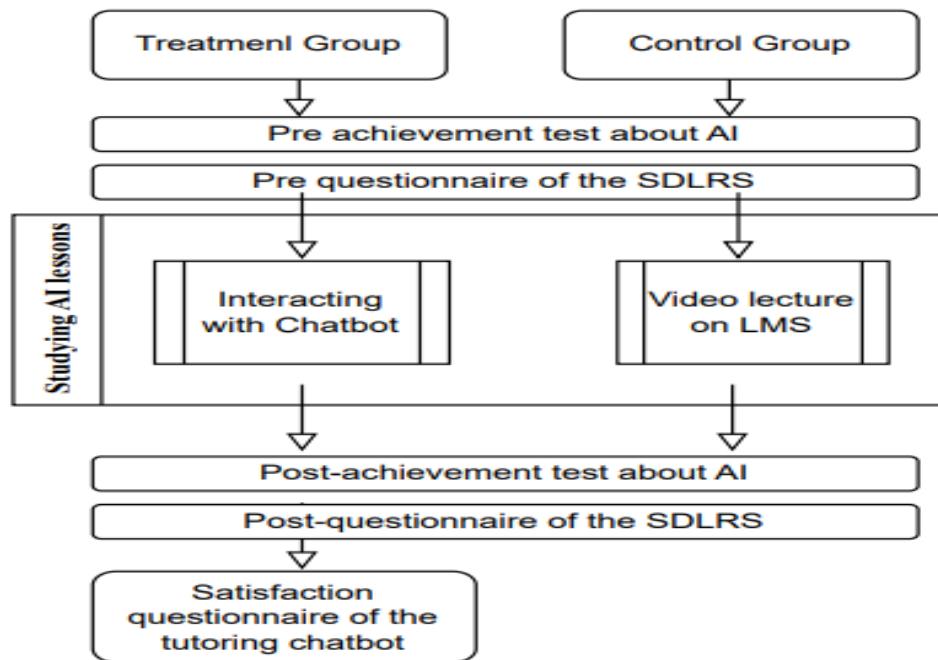


Figure 3: Experimental Procedure in the Second Study

The second study aimed to compare the effects of traditional asynchronous video lectures on a LMS with video lectures delivered through the chatbot tutor. The study was conducted in a mandatory liberal arts course for first-year students at universities located in a small and medium-sized city in Korea. Two out of four classes were assigned as the experimental group, which interacted with the chatbot tutor to study AI, while the remaining two classes served as the control group, utilizing e-learning methods for AI instruction. Both groups were asked to take a pre-test about AI and complete a pre-questionnaire about their SDLR, before studying and then they were asked to take the AI lessons wherever and whenever they wanted during the next three weeks. As described above, same video lectures were utilized in LMS and AI chatbot tutor. To ensure treatment fidelity, the chatbot tutor delivered identical instructional sequences for all learners, with adaptivity only based on quiz result. Interaction logs were collected automatically and the learner's quiz results in each module were recorded with time. The quiz results showed the number of retry attempts per quiz. These logs were analyzed descriptively to confirm that interaction patterns aligned with the intended instructional design and to observe variation in self-paced learning among learners. The interaction logs in the experimental group utilized the chatbot tutor for self-directed AI study demonstrated the consistency and fidelity of the instructional design led by chatbot tutor, whereas the log of LMS in the control group exclusively relied on the LMS for all lectures demonstrated the consistency and fidelity of the instructional design led by video lectures.

After three weeks, both groups took a post-test and completed the post-questionnaire about their self-directed learning readiness. The experimental groups only, were asked to fill in a learning satisfaction questionnaire about the chatbot to measure how they felt about their interactions. The following table 2 shows the variables integrating in this study.

Table 2: Variables and operational definition for the research tools

Variable	Operational Definition	Research Tool	Reference
Self-Directed Learning Readiness (SDLR)	A competency that enables the students to decide their own learning needs, including independence, preparation to learn and motivation	SDLRS (25 items, 5-point Likert scale)	Guglielmino (1977, 1978)
Academic Achievement	Understanding and applying AI knowledge and ethics	Pre-/post-tests on AI concepts	Ng et al., (2021)
Learning Satisfaction	Learners' satisfaction with chatbot interaction and AI learning experience	Satisfaction survey (5-point Likert scale)	

Participation selection

Thirty eight students from a university in the capital of Korea participated in the first study. The sample size was considered sufficient based on Cohen (1988)'s power analysis assuming a medium effect size ($d = 0.5$), $\alpha = 0.05$, and power = 0.80 for a paired t-test typically require a sample size of approximately 34 participants. The course in the first study is a basic liberal arts course that all first-year students must take. In particular, this curriculum was designed to cultivate basic knowledge about computational thinking and AI, for humanities students. Therefore, the 38 students had backgrounds that encompassed various majors. Table 3 and Table 4 shows the profiles of the participants in the first study.

In the second study, 57 students in two classes where a total number of students are 82 were in the treatment group who voluntarily participated and completed the study of AI by interacting with the chatbot tutor, and 61 students from 2 different classes where a total number of students are 82 were in the control group who agreed to participate and completed the study of AI through video lecture on LMS. All four classes are designed with the same curriculum as a basic liberal arts course that all first-year students must take.

Table 3: Major profile of participants in the first study

Major	N	Percent
Business	17	44.7
Education	2	5.3
Social Science	10	26.3
Art & Design	9	23.7
Total	38	100

Table 4: Gender profile of the first study

Gender	N	Percent
Male	13	34.2
Female	25	65.8
Total	38	100

Instruments

Video clips that were designed and developed by an instructor for the basic AI education, were utilized for both the AI chatbot tutor and in the e-learning. In other words, the content was the same, but the delivery and teaching methods were different.

Self-directed learning readiness (SDLR) is considered a competency that enables the students to decide their own learning needs, including independence, preparation to learn and motivation (Dogham et al., 2022). Wong et al. (2021) emphasized that SDLR is a professional as well as necessary, competency to be developed by students since it helps them to monitor and assess themselves during their learning. In this study, the self-directed learning readiness scale (SDLRS) proposed by Guglielmino (1977, 1978) with the 5-point Likert scale was adopted and adapted according to the purpose and the context of the study. The total number of items in the SDLRS is 25. An example of an SDLRS item is 'I think I am entirely responsible for my studies'. The SDLRS suggested by Guglielmino (1978) is an eight-factor structure model including (a) four items in the Self-concept as an effective learner, (b) eight items in the Openness to learning opportunities, (c) four items in the Initiative and independence in learning, (d) three items in the Accepting of responsibility for one's own learning, (e) two items in the Love of learning, (f) three items in Creativity, (g) three items in the Ability to use basic study skills and problem solving skills, and (h) two items in the Positive orientation to the future. Of these eight factors, creativity and initiative and independence factors were deleted in this study, and one item from self-concept and one item from openness were deleted.

To validate the factor structure of the Self-Directed Learning Readiness (SDLR) scale, an exploratory factor analysis (EFA) was conducted using 17 items. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy yielded a value of .784, demonstrating a meritorious level of sampling sufficiency for factor extraction, and Bartlett's test of sphericity was significant ($p < .001$), indicating that the correlation matrix was factorable. Communalities ranged from .602 to .846, with the majority exceeding the recommended threshold of .60, confirming that the items were robustly accounted for by the common factor. Although the scale was conceptually designed to represent six subdimensions of SDLR—self-concept, openness, accepting of responsibility, love of learning, problem solving skills and orientation to the future—the EFA results did not support a clear multidimensional structure. This finding suggests that SDLR may manifest as a holistic and integrated construct rather than a set of discrete dimensions among learners. Accordingly, the current study operationalized SDLR as a unidimensional construct comprising 17 items to enhance parsimony and conceptual coherence. The internal consistency of the unified 17-item SDLR scale was satisfactory, with a Cronbach's alpha of .79.

The satisfaction questionnaire focused on how students interacted with the chatbot, whether they studied the learning contents when they answered the given quiz correctly, since the chatbot tutor offered the choice on whether or not to reinforce learning, and how they felt while they were interacting with the chatbot, the effects of the chatbot, and so on. The questions about how they interacted or why they acted with the chatbot were designed as multiple-choice questions and questions related to the satisfaction of the chatbot were designed as 5-points of a Likert scale.

Analysis of the data

In the first study, a paired sample t-test analysis was conducted for the pre-post achievement tests and the pre/post SDRLS. Statistical analysis of the data were performed using SPSS 21.0. In the second study, a mixed-methods approach was adopted to compare the effects on achievement and the self-directed learning readiness competency, of the instructional methods offered by the chatbot tutor and LMS.

To complement the limitations of intact class assignment rather than random assignment, an independent samples t-test was conducted between the two groups on the pre-test scores (academic achievement, SDLR) before the experimental treatment to verify initial homogeneity. To mitigate potential pre-group differences, pre-test achievement and SDLR scores were used as covariates in subsequent ANCOVA analyses.

Pre-group equivalence tests confirmed no statistically significant baseline differences between groups. Then, one-way ANCOVA was performed to compare the differences in academic achievement and the SDRLS before and after the program with the chatbot tutor and LMS, using pre-score as the covariate and post-score as the dependent variable. To mitigate the influence of initial group differences, ANCOVA was employed using the pre-test scores as covariates. In the satisfaction questionnaire, descriptive analyses including frequencies, percentages, means, and standard deviations were performed. The effect size was analyzed based on Cohen's d (Cohen, 1988).

5. Results

Academic Achievements

In the first study, it was revealed that the chatbot tutor had a positive influence on academic achievement. As shown in the table 5, the result of the paired sample t-test proved that the achievement scores in the post-test were improved by a statistically significant amount ($t = -3.075$, $p < 0.05$). The Cohen's effect size is 0.734, which means that the effect size is quite large.

Table 5: Result of the Paired Sample t-test in Academic Achievement Measurement of the First Study

Measure	Pre-test (N=38)		Post-test (N=38)		difference	t	effect size (Cohen's d)
	M	SD	M	SD			
Achievement	4.39	1.569	5.53	1.538	1.132	-3.075**	0.734

* $p < .05$, ** $p < .01$, *** $p < .001$

In the second study, a paired sample t-test analysis in both groups revealed statistically significant differences between the pre and the post achievement test as shown in the Table 6. This means that learning AI through either the chatbot tutor approach ($t = -8.034$, $p < 0.001$) or by LMS ($t = -3.684$, $p < 0.001$) is effective in terms of academic performance. However, the effect size is larger by chatbot interactions (Cohen's $d = 1.146$) than study through LMS (Cohen's $d = 0.542$).

Table 6: Result of the Paired Sample t-test in Academic Achievement Measurement of the Second Study

Measure of achievement	Pre-test		Post-test		difference	t	effect size (Cohen's d)
	M	SD	M	SD			
chatbot group (N= 72)	3.72	1.258	5.39	1.632	-1.667	-8.034***	1.146
LMS group (N= 75)	3.96	1.728	4.87	1.630	-0.907	-3.683***	0.542

* $p < .05$, ** $p < .01$, *** $p < .001$

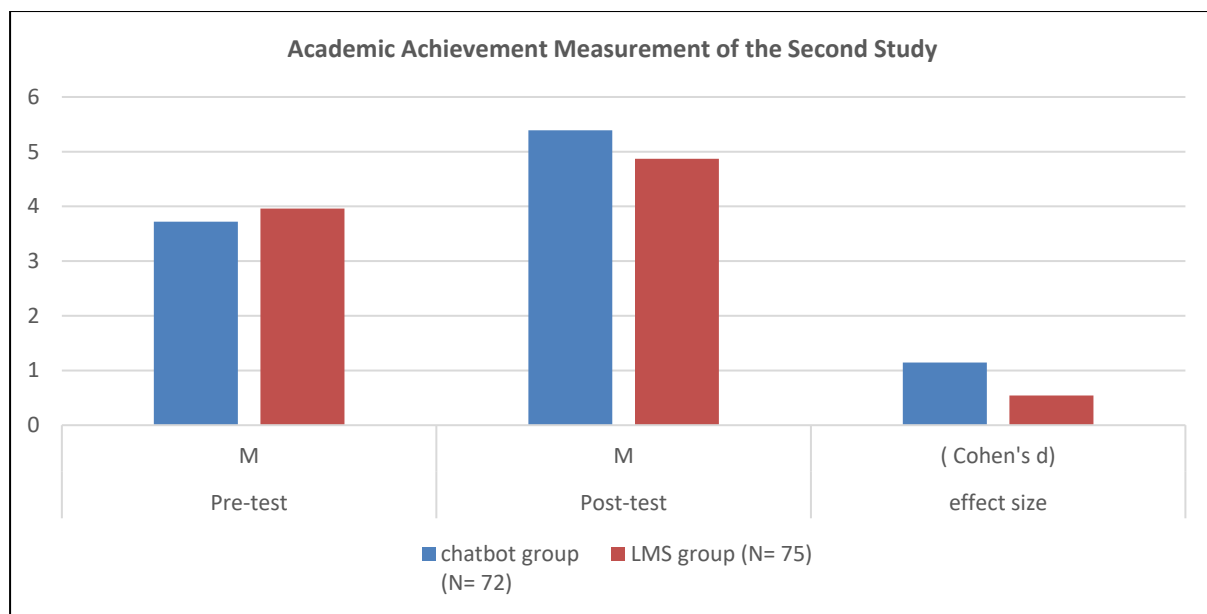


Figure 4: Comparison of academic achievement measurement of the second study

The one-way ANCOVA analysis that was performed to compare the changes in the achievement by both the experimental and control groups showed a significant difference. The result in Table 7 shows that learning method (group) is the main effect in influencing changes in achievement ($F=4.838$, $p<0.05$), indicating that students who studied AI by interacting with a chatbot tutor (treatment group) had a better, and statistically significant, achievement difference than those who studied AI through LMS.

Table 7: Results of the One-Way ANCOVA between Two Groups in Academic Achievement of the Second Study

Measure	Pre-test (N=38)		Post-test (N=38)		Change	t	effect size (Cohen's d)
	M	SD	M	SD			
SDLRS	3.54	0.381	3.85	0.385	0.314	-3.684***	0.809

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Self-directed Learning Readiness

In terms of self-directed learning readiness (SDLR) competence, from the first study, it was also proved that students could improve this competency by studying AI with the use of the chatbot tutor. As shown in table 8, the result of the paired sample t-test proved that the change in SDLRS between pre and post-questionnaires was statistically significant ($t=-3.684$, $p<0.001$) with a large effect size (the Cohen's $d = 0.809$).

Table 8: Result of the Paired Sample t-test in SDLRS Measurements of the First Study

Measure	Pre-test	Post-test	Change	t	effect size

	(N=38)		(N=38)				(Cohen's d)
	M	SD	M	SD			
SDLRS	3.54	0.381	3.85	0.385	0.314	-3.684***	0.809

*p<.05, **p<.01, ***p<.001

In the second study, a paired sample t-test analysis was conducted. The treatment group (chatbot tutor) showed statistically significant differences in the SDLRS. This can be interpreted as, learning with a chatbot tutor may help students to improve SDLR ($t = -2.115$, $p < 0.05$). However, the effect size is small (Cohen's $d = 0.3$) as shown in the Table 9. In the LMS group, there was no significant difference in the SDLRS.

Table 9: Result of the Paired Sample t-test in SDRLS Measurement of the Second Study

Measure of achievement		Pre-test		Post-test		Change	t	effect size (Cohen's d)
		M	SD	M	SD			
SDLRS	chatbot group (N= 56)	3.5336	0.37487	3.6481	0.38962	-0.11450	-2.115*	0.3
	LMS group (N= 61)	3.5391	0.3851	3.6528	0.5005	-0.11379	-1.911	0.25

*p<.05, **p<.01, ***p<.001

For comparison of the two teaching methods, the one-way ANCOVA analysis revealed that there was no statistically significant difference in the treatment and control groups in terms of SDLRS as shown in Table 10.

Table 10: Result of the one-way ANCOVA between Two Groups in SDRLS of the Second Study

Source		SS	Df	MS	F
SDLRS	Mean of Pre-SDLRS	1.429	1	1.429	10.124**
	Main effect (Group)	.000	1	.000	.002
	Error	16.088	114	.141	
Total			117		

*p<.05, **p<.01, ***p<.001

Although the chatbot group demonstrated within-group improvement in SDLRS, the ANCOVA comparison did not reveal a significant difference between the chatbot and LMS groups. That is, the chatbot group showed statistically significant within-group improvements in SDLR scores after three weeks of experimental treatment (Table 7). However, in an ANCOVA analysis comparing the two groups with the LMS group (Table 8), the difference in post-test scores between the two groups was not statistically significant. This suggests that the self-directed learning behaviors required in both conditions were already comparable, given that both formats allowed students to regulate their learning pace and time autonomously. Additionally, SDLRS reflects more continued motivation and metacognition, which may require longer instructional duration or sustained feedback cycles to change meaningfully.

Satisfaction

The satisfaction questionnaire was applied identically to both studies to analyze the chatbot tutor usage pattern, and satisfaction. The questionnaire was conducted anonymously and voluntarily. Therefore, the two datasets from both the first and second studies were merged and analyzed together as shown in Table 11.

Regarding satisfaction with the use of the chatbot tutor, students were most satisfied with the convenience of being able to study anytime, anywhere ($M=4.11$, $SD=0.795$). From the open-ended question, a student (S58) responded, “it was nice to be able to do it wherever and whenever I wanted, and to be able to review parts I didn't know over and over again”. Another student (S100) said that it was comfortable because there were no restrictions on space or time.

A student thought it was meaningful to learn AI-related topics through chatbots incorporating AI technology ($M=3.98$, $SD=0.689$), saying that the use of artificial intelligence in the process of learning artificial intelligence is a very new approach.

Moreover, in terms of the chatbot as an educational platform, most students said that it would be useful to use chatbots as learning tools in the future ($M=3.94$, $SD=0.806$).

However, some students felt it was distracting to study through chatbots ($M=2.5$, $SD=0.993$). Furthermore, quite a few students responded that there is a negative aspect to not learning regardless of the level of knowledge they currently have, if the quiz presented by the chatbot was answered correctly ($M=3.32$, $SD=1.007$). A student (S20) reflected, “it was nice that I could choose the parts I needed and study more, but I also felt like I didn't have to listen to them, which was a bit disappointing”.

Table 11: Analysis of satisfaction from use of the tutoring chatbot

Satisfaction with the use of the tutoring chatbot (N=103)	M	SD
Learning while talking to a chatbot is fun	3.4	0.984
Convenient because I can learn at the time and place I want with the chatbot.	4.11	0.795
Effective to check what I know and what I don't know and provide customized learning.	3.85	0.767
Learning through chatbots is distracting	2.5	0.993
Existing learning methods (offline, e-learning, etc.) are more effective than chatbots.	3.4	0.957
If the quiz presented by the chatbot is answered correctly, there is a negative aspect of not learning regardless of the level of knowledge I currently have.	3.32	1.007
More effective if the chatbot is developed more intelligently.	3.68	1.118
Meaningful to learn AI-related topics through chatbots incorporating AI	3.98	0.689

technology.		
Useful to use chatbots as learning tools in the future.	3.94	0.806
Willingness to participate again if another opportunity to learn using chatbot is given.	3.83	0.809

From analyzing comments provided about the chatbot tutor, some students said that it was interesting because it was the first experience of a new teaching method, and depending on my answer, the tutoring chatbot gave me a different response, but many students mentioned that chatbot tutors should be more intelligent. Students (S82, S84) discussed that they think it was a little more interesting because it was a system with different manuals for each situation, rather than a system that always provided the same answer.

6. Conclusion

Discussion

This study aimed to explore how good the learning experience provided by a chatbot tutor could be when provided to university students studying AI in a basic liberal arts course. The results of this research from two separate studies confirmed the applicability of using a chatbot tutor. Firstly, both studies proved that learning about AI with the use of the chatbot tutor was effective. This is a similar result to that seen with other previous studies such as those of Kim & Lee (2019) and Crown et al. (2011). These results are consistent with Alokyan et al.'s (2024) meta-analysis of 27 studies on chatbots, which again shows that chatbots can have a positive effect on self-directed learning (SDLRS). However, this study specifically aimed to compare the impact of using LMS on self-directed learning.

In this regards, more interestingly, the second study from this investigation proved that academic performance was statistically better than studying the same curriculum through LMS. In terms of educational methods, the video-based lecture on LMS and the chatbot tutors have similarities in that learning is possible anytime, anywhere and at the places and times the learner chooses. In the second study, based on the advantages of the use of LMS and the chatbot tutors, students were allowed to learn AI at times and places they wanted. The only difference was that education was provided either by interacting with the chatbot tutor or by LMS for themselves. One of the differences between the two was that in the LMS group, students were required to study all given content. However, in the chatbot group, students could decide whether or not they wanted to study particular parts based on whether or not they answered the quizzes correctly. In the end, students in the chatbot group may not have studied all five lessons, but they did have a statistically better increase in achievement than those of the LMS group. This can be seen as a result similar to that of Hamzah et al. (2021) who used the chatbot as a self-study assistant in bridging the skills and education gap. From this finding, it appears that students do not have to study all content to achieve the learning objective, but that it might be more effective allowing them to decide whether to study on their own level in a self-directed way and then learn the necessary parts more effectively.

This result can be reflected from the CLT. From the CLT perspective, forcing unnecessary explanations (such as the entire LMS video) on learners who already know the content actually hinders learning by creating an extrinsic cognitive load. Chatbots might maximize learning efficiency by eliminating this redundancy. Ultimately, the fact that the chatbot group showed higher performance despite skipping the content can be explained by the Expertise Reversal Effect of cognitive load theory (Kalyuga et al., 2003). Moreover, from the SDT perspective, the choice of deciding to skip a video is a significant metacognitive activity. While the LMS group passively watched the video, the chatbot group independently assessed their own level by understanding themselves and actively customize their learning path. This suggests that their learning engagement might be more intrinsic and motivated by choosing their own choice with autonomy than mere exposure time to the content.

From this result, the chatbot tutor might help students to study in a self-directed way. In addition, this study showed that there was a positive effect in terms of improving students' self-directed learning readiness as a competency, by an appreciation of their own level and thus having self-directedness in their learning. However, in comparing the effects of the video lecture on LMS with through the chatbot tutor, there was not a statistically significant difference. From previous studies related to e-learning or flipped learning, online learning methods might positively affect self-directed learning readiness (Khodaei et al. 2022). Student's self-directed learning readiness is closely related to e-learning (Chau, et al. 2021), since the online learning contents provide students with greater flexibility and force students to adopt SDL. Interestingly, Al-Adwan et al. (2019) found that self-directed learning negatively affected student's satisfaction and continued usage intention. Indeed, this greater flexibility and SDL are required of students in both the video lecture on LMS and through chatbot approaches investigated here and hence might be a reason for the lack of a significant difference in the comparison of the two groups.

In addition, the positive results of this study may be related to the high digital literacy of the Korean university students (participants in this study) and the familiarity of the mobile learning environment (OECD, 2023). For students with low digital literacy (novice in Kalyuga et al., 2003), the autonomy of chatbots may not have positive effects. Therefore, for students with low digital literacy or SDL, the skip option provided by chatbots can actually lead to neglect or learning loss. Therefore, future study might be conducted to compare two different students groups in order to generalize the results of this study to other cultural backgrounds.

In particular, with the recent technological advancements in LLM, many attempts are being made to integrate chatbots with LMS to support students' learning. Sedrakyan et al. (2024) also investigated the positive effects and concerns of integrating chatbots into LMSs among instructors and students in higher education. The results presented in this study show that when chatbots are effectively integrated into LMS in the future, the advantages of two methods need to be effectively integrated rather than just one specific method.

The following Table 12 shows how the research questions are aligned with literature findings, methodological steps, and analytical outcomes.

Table 12: A mapping table of research questions and findings based on the theoretical foundations

Research Objective	Literature finding	Methodology	Outcome in this study
Evaluate chatbot tutor's effectiveness in AI learning	Chatbot systems help improve student's academic achievement (Chang et al.(2022); Essel et al.(2022)) and personalized scaffolding provided by chatbot tutors based on CLT (Sweller, 1994) and SDT (Ryan & Deci, 2000).	Quasi-experiment; Pre-/post-test (Academic achievement)	RQ1: Significant improvement (Cohen's $d = 0.734$)
Compare chatbot-based vs. LMS-based learning	A lack of adaptive learning process in traditional video lectures (Marchand & Gutierrez, 2012) and personalized scaffolding and autonomy provided by chatbot tutors based on CLT (Sweller, 1994) and SDT (Ryan & Deci, 2000).	Paired t-test; ANCOVA (Achievement)	RQ1: Chatbot group had higher gains ($F=4.838$, $p<.05$)
Assess impact on self-directed learning readiness	Chatbots can have a positive effect on SDLRS(Alokyan et al., 2024 & Guan, R. et al., 2025) and chatbot tutor can provide social presence from the conversational interface in the chatbot tutor (Short et al., 1976)	SDLRS questionnaire	RQ2: Significant improvement in chatbot group ($d = 0.809$)
Examine learning experience including learner's satisfaction with chatbot	Chatbot tutors improved learning motivation with personalization (Sweller, 1994), conversational interface (Ryan & Deci, 2000), autonomy and intrinsic motivation (Ryan & Deci, 2000), and; Yin et al., 2020), and learning participation rate (Nghi, Phuc, & Thang, 2019).	Descriptive survey	RQ3: High satisfaction; Concerns about chatbot logic

These findings contribute to ongoing discussions about how to effectively integrate AI chatbot tutors in diverse educational courses. By focusing on students in liberal art courses, the study expands current understanding of inclusive AI education and highlights the potential of chatbot tutors as a scalable tool for addressing diverse learner needs, particularly in self-paced and self-directed learning contexts. For instance, the results presented in this study demonstrate that chatbots can serve as cost-effective one-on-one tutors in large-scale liberal arts courses with hundreds of students or AI literacy courses with diverse student populations. In university liberal arts education environments where physical and financial constraints preclude assigning human tutors, chatbots can serve as an institutional alternative that guarantees at least a minimal level of personalized feedback to all students.

Limitation and futher studies

This study has a limitation in that the chatbot did not provide in-depth intelligent services based on AI algorithms. From the satisfaction questionnaire, students answered that it would be more effective if the chatbot was developed to be more intelligent. Therefore, AI-based chatbot tutors might be developed to provide customized learning based on their knowledge levels, preferences, and interests, and then empirically assess the academic achievement, SDLRS, and satisfactions. Future research needs to be expanded to research on chatbot tutor that enable

more diverse conversations and can provide accurate learning by clearly identifying students' cognitive levels.

In addition, these findings should be interpreted in light of the cultural and regional context of South Korea, where students generally have high digital literacy and are familiar with mobile-based learning tools (OECDa, 2023). Additionally, the widespread availability of internet infrastructure and the prominence of self-paced e-learning models in Korean universities (Lee & Lee, 2024) may have positively influenced the effectiveness of the chatbot tutor. However, these conditions may not be applicable in regions with lower technological access or in cultures where student autonomy in learning is less emphasized. Therefore, further studies should explore cross-cultural comparisons to validate the broader applicability of chatbot tutors in AI education.

In particular, in terms of sampling, while demographic and academic background variables such as major and gender were not included as covariates due to data constraints, these factors should be considered in future studies. Segmental analysis was not conducted in this study due to limited sample size but is recommended for further exploration. Furthermore, Study 2 of this study suffers from the limitations of a quasi-experimental design that did not allow random assignment of students. Although the homogeneity of the two groups was statistically confirmed in a pre-test and adjusted for post-test using ANCOVA, the possibility that differences in unmeasured potential variables (e.g., learning motivation and academic ability) may have influenced the results cannot be completely ruled out. This limits the internal validity of the study results.

Although this study utilized a single-factor structure of the Self-Directed Learning Readiness (SDLR) scale based on the exploratory factor analysis, this approach entails certain limitations. The first factor accounted for 28.884% of the total variance, which falls below the commonly suggested 40% threshold typically considered sufficient to justify a unidimensional factor structure. This suggests that interpreting SDLR strictly as a single construct should be approached with caution. Nevertheless, SDLR is inherently a multidimensional construct, and prior studies have also reported relatively low variance explained by the first factor—often around 28–30%—when measuring SDLR, indicating that such results are not uncommon. In this regard, the findings of the present study may still reflect the possibility that SDLR operates as a more integrated construct from the learners' perspective (Guglielmino, 1977; Hendry & Ginns, 2009; Cheng et al., 2020). Future studies are encouraged to employ confirmatory factor analysis (CFA) or structural equation modeling (SEM) to revalidate the latent structure of SDLR and to compare the fit of uni- and multi-factor models.

Finally, given that the duration of this study was relatively short, so it will be necessary to study in depth the impact of chatbot tutors through more diverse tutoring methods and over longer learning periods. In addition, in terms of SDLRS, behavioral log data further showed that the students' interaction styles might be a minimal or efficiency-driven way (e.g., skipping optional reinforcement steps when quiz answers were correct). It means that students may have limited deeper metacognitive reflection. Therefore, future research could incorporate motivational scaffolds or reflective prompts within the chatbot dialogue to support SDLR development more explicitly. It might influence the differences between two groups.

Therefore, more studies on the influence of chatbot tutors, in order to draw more generalized conclusions in the future, are suggested, since this study was conducted with a small sample size in a specific region.

7. Declarations

Availability of data and materials

The datasets utilized and/or examined in the present investigation can be obtained from the corresponding author upon a reasonable request.

Competing interests

The authors of this manuscript affirm that they have no conflicts of interest.

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References

- Al-Madadha, A., & Zvirzdinaite, Z. (2018). Modeling students' readiness to adopt mobile learning in higher education: An empirical study, *International Review of Research in Open and Distance Learning*, 19(1), 1-5. <https://doi.org/10.19173/irrodl.v19i1.3256>.
- Alokyan, S., Götz, F. M., & Jucks, R. (2024). How educational chatbots support self-regulated learning? A meta-analysis. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-024-12881-y>
- Burgsteiner, H., Kandlhofer, M., & Steinbauer, G. (2016). iRobot: Teaching the basics of artificial intelligence in high schools. In *Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence* (pp. 4126–4127). AAAI Press. <https://doi.org/10.1609/aaai.v30i1.9864>
- Chau, K. Y., Law, K. M. Y., & Tang, Y. M. (2021). Impact of Self-Directed Learning and Educational Technology Readiness on Synchronous E-Learning, *Journal of Organizational and End User Computing*, 33(6), 1-22. <https://doi.org/10.4018/JOEUC.20211101.0a26>.
- Chen, H.-L., Widarso, G. V., & Sutrisno, H. (2020). A ChatBot for Learning Chinese: Learning Achievement and Technology Acceptance. *Journal of Educational Computing Research*, 58(6), 1161–1189. <https://doi.org/10.1177/0735633120929622>
- Cheng, S.-C., Kuo, C.-L., & Lee, H.-Y. (2020). The development and validation of a self-directed learning instrument for online learners. *Journal of Educational Technology & Society*, 23(2), 1–17. <https://10.1016/j.ijnurstu.2010.02.002>
- Chang, C. Y., Kuo, S. Y., & Hwang, G. H., (2022). Chatbot-facilitated Nursing Education: Incorporating a Knowledge-Based Chatbot System into a Nursing Training Program, *Educational Technology & Society*, 25(1), 15-27. <https://doi.org/10.1111/bjet.13158>
- Chung, C. -J., & Shamir, L. (2021). Introducing Machine Learning with Scratch and Robots as a Pilot Program for K-12 Computer Science Education. *International Journal of Learning and Teaching*, 7(3), 181–186. <https://doi.org/10.18178/ijlt.7.3.181-186>
- Clarizia, F., Colace, F., Lombardi, M., Pascale, F., & Santaniello, D. (2018, October). Chatbot: An education support system for students. *International Symposium on Cyberspace Safety and Security* (pp. 291–302). Springer.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers. <https://doi.org/10.4324/9780203771587>
- Crown, S., Fuentes, A., Jones, R., Nambiar, R., & Crown, D. (2010). Ann G. Neering: Interactive chatbot to motivate and engage engineering students. In *2010 Annual Conference & Exposition Proceedings*. <https://doi.org/10.18260/1-2—16687>
- De Bruin, K., Jacobs, G. J., Schoeman, W. J., & De Bruin, G. P. (2001). The factor structure of the Self-directed Learning Readiness Scale. *South African Journal of Higher Education*, 15(3), 119-130. <https://doi.org/10.4314/sajhe.v15i3.25333>
- Dogham, R. S., Elcokany, N. M., Ghaly, A. S., Daweed, T. M. A. D., Aldakheel, F. M.,

- Llaguno, M. B. B., & Mohsen, D. M. (2022). Self-directed learning readiness and online learning self-efficacy among undergraduate nursing students, *International Journal of Africa Nusing Sciences*, 17, 1-5. <https://doi.org/10.1016/j.ijans.2022.100490>
- Essel, H. B., Vlachopoulos, D., Tachie-Menson, A., Johnson, E. E., & Baah, P. K. (2022). The impact of a virtual teaching assistant (chatbot) on students' learning in Ghanaian higher education. *International Journal of Educational Technology in Higher Education*, 19(1), 1-19. <https://doi.org/10.1186/s41239-022-00362-6>
- Evans, H. K. (2014). An experimental investigation of videotaped lectures in online courses. *TechTrends*, 58(3), 63–70.
- Fryer, L., & Carpenter, R. (2006). Bots as language learning tools. *Language learning and technology*. *Language Learning & Technology*, 10(3), 8-14.
- Geng, S., Law, K. M. Y. & Niu, B. (2019). Investigating self-directed learning and technology readiness in blending learning environment. *International Journal of Educational Technology in Higher Education*, 16(17), <https://doi.org/10.1186/s41239-019-0147-0>
- Guglielmino, L. M. (1978). *Development of the Self-Directed Learning Readiness Scale*. Dissertation, University of Georgia. Dissertation Abstracts International, 38, 6467.
- Guglielmino, L. M. (1977). *Development of the self-directed learning readiness scale*. University of Georgia.
- Hamzah, F., Phong, S.Y., Sharifudin, M. A. S., Zain, Z. M., & Rahim, M. (2020). Exploring Students' Readiness on English Language Blended Learning, *Asian Journal of University Education*, 16(4), <https://doi.org/10.24191/ajue.v16i4.11948>.
- Hamzah, A. F. W. M., Ismail, I., Yusof, M. K., Saany, S. I. M., & Yacob, A. (2021). Using Learning Analytics to Explore Responses from Student Conversations with Chatbot for Education. *International Journal of Engineering Pedagogy*, 11(6). 70-84. <https://doi.org/10.3991/ijep.v11i6.23475>
- Hendry, G. D., & Ginns, P. (2009). Readiness for self-directed learning: Validation of a new scale with medical students. *Medical Teacher*, 31(10), 918–920. <https://10.3109/01421590802520899>
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching & learning*. Boston: Center for Curriculum Redesign.
- House, W. (2018). Summary of the 2018 White House summit on artificial intelligence for American Industry. In *United States. Office of Science and Technology Policy*. United States. Office of Science and Technology Policy.
- Kalyuga, S., Ayres, P., Chandler, P., & Sweller, J. (2003). The expertise reversal effect. *Educational Psychologist*, 38(1), 23-31. <https://doi.org/10.1207/S15326985EP38014>
- Khodaei, S., Hasanvand, S., Gholami, M., Mokhayeri, Y., & Amini, M. (2022). The effect of the online flipped classroom on self-directed learning readiness and metacognitive awareness

in nursing students during the COVID-19 pandemic, *BMC Nursing*, 21(22), <https://doi.org/10.1186/s12912-022-00804-6>

Kim, M., & Lee, J. (2019). Analysis of Interaction in Cooperative Learning by Academic Achievement in a Middle School English Class. *Journal of Educational Technology*, 35(1), 1–35. <https://doi.org/10.17232/kset.35.1.001>

Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. Chicago: FolletPublishing Company. <https://doi.org/10.1177/105960117700200220>

Kumar, J. A. (2021). Educational chatbots for project-based learning: investigating learning outcomes for a team-based design course, *International Journal of Educational Technology in Higher Education*, 18(65), <https://doi.org/10.1186/s41239-021-00302-w>.

Lee, D. (2019). A developmental plan for a conversational English learning chatbot through scenario flow. *Secondary English Education*, 12(4), 99–124. <https://doi.org/10.20487/kasee.12.4.201911.99>

Lee, J., So, HJ., & Ha, S. (2021) Unpacking Academic Emotions in Asynchronous Video-based Learning: Focusing on Korean Learners' Affective Experiences. *Asia-Pacific Education Researcher*, 30, 247–261. <https://doi.org/10.1007/s40299-021-00565-x>.

Lee, H., & Lee, R. (2024). Transformation of Korean higher education in the digital era: Achievements and challenges. *Journal of Comparative & International Higher Education*, 16(2), 47–55. <https://doi.org/10.32674/jcihe.v16i2.5847>

Lin, M. P. -C., & Chang, D. (2020). Enhancing Post-secondary Writers' Writing Skills with a Chatbot: A Mixed-Method Classroom Study. *Journal of Educational Technology & Society*, 23(1), 78–92.

Marchand, G. C., & Gutierrez, A. P. (2012). The role of emotion in the learning process: Comparisons between online and face-to-face learning settings. *The Internet and Higher Education*, 15(3), 150–160.

McCarthy, J., Minsky, M., Rochester, N., & Shannon, C. (1955). A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence. Retrieved from <http://jmc.stanford.edu/articles/dartmouth/dartmouth.pdf>

McCarthy, J., Minsky, M., & Shannon, C. (2006). A proposal for the Dartmouth Summer Research Project on Artificial Intelligence. *AI magazine*, 27(4), 12-14. Retrieved from <file:///C:/Users/lois6/Downloads/1904-Article%20Text-1900-1-10-20080129.pdf>

Nghi, T. T., Phuc, T. H., & Thang, N. T. (2019). Applying Ai Chatbot For Teaching A Foreign Language: An Empirical Research. *International Journal of Scientific & Technology Research*, 8(12), 897-902. <https://doi.org/10.4018/978-1-59904-895-6.ch029>

Nisar, T. M. (2002). Organizational determinants of e-Learning. *Industrial and Commercial Training*. 34(7). 256-262. <https://doi.org/10.1108/00197850210447246>

OECDa. (2023). PISA 2022 Results (Volume III) – Factsheets: Korea. OECD Publishing.

Retrieved from https://www.oecd.org/en/publications/pisa-results-2022-volume-iii-factsheets_041a90f1-en/korea_adb21d76-en.html

OECD. (2023). OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem. OECD Publishing. <https://doi.org/10.1787/c74f03de-en>

Okonkwo, C. W., & Ade-Ibijola, A. (2020). Python - bot: A chatbot for teaching python programming. *Engineering Letters*, 29(1), 25-34.

Pérez, J. Q., Daradoumis, T., & Puig, J. M. M. (2020). Rediscovering the use of chatbots in education: A systematic literature review. *Computer Applications in Engineering Education*, 28(6), 1549-1565.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>

Sabuncuoglu, A. (2020). Designing One Year Curriculum to Teach Artificial Intelligence for Middle School. *Proceedings of the 2020 ACM Conference on Innovation and Technology in Computer Science Education*. 96-102. <https://doi.org/10.1145/3341525.3387364>

Sandu, R. (2017). *A Study to Analyse Economic Benefits of Cloud-Based Open Source Learning for Australian Higher Education Sector*. 1st International Conference on Business Research and Ethics (ICSBE), 9-12. <https://doi.org/10.3991/ijim.v12i4.9200>

Sandu, N., & Gide, E. (2019). Adoption of AI-Chatbots to enhance student learning experience in higher education in India. In *2019 18th International Conference on Information Technology Based Higher Education and Training (ITHET)* (pp. 1-5). IEEE. <https://doi.org/10.1109/ITHET46829.2019.8937382>

Schuett, J. (2019). A legal definition of AI, *SSRN Electronic Journal*, 10.2139/ssrn.3453632.

Sensetime (2018). Fundamentals of Artificial Intelligence. East China Normal University. Retrieved from https://www.sensetime.com/en/Service/ai_class.html

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. John Wiley & Sons.

Srikant, S. & Aggarwal, V. (2017). Introducing Data Science to School Kids. In *Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education* (SIGCSE '17). ACM, New York, NY, USA, 561–566. <https://doi.org/10.1145/3017680.3017717>

Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction*, 4(4), 295–312. [https://doi.org/10.1016/0959-4752\(94\)90003-5](https://doi.org/10.1016/0959-4752(94)90003-5)

Szczepański, M. (2019). *Economic impacts of artificial intelligence (AI)*, EPRS: European Parliamentary Research Service. 20.500.12592/0phht4.

Vázquez-Cano, E., Mengual-Andrés, S., & López-Meneses, E. (2021). Chatbot to improve

learning punctuation in Spanish and to enhance open and flexible learning environments. *International Journal of Educational Technology in Higher Education* 18(33). <https://doi.org/10.1186/s41239-021-00269-8>

Verleger, M., & Pembridge, J. (2018). A Pilot Study Integrating an AI-driven Chatbot in an Introductory Programming Course, *Conference: 2018 IEEE Frontiers in Education Conference (FIE)*.

Yin, J., Goh, T.-T., Yang, B., & Yu, X. (2020). Conversation Technology with Micro-Learning: The Impact of Chatbot-Based Learning on Students' Learning Motivation and Performance. *Journal of Educational Computing Research*, 59(1), 154–177. <https://doi.org/10.1177/0735633120952067>

Yu, Z. (2021). The effects of gender, educational level, and personality on online learning outcomes during the COVID-19 pandemic. *International Journal of Educational Technology in Higher Education*, 18(14). <https://doi.org/10.1186/s41239-021-00252-3>

Zeng, D. (2013). From Computational Thinking to AI Thinking [A letter from the editor]. *IEEE Intelligent Systems*, 28(6), 2–4. <https://doi.org/10.1109/mis.2013.141>

Zimmerman, M. (2018). *Teaching AI: exploring new frontiers for learning*. International Society for Technology in Education.

AI Integration in Research Writing: A Quantitative Study among Students and Teacher-researchers toward a Human-AI Model

ABSTRACT

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Estacio, R. D. (2025). AI integration in research writing: A quantitative study among students and teacher-researchers toward a human-AI model. *Journal of Institutional Research South East Asia*, 23(3), 373-392.

This quantitative study investigated the integration of artificial-intelligence (AI) tools in academic research writing among students and teacher-researchers at Quezon City University. Conducted in April 2025, the research assessed usage patterns, perceived effectiveness, and ethical considerations surrounding AI-assisted writing. Using a validated structured survey (Cronbach's $\alpha = 0.91$) administered to 120 participants (80 students, 40 faculty), results revealed extensive AI use for grammar correction, paraphrasing, citation formatting, and literature summarization. Statistically significant differences ($p < .05$) appeared between students and faculty in usage frequency and ethical perception. The study developed the Adaptive Human-AI Writing Continuum (AHAWC) Model—a flexible framework integrating five collaboration patterns (Human-AI-Human, AI-Human-AI, Human-in-the-Loop, AI Companion, Human-AI Co-creation)—to guide responsible, context-sensitive AI integration in research writing.

Keywords: Artificial Intelligence, Research Writing, Human-AI Collaboration, Academic Integrity, Higher Education

1. Introduction

The rapid advancement of artificial intelligence (AI) technologies has profoundly transformed academic writing and scholarly communication. Tools such as Grammarly, Quillbot, Wordtune, and ChatGPT now support students and researchers by improving grammar, paraphrasing, summarizing, and synthesizing ideas (Rezaee & Allahyari, 2023; Roe et al., 2023; Zhao, 2025). These AI-powered platforms have proven particularly beneficial in non-native English contexts, where they enhance linguistic fluency and writing confidence (Abdullah, 2025; Nurchurifiani et al., 2025).

Despite these advantages, concerns persist about AI's implications for originality, authorship, and critical thinking. Studies warn that dependence on generative systems may erode metacognitive engagement and blur the boundaries of intellectual ownership (Fowler, 2023; Kotsis, 2024; Zhai et al., 2024). Ethical tensions arise as AI outputs challenge traditional notions of academic honesty, raising questions about attribution, disclosure, and plagiarism (Hutson, 2024; Tripathi & Thakar, 2024). Institutions are thus pressed to balance technological innovation with integrity and responsible authorship (Chan, 2023; Bankins, 2021).

While literature on AI in education is rapidly expanding, the majority of existing studies remain tool-based or conceptual, often focusing on linguistic improvements or AI's technical affordances rather than its social, ethical, and pedagogical dimensions. For instance, Roe et al. (2023) examined writing improvement using Grammarly, while Al-Shaboul et al. (2024) analyzed ChatGPT's stylistic impacts on academic tone. However, few studies explore how students and teacher-researchers actually integrate AI into research writing, or how their ethical perceptions and institutional contexts shape this process. Even fewer focus on developing countries, such as the Philippines, where AI use has outpaced formal policies on academic integrity and digital literacy (Al-Bukhrani et al., 2025; Khalifa & Albadawy, 2024).

The absence of empirical evidence on AI usage behavior and ethical engagement within higher education leaves critical gaps. These include: (1) the extent to which students and faculty rely on AI tools, (2) differences in perceived productivity and ethical awareness between academic groups, and (3) the lack of a context-specific framework guiding responsible AI collaboration in academic writing. Addressing these gaps is vital for developing institutional policies that promote both innovation and integrity.

This study therefore quantitatively investigates the integration of AI tools in research writing among students and teacher-researchers at Quezon City University. It examines usage patterns, perceived effectiveness, and ethical considerations, while comparing perceptions between the two groups. Ultimately, it proposes the Adaptive Human–AI Writing Continuum (AHAWC) Model, an empirically grounded framework that contextualizes AI integration across stages of authorship and ethical awareness. By bridging conceptual theory and empirical practice, this study contributes to redefining academic writing as a process of reflective human–AI collaboration, aligned with institutional accountability and scholarly ethics.

2. Literature Review

Artificial intelligence has emerged as both a tool of empowerment and a source of pedagogical complexity in higher education. Research highlights AI's capacity to streamline grammar

correction, idea generation, and data organization, thereby improving writing efficiency and confidence (Rezaee & Allahyari, 2023; Roe et al., 2023; Widiati et al., 2023). For many writers, especially those in non-Western academic settings, these tools bridge linguistic barriers and democratize access to scholarly publication (Abdullah, 2025; Nurchurifiani et al., 2025).

However, studies have increasingly noted that AI's cognitive convenience may compromise originality, authorship identity, and independent thought (Fowler, 2023; Kotsis, 2024). Overdependence on AI may reduce authentic student engagement, while unregulated use can lead to ethical infractions, including plagiarism and ghost authorship (Hutson, 2024; Tripathi & Thakar, 2024). Consequently, scholars and institutions have called for AI literacy frameworks emphasizing human judgment, transparency, and responsible disclosure (Chan, 2023; Bankins, 2021).

Despite global progress, empirical studies examining the real-world integration of AI in academic writing remain scarce. Most research has centered on system performance or classroom evaluation rather than user experiences, institutional contexts, or ethical variations (Khalifa & Albadawy, 2024; Al-Bukhrani et al., 2025). This is particularly evident in the Philippine higher education sector, where digital infrastructures and AI policies are still developing. The resulting gap underscores the need for localized empirical evidence to guide teaching, supervision, and institutional policy development.

Human–AI Collaboration Models in Writing

Recent frameworks attempt to conceptualize how humans and AI co-create text. Kumar et al. (2024) introduced Human-in-the-Loop (HITL) models emphasizing iterative review cycles with human oversight, while McGrath et al. (2024) proposed Human–AI–Human (HAIH) frameworks where AI mediates idea refinement between drafts. Shneiderman (2020) and Gilson et al. (2023) advocate for Human–Computer Partnership Models that prioritize creativity, ethical reflection, and accountability in co-authoring processes.

However, these models are predominantly theoretical or engineering-based and rarely grounded in educational research. Few examine AI collaboration as a social and pedagogical process influenced by institutional culture and academic norms. This study addresses that gap by empirically modeling Human–AI collaboration in the Philippine higher education context, leading to the development of the Adaptive Human–AI Writing Continuum (AHAWC).

To synthesize findings from the literature, Figure 1 presents a concept map linking the study's main constructs—AI Use, Productivity, Ethical Awareness, and Institutional Response—illustrating how these dimensions interact dynamically in the academic writing process.

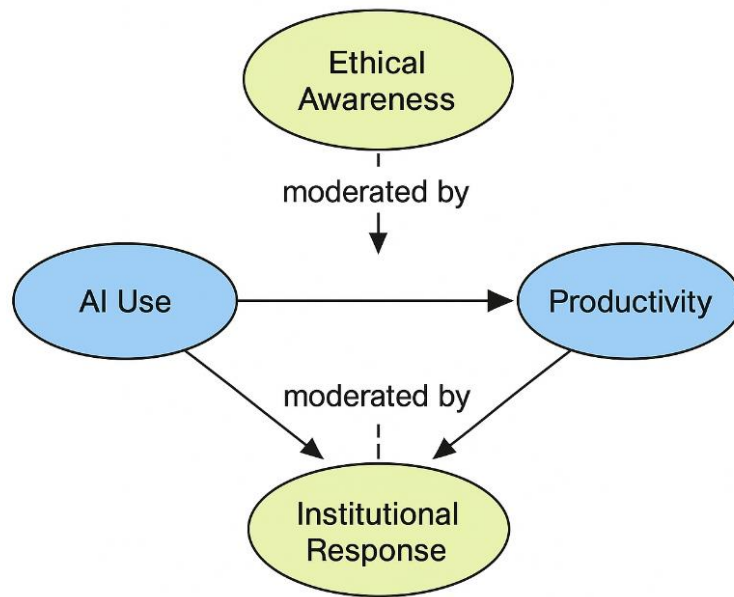


Figure 1: Concept Map of AI Integration in Academic Writing

3. Theoretical Framework

This study is grounded in Socio-Technical Systems Theory (Appelbaum, 1997) and the Human–Computer Interaction (HCI) Framework (Shneiderman, 2020; Gilson et al., 2023)—two complementary lenses that explain the interaction between human authors, technological tools, and institutional systems in academic writing.

Socio-Technical Systems Theory posits that effective performance arises when human and technological subsystems are aligned. Applied to AI-assisted writing, it suggests that optimal academic output results from balancing technical efficiency with human ethical reasoning and institutional guidance. This theory provides the foundation for analyzing how AI enhances writing productivity while simultaneously challenging the moral and cognitive dimensions of authorship.

The Human–Computer Interaction (HCI) Framework complements this perspective by focusing on the usability, feedback, and trust mechanisms that govern user engagement with intelligent systems. In academic writing, HCI emphasizes how iterative interactions between users and AI tools shape writing behavior, reflection, and decision-making. This framework offers a more relevant behavioral lens than the earlier Activity Theory, as it directly aligns with the study’s focus on how writers use, interpret, and regulate AI assistance.

Together, these theories inform the design of the Adaptive Human–AI Writing Continuum (AHAWC). By integrating socio-technical balance (human–machine harmony) and HCI principles (user reflection and transparency), the model operationalizes the dynamic relationship between productivity, ethical responsibility, and institutional mediation in AI-assisted research writing.

4. Conceptual Framework and Construct Operationalization

The conceptual framework (Figure 2) illustrates the hypothesized relationships among the study’s key constructs—AI Use, Perceived Productivity, Ethical Awareness, and Institutional Response—culminating in the development of Human–AI Collaboration Models.

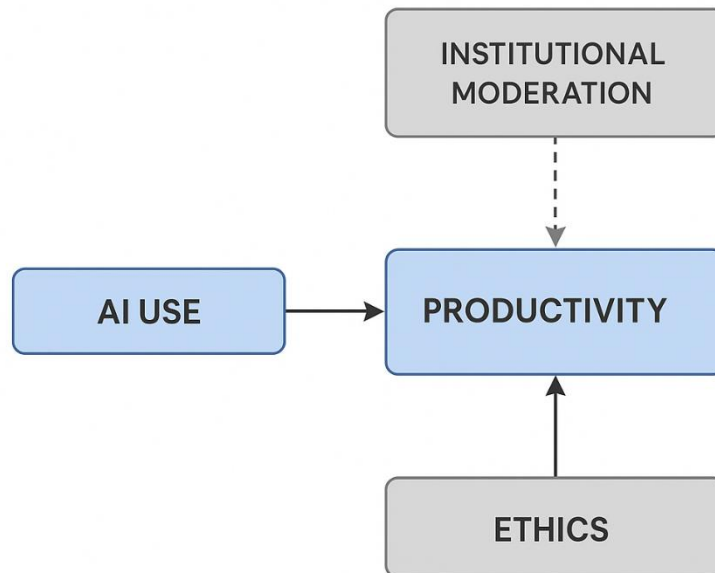


Figure 2: Conceptual Framework for the Adaptive Human–AI Writing Continuum

Construct Operationalization

Construct	Operational Definition	Example Questionnaire Item	Source(s)
AI Use	Frequency and purpose of AI engagement (e.g., editing, paraphrasing, summarizing).	“I use AI tools regularly to improve the clarity of my writing.”	Roe et al., 2023; Khalifa & Albadawy, 2024
Perceived Productivity	The extent to which AI use enhances writing efficiency, coherence, and output quality.	“AI helps me complete research writing tasks faster and more effectively.”	Zhao, 2025; Widiati et al., 2023
Ethical Awareness	Knowledge and practice of ethical principles in AI use, including citation and originality.	“Using AI without acknowledgment constitutes plagiarism.”	Hutson, 2024; Tripathi & Thakar, 2024
Institutional Response	The presence of guidelines, supervision, and training supporting responsible AI use.	“My university provides policies or seminars on ethical AI use in writing.”	Chan, 2023; Bankins, 2021
Human–AI Collaboration	The degree of partnership between human writers and AI tools across writing stages.	“I use AI as a writing assistant but retain full control over the content.”	Kumar et al., 2024; McGrath et al., 2024

Each construct was measured using Likert-scale items validated through expert review and pilot testing (Cronbach's $\alpha = 0.91$). The operational definitions guided both instrument development and model formulation, ensuring that the AHAWC Model reflects observable behaviors and ethical perceptions.

Framework Linkage

The conceptual relationships illustrated in this study reveal that AI use positively influences perceived productivity, reflecting the efficiency gains that users experience when integrating AI tools into academic writing. However, this relationship is moderated by ethical awareness, which ensures that such efficiency is achieved responsibly and within the bounds of academic integrity. Furthermore, the institutional response—in the form of clear policies, training programs, and governance mechanisms—plays a crucial role in strengthening both productivity and ethical alignment, promoting informed and accountable AI practices. Collectively, these interactions form the foundation of the Adaptive Human–AI Writing Continuum (AHAWC), an empirically grounded model that conceptualizes five progressive stages of human–AI collaboration, evolving from basic mechanical assistance to ethically guided co-creation.

5. Methodology

Research Design

This study employed a quantitative descriptive–comparative design to examine how AI tools are integrated into academic writing among university students and teacher-researchers. This design was chosen to systematically identify patterns, perceptions, and ethical considerations associated with AI use and to compare these across two distinct academic groups. Quantitative data served as the foundation for developing the Adaptive Human–AI Writing Continuum (AHAWC) Model, which illustrates progressive levels of human–AI collaboration.

While this approach effectively captured measurable differences between students and faculty, its single-institution scope presents a limitation in generalizability. To enhance future studies, triangulation across multiple institutions or the inclusion of qualitative interviews and focus groups is recommended to provide richer contextual insights into the complexities of AI-assisted writing across diverse educational environments.

Participants

The study involved a total of 120 participants, consisting of 80 students enrolled in undergraduate research courses and 40 teacher-researchers engaged in scholarly writing or thesis supervision.

A purposive sampling technique was applied to ensure that participants had relevant experience with AI tools in research writing. Invitations were distributed through college deans and faculty advisers, targeting individuals who met two inclusion criteria:

1. Active use of at least one AI-powered writing tool (e.g., Grammarly, Quillbot, ChatGPT) during the past academic year; and
2. Involvement in research-related coursework or publication activities.

Out of 140 invitations, 120 valid responses were received, representing an 86% response rate. The sample was diverse in age, discipline, and writing experience, providing a representative profile of AI users within the institution's academic community.

Research Context

The study was conducted at Quezon City University, a public higher-education institution in Metro Manila, Philippines, during April 2025. The research setting is significant because the university is among the early adopters of digital and AI-assisted teaching and research practices. Institutional discussions about responsible AI use and data ethics were emerging at the time of the study, offering an ideal context for analyzing academic behaviors, perceptions, and challenges related to AI integration in scholarly writing.

Research Instrument

Data were collected using a researcher-developed questionnaire titled “Survey Questionnaire on AI Integration in Academic Writing”. The tool was designed to gather information on AI usage patterns, perceived benefits and challenges, ethical awareness, and institutional responses among students and teacher-researchers.

The instrument consisted of five main parts: (1) demographic profile; (2) usage of AI tools in academic writing; (3) perceived benefits and challenges; (4) ethical and academic integrity concerns; and (5) open-ended questions on experiences and reflections. Most items were rated on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5), while the final section provided qualitative data to complement the quantitative results.

The questionnaire was aligned with existing validated measures (Roe et al., 2023; Zhao, 2025; Hutson, 2024) and contextualized for the Philippine higher education setting. It served as the primary data-gathering instrument for identifying patterns of AI use and informing the development of the Adaptive Human–AI Writing Continuum (AHAWC) Model.

Instrument Validation and Reliability

The questionnaire underwent a two-phase validation process: expert review and pilot testing. Three field experts—specialists in educational research, research ethics, and educational technology—were invited to evaluate the survey's content validity, clarity, and face validity. They reviewed each item for relevance, completeness, and alignment with the study constructs, providing written feedback that led to minor revisions such as simplifying terminologies, reordering items for clarity, and merging overlapping questions.

A pilot test was conducted with 20 respondents (10 students and 10 faculty members) from a similar institution. The pilot results produced a Cronbach's $\alpha = 0.91$, indicating excellent internal consistency. Qualitative comments from pilot participants were used to further refine item phrasing and ensure clear comprehension across varying literacy levels.

Research Procedures

Prior to data collection, ethical clearance was obtained from the Quezon City University Research Ethics Committee. The survey was administered online via Google Forms, accompanied by an informed-consent statement outlining the purpose of the study, voluntary

participation, confidentiality of responses, and adherence to the Data Privacy Act of 2012 (RA 10173).

Participants were informed that completion of the survey signified consent. No identifying information was collected. Data were stored in a secure institutional drive accessible only to the research team.

Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics v26.

- Descriptive statistics (frequencies, means, and standard deviations) summarized demographic information, AI-usage patterns, and perceptions.
- Inferential statistics, including independent-samples t-tests, were used to compare students and faculty regarding perceived productivity and ethical awareness.
- Pearson correlation coefficients examined relationships between AI-usage frequency, productivity, and ethical awareness scores.

Open-ended responses from 94 participants (62 students and 32 faculty members) were analyzed using a thematic-content approach. The unit of analysis was each distinct idea or reflection relating to AI benefits, challenges, or ethics. Two independent coders analyzed responses using a hybrid deductive–inductive coding scheme. The resulting themes included enhanced efficiency, ethical uncertainty, dependence concerns, and pedagogical implications.

Inter-coder reliability reached $\kappa = 0.87$, indicating strong consistency. Comparative analysis between the two respondent groups revealed that students emphasized efficiency and accessibility, while faculty emphasized accountability and ethical risk.

Recognizing the limitation of self-reported Likert data, the researchers note potential response biases and advocate the use of triangulation (e.g., interviews, document analysis, or AI tool usage logs) in future studies to verify findings and enhance credibility.

6. Results

AI Usage Patterns

As shown in the data, the most frequently used AI tools were Grammarly ($n = 51$), ChatGPT ($n = 26$), Quillbot ($n = 15$), and Citation Generators ($n = 10$). Respondents also reported using Summarization Tools ($n = 7$) and AI-based Plagiarism Checkers ($n = 6$), with fewer using other tools ($n = 5$).

Table 1: AI Tools Usage Patterns

AI Tool	F	%
Grammarly	51	42.50
ChatGPT	26	21.67
Quillbot	15	12.50

Citation Generators	10	8.33
Summarization Tools	7	5.83
Plagiarism Checkers	6	5.00
Others	5	4.17
Total	120	

AI was primarily used in the stages of Citation Formatting (n = 53), Editing (n = 30), and Literature Review (n = 20), with substantial use during Drafting (n = 8), Finalizing (n = 6), and Topic Generation (n = 3). These findings suggest that AI is used not only for polishing texts but also for content development and research support.

Table 2. AI Usage by Writing Stage

Writing Stage	F	%
Citation Formatting	53	44.16
Editing	30	25.00
Literature Review	20	16.67
Drafting	8	6.67
Finalizing	6	5.00
Topic Generation	3	2.50
Total	120	

This widespread and multi-stage use aligns with literature suggesting AI is reshaping not just how we write, but how we think through and structure research work. The prominence of Grammarly and citation tools also indicates a persistent concern with form, accuracy, and formatting in academic output.

Perceived Effectiveness of AI Tools

Both student and teacher respondents generally agreed on the positive impact of AI tools in research writing. Among teachers, the highest mean ratings were observed in the following items: “AI tools help improve the quality of my writing” (M = 4.20), “AI tools are useful in summarizing literature” (M = 4.10), and “AI tools assist in reducing grammatical and typographical errors” (M = 4.05).

Table 3: Perceived Effectiveness of AI Tools

	Student Mean	Teacher Mean
Improves writing quality	3.96	4.2
Increases efficiency	3.95	3.9
Reduces errors	4.01	4.05
Enhances idea generation	3.88	4.05
Summarizes literature	3.75	4.1
Clarifies structure	3.9	4.1
Helps with citation	3.98	3.95
Boosts confidence	4.01	4
Reduces cognitive load	3.95	4
Overall helpful	4.08	3.98

Students gave comparable ratings, with slightly lower means, though still within the "Agree" range ($M = 3.88\text{--}4.01$). These results highlight consensus on AI's role in enhancing productivity, clarity, and confidence in research writing.

These findings support the view that AI tools, when used appropriately, can meaningfully support academic writing. The statistical analysis shows minimal divergence in perception between students and teachers, reinforcing the idea that AI effectiveness is broadly recognized across academic roles.

Ethical Considerations on AI Use

The study also explored ethical dimensions, revealing that teacher-researchers held a more cautious stance compared to students. Teachers gave higher ratings on key ethical statements, including "AI-generated content should be cited" ($M = 4.08$ vs. 3.29), "AI may promote plagiarism" ($M = 4.03$ vs. 3.24), and "Using AI to generate full sections raises ethical concerns" ($M = 4.03$ vs. 3.42).

Table 4. Ethical Considerations on AI Use

	Student Mean	Teacher Mean
AI content should be cited	3.29	4.08
Hinders original thinking	3.49	3.9
Raises ethical concerns	3.42	4.03
May promote plagiarism	3.24	4.03
Needs university guidelines	3.62	3.95
Affects writing skills	3.45	3.98
Can cause unfair advantage	3.51	4.1
Should be support only	3.45	3.85
Unclear ethical limits	3.4	3.85
Should be declared	3.44	3.9

These differences were statistically significant ($p < 0.05$), indicating a genuine gap in how each group perceives the ethical risks of AI in academic settings. Teachers' heightened concern reflects their role as gatekeepers of academic integrity, while students may be more focused on productivity gains.

This supports earlier findings in literature emphasizing the importance of AI ethics education. Without clear institutional guidelines, students may under-recognize the boundaries of appropriate AI use, making teacher guidance and policy frameworks essential.

Relationship Between AI Use, Effectiveness, and Ethics

Correlation analyses deepened the understanding of these dynamics. A moderate positive correlation was found between AI usage frequency and perceived effectiveness ($r = .48$, $p < .01$), suggesting that familiarity and consistent engagement lead to greater confidence in AI use.

However, a weak negative correlation between usage frequency and ethical awareness ($r = -.19$, $p < .05$) indicates that increased reliance on AI does not necessarily enhance ethical mindfulness. This underscores the importance of explicit ethical scaffolding in academic programs to prevent normalization of superficial or unacknowledged AI authorship.

These findings reinforce the Socio-Technical principle that technological systems require social regulation—through policy and pedagogy—to ensure balanced, ethical outcomes.

Qualitative Insights

Open-ended responses from 94 participants (62 students and 32 faculty members) were analyzed using a thematic content approach, consistent with the study’s methodology. Each distinct idea in a response served as the unit of analysis, capturing reflections on AI’s benefits, risks, and ethical dimensions. A hybrid deductive–inductive coding scheme guided the analysis, and two independent coders reached strong agreement ($\kappa = 0.87$), ensuring reliability. To deepen interpretation, themes were compared between students and faculty, revealing meaningful contrasts that informed the construction of the Adaptive Human–AI Writing Continuum (AHAWC).

Three major themes and corresponding subthemes emerged:

Theme 1: AI as Cognitive and Affective Support

(Subthemes: Writing Assistance, Confidence Boost, Linguistic Support)

Students and faculty consistently highlighted AI’s value in enhancing clarity, generating ideas, and reducing writing anxiety. Many respondents viewed AI as a form of cognitive scaffolding—a tool that helps them express ideas more clearly and organize their writing.

A student described AI as a *“digital tutor that helps me finish my research faster because it gives ideas and fixes grammar.”*

Another explained that AI *“makes writing easier and less time-consuming,”* especially during the drafting stage.

Faculty echoed these benefits, noting that AI provides efficient proofreading and stylistic refinement, making writing *“more organized and clear.”*

However, the depth of use differed significantly between groups. Students tended to rely on AI for surface-level tasks such as grammar correction, paraphrasing, and idea generation. As one student put it: *“It helps in grammar and gives ideas; I just need to rephrase it.”*

Faculty, on the other hand, used AI more strategically for conceptual coherence, consistency checks, and validating paraphrased content.

This functional differentiation between superficial and deeper levels of support corresponds directly to the lower stages of the AHAWC model (*Minimal Support* and *Assisted Structuring*), where AI serves primarily as a linguistic and organizational aid.

Theme 2: Ethical and Pedagogical Tensions

(Subthemes: Academic Integrity, Overreliance, Misconceptions about Disclosure)

Ethical concerns emerged strongly, especially among faculty respondents, who emphasized risks of plagiarism, overreliance, and loss of authentic academic voice.

Faculty explicitly warned about academic dishonesty:

“AI is a helpful editor, but it must not become the author.”

“Students may no longer read or understand their own research because AI produces answers for them.”

Students, however, often equated responsible use with simple transparency:

“As long as you cite AI, it is okay.”

“Use AI but don’t rely too much—just rephrase it.”

This contrast reveals a clear ethical maturity gap: faculty advocated accountability, whereas many students prioritized procedural compliance (e.g., paraphrasing or citing AI). Some students even expressed misconceptions such as:

“AI information is okay as long as you double-check and rephrase it,”
suggesting uncertainty about deeper ethical obligations like source verification, authorship integrity, and critical evaluation.

These tensions directly informed the ethical checkpoints embedded throughout the AHAWC continuum, particularly the middle stages (*Iterative Supervision* and *Dialogic Collaboration*), where human judgment and verification are emphasized.

Theme 3: Evolving Human–AI Collaboration Practices

(Subthemes: *Co-Development of Text, Changing Writer Roles, Reflective Oversight*)

Both groups described AI as a dynamic collaborator, though they conceptualized this partnership differently.

Students tended to view AI as a peer-like assistant:

“It gives many ideas—it’s easier to write when AI helps.”

“AI helps me understand confusing topics by using simpler words.”

Teachers viewed AI within a guided pedagogical system, stressing reflective use and human oversight:

“Use AI only for organizing ideas, not as the source of information.”

“Teachers should set guidelines and use AI detection carefully—students must think on their own.”

Comparative analysis showed:

Students → emphasize *efficiency, accessibility, idea generation*.

Faculty → emphasize *critical thinking, academic honesty, accountability*.

These developmental differences map onto the higher stages of the AHAWC model (*Dialogic Collaboration* and *Guided Co-Creation*), where AI becomes a co-developer of text but must be mediated by reflective human control.

The qualitative findings provided essential empirical grounding for the development of the Adaptive Human–AI Writing Continuum (AHAWC). Reports of surface-level AI use—such as grammar correction, paraphrasing, and basic idea generation—directly informed Stages 1 and 2, where AI functions primarily as a mechanical and structural aid. Faculty members’ emphasis on verification, critical checking, and responsible evaluation shaped Stage 3, which centers on iterative supervision and human-led judgment. Participants’ descriptions of back-and-forth engagement with AI, including refining drafts and clarifying arguments, contributed to Stage 4, characterized by dialogic collaboration between human and machine. Finally, repeated calls for explicit guidelines, ethical boundaries, and pedagogical oversight grounded Stage 5, where co-creation occurs under reflective and institutionalized ethical safeguards. Taken together, these insights did more than support the model—they actively shaped its

structure, ensuring that the AHAWC continuum authentically reflects the diverse, developmental, and ethically layered ways users engage with AI in academic writing.

Development of the Adaptive Human–AI Writing Continuum (AHAWC) Model

Synthesizing the quantitative trends and qualitative insights, the AHAWC Model conceptualizes the integration of AI tools as a fluid, reflective continuum moderated by ethical awareness and human oversight.

Stage	Description	Dominant Actor	Ethical Focus
1. Minimal Support	AI used only for grammar or citation correction	Human	Accuracy
2. Assisted Structuring	AI aids in sequencing ideas and improving coherence	Human	Transparency
3. Iterative Supervision	Human critically evaluates AI-generated suggestions	Human-led	Accountability
4. Dialogic Collaboration	AI and human co-develop text through iterative feedback	Shared	Disclosure
5. Guided Co-Creation	Human and AI co-produce text under ethical supervision	Collaborative	Reflective integrity

Progression through these stages mirrors Socio-Technical Systems Theory (Appelbaum, 1997) and Activity Theory (Engeström, 1999)—emphasizing equilibrium between technological efficiency and human judgment.

The model underscores that ethical literacy and reflective agency, not mere access to AI tools, define successful academic integration. Institutions may adopt AHAWC as a tiered pedagogical framework, enabling learners to move from surface-level automation toward ethically reflective co-authorship.

7. Discussion

This study examined how students and teacher-researchers at Quezon City University integrate artificial intelligence (AI) tools into their research writing practices. Quantitative and qualitative analyses revealed both the potential and the tensions inherent in AI-assisted writing, highlighting differences in perception between students and faculty. The discussion that follows synthesizes these findings and explains how they informed the development of the Adaptive Human–AI Writing Continuum (AHAWC) Model.

Linking Findings to the Proposed Model

The data show that AI tools such as Grammarly, ChatGPT, Quillbot, and citation generators are used across multiple writing stages—from editing and formatting to literature summarization. This widespread, multi-stage application aligns with global findings that AI increasingly mediates both mechanical and cognitive aspects of writing (Khalifa & Albadawy, 2024; Nurchurifiani et al., 2025).

At the same time, users in this study varied significantly in depth of engagement and ethical orientation. Students tended to employ AI for grammar correction and idea generation, valuing its convenience ($M = 3.9\text{--}4.0$), whereas faculty respondents emphasized accuracy, verification, and responsible use ($M = 4.0\text{--}4.2$). The t-test confirmed statistically significant differences in ethical concern ($p < .05$). These contrasts directly informed the continuum logic of the AHAWC Model: the model's five levels correspond to the increasing complexity and ethical sensitivity of AI involvement observed among participants.

For example, respondents who used AI solely for surface-level corrections reflect Stage 1 (Minimal Support); those who combined AI summarization with personal synthesis correspond to Stage 3 (Iterative Supervision); and participants who collaborated with AI for brainstorming or translation resemble Stage 4 (Dialogic Collaboration). The progression from mechanical to creative reliance—anchored by teacher supervision and disclosure—emerged organically from the dataset rather than being imposed a priori. Thus, the AHAWC Model is empirically grounded: each continuum stage is traceable to specific usage patterns, frequency data, and qualitative themes documented in this study.

Data-Driven Implications

The implications drawn from this study are not theoretical speculations but are firmly anchored in the evidence collected from both quantitative and qualitative findings. First, AI literacy must emphasize ethical competence. Teachers' significantly higher ethical ratings ($M \approx 4.0$ vs. 3.3 for students) reveal a notable gap that institutions must address through explicit instruction on citation, authorship, and responsible AI assistance. This finding underscores the need to embed ethical training in AI-related writing programs to cultivate academic integrity and critical awareness among learners.

Second, institutional scaffolding is essential. Frequent mentions in the open-ended responses about the need for “clearer policies” and “AI training in schools” support the call for structured frameworks, such as the Adaptive Human–AI Writing Continuum (AHAWC) Model. Institutional mechanisms can ensure that technological fluency is complemented by ethical accountability, allowing AI integration to enhance learning outcomes without compromising authenticity.

Third, pedagogical differentiation is required to address role-based differences in AI utilization. The findings demonstrate that a one-size-fits-all policy is ineffective, as students and teacher-researchers engage with AI tools differently. The AHAWC continuum offers a tiered approach: early-stage writers may remain within Stages 1–2, focusing on accuracy and transparency, while advanced researchers can progress to Stages 4–5, where collaboration and ethical co-creation are emphasized under guided supervision.

Lastly, the study provides evidence for dynamic human–AI interaction. Participants reported that their reliance on AI shifted depending on task complexity and time constraints, highlighting that AI engagement is situational rather than linear. This observation validates the adaptive nature of the AHAWC Model and reinforces the need for ethical checkpoints at every stage of AI integration, ensuring that human judgment remains central in the writing process.

Integrating Quantitative and Qualitative Insights

The quantitative trends observed in AI usage, perceived effectiveness, and ethical awareness were strongly reinforced by the qualitative data drawn from 94 open-ended responses (62 students; 32 faculty). Thematic content analysis revealed four dominant categories—enhanced efficiency, ethical uncertainty, dependence concerns, and pedagogical implications—which mapped closely onto the statistical patterns identified earlier. Students’ reflections such as “*AI helps me generate ideas faster*” and “*It makes writing easier and less time-consuming*” echoed the high mean scores on productivity and linguistic improvement, confirming that AI functions as a cognitive support tool for many novice writers. In contrast, faculty emphasis on critical oversight and integrity—captured in statements like “*AI must not replace critical thought*” and “*Use AI only to organize ideas, not to be the author*”—aligned with their significantly higher ethical-awareness scores in the quantitative analysis.

The convergence of these data sources substantiates the dual architecture of the AHAWC Model: the horizontal axis representing increasing levels of AI-supported productivity and writing refinement, and the vertical ethical checkpoints ensuring responsible engagement at each stage. This integration demonstrates that the continuum is not theoretically imposed but empirically derived, grounded in the lived experiences, concerns, and developmental needs of both students and teacher-researchers. As such, the AHAWC Model reflects a realistic progression of human–AI collaboration—from basic mechanical support to ethically guided co-creation—supported by evidence from both numerical trends and narrative insights.

The Adaptive Human–AI Writing Continuum (AHAWC Model)

Grounded in the empirical patterns above, the AHAWC Model conceptualizes AI engagement as a tiered continuum ranging from minimal tool assistance to collaborative co-creation. Each stage embeds ethical prompts—transparency, oversight, originality, and attribution—derived from participants’ expressed concerns.

The continuum accommodates user diversity, disciplinary variance, and evolving AI literacy, allowing seamless movement between stages based on task requirements and ethical risk.

Adaptive Human-AI Writing Continuum (AHAWC)

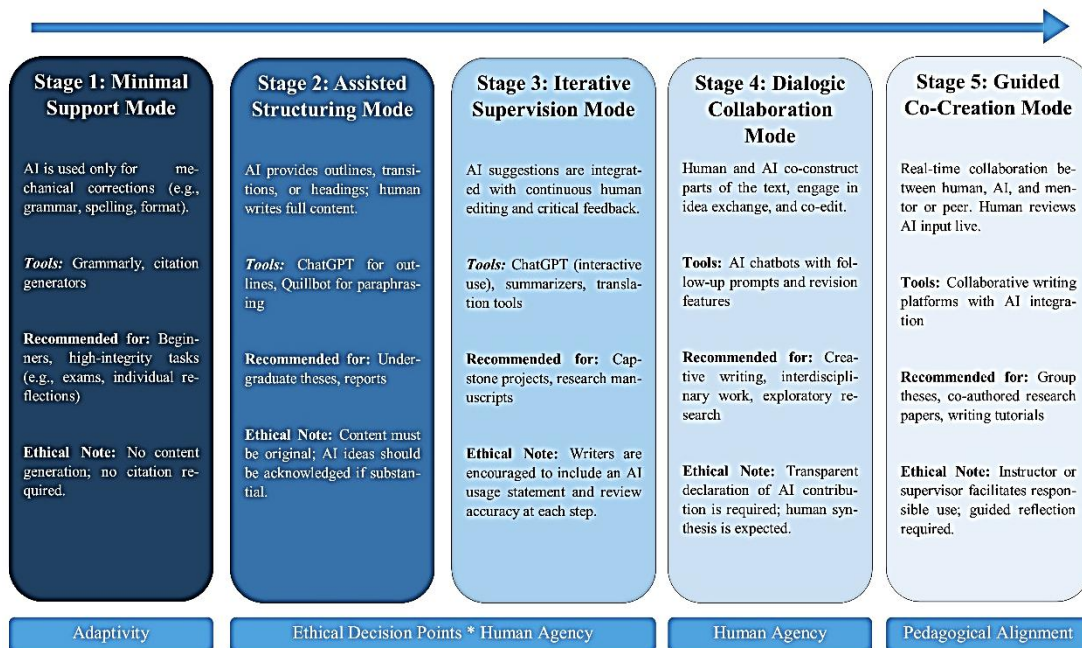


Figure 3: The Adaptive Human–AI Writing Collaboration (AHAWC Model)

Implications for Higher-Education Policy and Practice

Evidence from both datasets highlights several actionable directions for educational institutions. The findings point to the need for Institutional AI Literacy Programs, as quantitative results revealing ethical gaps support the creation of structured curricula that explicitly address AI ethics, authorship, and responsible tool use. Furthermore, Tiered AI Use Policies are recommended, wherein the five levels of the AHAWC continuum can serve as benchmarks for determining acceptable degrees of AI assistance based on the learner's course level or research experience.

In addition, Faculty Professional Development emerges as a crucial component. Faculty members' strong ethical orientation positions them as key facilitators in embedding AI ethics within research mentorship and classroom instruction. Finally, the participants' expressed need for guidance justifies the establishment of Research Writing Support mechanisms, such as AI help desks or writing centers designed around the AHAWC framework, to provide ethical and technical assistance.

These recommendations are both data-driven and contextually grounded, reflecting the unique patterns of AI adoption and ethical perception observed at Quezon City University, while also offering transferrable insights and strategies for other higher education institutions navigating responsible AI integration.

Limitations and Future Research Directions

The study's limitations were consolidated here for clarity. First, the single-institution sample restricts generalizability; future studies should triangulate results through multi-campus or cross-cultural comparisons. Second, reliance on self-reported Likert data may introduce bias;

mixed-method approaches combining interviews, writing-sample analysis, or AI-usage logs are recommended for validation. Third, while open-ended responses added depth, more robust qualitative methods (e.g., focus groups) would capture collaborative and disciplinary nuances. Finally, the model's application was theoretical; subsequent research should pilot and evaluate the AHAWC Model across disciplines and cultures to test its pedagogical and ethical efficacy.

8. Recommendations

In light of the study's findings, several practical steps are recommended to help higher education institutions promote the ethical, effective, and responsible use of AI in academic writing. Institutions should begin by establishing clear and accessible policies that define acceptable AI use, outline proper citation of AI-generated content, specify consequences for misuse, and ensure that these guidelines are easily accessible through student handbooks, course materials, or online portals. The Adaptive Human–AI Writing Continuum (AHAWC) Model should also be adopted as a pedagogical tool to guide both students and teachers in understanding appropriate levels of AI involvement in writing, adjusting use according to task complexity and academic level while maintaining a balance between human cognition and AI assistance. Furthermore, AI literacy training must be integrated into the curriculum through workshops, seminars, or embedded modules that teach technical proficiency, responsible use, and reflective awareness of AI tools. Assessment practices should likewise be revised to include ethical dimensions, with rubrics that evaluate originality, critical thinking, and adherence to institutional AI-use policies. Finally, universities should continue conducting research on the pedagogical and ethical implications of AI, testing and refining the AHAWC Model across disciplines to inform future policies and teaching innovations. Collectively, these measures aim to foster a culture of thoughtful and ethical AI engagement, ensuring that technological advancement enhances rather than undermines academic integrity.

References

- Abdullah, M. Y. (2025). Probing into EFL students' perceptions about the impact of utilizing AI-powered tools on their academic writing practices. *Education and Information Technologies*, 30, 21189–21220
- Al-Bukhrani, M. A., Alrefaee, Y. M. H., & Tawfik, M. (2025). Adoption of AI writing tools among academic researchers: A Theory of Reasoned Action approach. *PloS One*, 20(1), e0313837.
- Al-Shaboul, I. A., Al Rousan, R. M., Kalsoom, T., & A-Awawdeh, N. (2024). A critical examination of how AI-driven writing tools have impacted the content, style, and organization of foreign language undergraduates' writing: A survey of lecturers. *Research Journal in Advanced Humanities*, 5(4). <https://doi.org/10.58256/pjf6en83>
- Al-Sofi, B. B. M. A. (2024). Artificial intelligence-powered tools and academic writing: to use or not to use ChatGPT. *Saudi Journal of Language Studies*, 4(3), 145-161.
- Appelbaum, S. H. (1997). Socio-technical systems theory: an intervention strategy for organizational development. *Management Decision*, 35(6), 452-463.
- Bankins, S. (2021). The ethical use of artificial intelligence in human resource management: a decision-making framework. *Ethics and Information Technology*, 23(4), 841-854.
- Chan, C. K. Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education*, 20(1), 38.
- Chen, Z., Chen, C., Yang, G., He, X., Chi, X., Zeng, Z., & Chen, X. (2024). Research integrity in the era of artificial intelligence: Challenges and responses. *Medicine*, 103(27), e38811.
- Engeström, Y. (1999). Activity theory and individual and social transformation. *Perspectives on Activity Theory*, 19(38), 19-30.
- Fowler, D. S. (2023). AI in higher education: academic integrity, harmony of insights, and recommendations. *Journal of Ethics in Higher Education*, (3), 127-143.
- Grace, J. C. (2025). Chalkboards to Chatbots: Helping Faculty Harness AI for the Future of Higher Education.
- Hong, X., & Guo, L. (2025). Effects of AI-enhanced multi-display language teaching systems on learning motivation, cognitive load management, and learner autonomy. *Education and Information Technologies*, 1-35.
- Hutson, J. (2024). Rethinking plagiarism in the era of generative AI. *Journal of Intelligent Communication*, 3(2), 20-31.

Karam, J. (2023). Reforming higher education through AI. In *Governance in Higher Education: Global Reform and Trends in the MENA Region* (pp. 275-306). Cham: Springer Nature Switzerland.

Khalifa, M., & Albadawy, M. (2024). Using artificial intelligence in academic writing and research: An essential productivity tool. *Computer Methods and Programs in Biomedicine Update*, 100145.

Khatri, B. B., & Karki, P. D. (2023). Artificial intelligence (AI) in higher education: Growing academic integrity and ethical concerns. *Nepalese Journal of Development and Rural Studies*, 20(01), 1-7.

Kotsis, K. T. (2024). Artificial Intelligence Creates Plagiarism or Academic Research? *European Journal of Arts, Humanities and Social Sciences*, 1(6), 169-179.

Kumar, S., Datta, S., Singh, V., Datta, D., Singh, S. K., & Sharma, R. (2024). Applications, challenges, and future directions of human-in-the-loop learning. *IEEE Access*.

McGrath, M. J., Duenser, A., Lacey, J., & Paris, C. (2024). Collaborative human-AI trust (CHAI-T): A process framework for active management of trust in human-AI collaboration. *arXiv preprint arXiv:2404.01615*.

Nurchurifiani, E., Maximilian, A., Ajeng, G. D., Wiratno, P., Hastomo, T., & Wicaksono, A. (2025). Leveraging AI-Powered Tools in Academic Writing and Research: Insights from English Faculty Members in Indonesia. *International Journal of Information and Education Technology*, 15(2), 312-322.

Patel, K. (2024). Ethical reflections on data-centric AI: balancing benefits and risks. Available at SSRN 4993089.

Roe, J., Renandya, W. A., & Jacobs, G. M. (2023). A review of AI-powered writing tools and their implications for academic integrity in the language classroom. *Journal of English and Applied Linguistics*, 2(1), 3.

Rezaee, M., & Allahyari, A. (2023). The Advantages and Limitations of AI-Powered Writing Assistants in the EFL Classroom: Recent Insights and Future Directions. *Modeling and Simulation in Electrical and Electronics Engineering*, 3(3), 61-68.

Tripathi, A., & Thakar, S. V. (2024). Ethical use of AI for academic integrity: Preventing plagiarism and cheating. *Ethical Frameworks in Special Education: A Guide for Researchers*, 91.

Vasylyshyna, N., Skyrda, T., Lazorenko, N., & Kravets, I. (2024). Legal perspective on artificial intelligence and academic integrity within university education process participants research activity: New possibilities along with new limitations. *Scientific Journals of the International Academy of Applied Sciences in Lomza*, 96(4), 59-82.

Widiati, U., Rusdin, D., & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective. *Cogent Education*, 10(2).

Zhai, C., Wibowo, S., & Li, L. D. (2024). The effects of over-reliance on AI dialogue systems on students' cognitive abilities: a systematic review. *Smart Learning Environments*, 11(1), 28.

Zhao, D. (2025). The impact of AI-enhanced natural language processing tools on writing proficiency: An analysis of language precision, content summarization, and creative writing facilitation. *Education and Information Technologies*, 30(6), 8055-8086.

The Role of Grit on Happiness among University Students: Systematic Literature Review

ABSTRACT

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Grit characterized by perseverance and passion for long-term goals, plays a crucial role in enhancing university students' happiness by fostering resilience, academic achievement and overall well-being. However, despite growing interest in its significance, the mechanisms through which grit influences happiness and other student outcomes remain underexplored. This study systematically reviews the role of grit in promoting happiness among university students. Using the PRISMA guidelines, a comprehensive search was conducted across major databases, including SCOPUS and Google Scholar, to identify studies published in English between 2019 and August 2024. A total of 21 relevant articles were included in the review. The analysis revealed two primary themes: student enhancement and improved well-being, highlighting how grit mediates various factors such as resilience, self-esteem, growth mindset, and academic adaptation. The findings discovered that grit not only influences academic success but also contributes significantly to students' psychological well-being, fostering hope, life satisfaction and perseverance. Educators and student support systems are encouraged to focus on developing grit as a key resource to promote both academic achievement and holistic well-being. This review contributes to the broader understanding of grit's role in facilitating personal growth, resilience and sustained happiness among university students, extending its impact beyond academic contexts.

Keywords: Grit, Happiness, Subjective well-being, Life satisfaction, University students

1. Introduction

Background and Rationale

Happiness is a subjective experience often referred to as subjective well-being (SWB), encompassing both emotional and cognitive evaluations of life, such as life satisfaction, peace and fulfilment (Diener et al., 1999; Diener et al., 2003; Ryan et al., 2008). Because happiness relies on personal assessment, most research uses self-report measures to capture its emotional, cognitive, social, and attitudinal dimensions (Ghahramani et al., 2018; Lyubomirsky et al., 2005). Thus, this shows happiness not only emotional state but rather complex construct that influence individual social interaction that contributes to success (Ghahramani et al., 2018).

In the context of education setting, happiness is desirable due to its relevancy in fostering academic achievement and well-being (Lyubomirsky et al., 2005). To support academic success, recent studies have identified grit as a significant predictor of happiness, with individuals high in grit more likely to experience greater life satisfaction and emotional well-being (Disabato et al., 2018; Weisskirch, 2019). Grit is defined as the non-cognitive trait-level of perseverance and passion for long-term goals (Duckworth et al., 2007). Duckworth emphasized the importance of stamina in achieving long-term success, suggesting that individuals with higher levels of grit view achievement as a marathon rather than a sprint (Kannangara et al., 2018). Conversely, individuals with lower levels of grit are more likely to abandon goals when faced with adversity or boredom. A lack of well-structured and meaningful goals has been identified as a significant barrier to sustained effort (Duckworth, 2014). Thus, grit plays a crucial role in helping students persist through challenges and maintain motivation despite setbacks (Hodge et al., 2017).

The integration of findings indicates a positive relationship between grit and happiness among university students. Grit appears to play a significant role in enhancing students' ability to cope with academic stress and persist through challenges, thereby contributing to greater levels of happiness and well-being in the higher education context. Complementary relationship between grit and happiness is driven by one of the components of grit, namely perseverance dimension (Disabato et al., 2018). Weisskirch (2019) indicated that indirect effects of perseverance on happiness through commitment making, exploration in depth and rumination exploration. This is why people who have high grit tend to report of having higher levels of happiness, life satisfaction and better mental health (Salles et al., 2014; Vainio & Daukantaine, 2016). These findings suggest that grit plays a broader role beyond academic performance, contributing meaningfully to psychological well-being.

Therefore, a deeper and more systematic examination of how grit influences not only academic outcomes but also overall mental health and happiness is particularly important in the context of higher education. University students often face significant stress, pressure and life transitions, making grit a potentially critical factor in their overall well-being. Understanding this relationship more clearly can help lay the groundwork for future empirical studies and inform the design of targeted student support interventions aimed at enhancing academic success.

Underpinning Theory

University and college students face numerous academic, social, and personal challenges that require ongoing adaptation and resilience. Successfully navigating these demands is critical not only for academic achievement but also for overall psychological well-being. Understanding

the personal attributes that enable students to persevere, remain engaged and thrive in higher education is therefore essential. One such attribute that has gained increasing attention in research is grit, which has been linked to sustained effort, goal attainment and enhanced well-being (Duckworth et al., 2007).

In the context of university students, grit enables sustained engagement with challenging tasks, promotes persistence in achieving academic goals, and contributes to the development of personal mastery. When integrated with Self-Determination Theory (SDT), grit can be understood as facilitating the satisfaction of three basic psychological needs: autonomy, competence, and relatedness. Specifically, sustained effort toward meaningful goals enhances students' sense of competence, aligns goal pursuit with intrinsic motivation to support autonomy, and can strengthen relatedness through collaborative or socially recognized achievements (Ryan & Deci, 2000; Duckworth et al., 2007).

Building on this theoretical foundation, grit also contributes to broader well-being outcomes beyond academic performance. It influences mediators such as self-esteem, growth mindset, academic engagement, and resilience, which in turn foster happiness (Alhadabi & Karpinski, 2020; Duckworth & Quinn, 2009). From a Positive Psychology perspective, the PERMA model of well-being comprising positive emotions, engagement, relationships, meaning and accomplishment which provides a framework for understanding how grit translates into happiness (Seligman, 2011). Perseverance in goal pursuit enhances accomplishment and engagement, aligns actions with meaningful personal values, generates positive emotions, and can improve social connections. Integrating Grit Theory, SDT and PERMA thus provides a coherent framework illustrating how grit enables university students to satisfy psychological needs, leverage personal strengths and achieve higher levels of happiness as shown in Figure 1.

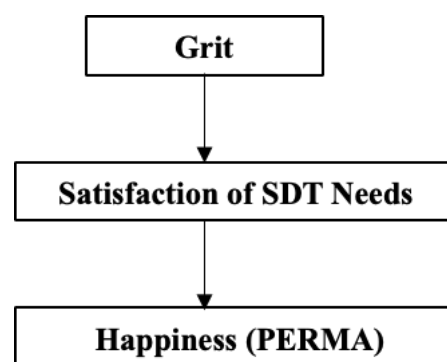


Figure 1: Study Conceptual Framework

Purpose of Study

Globally, university and college students facing challenges and adaptation is needed in order to overcome obstacle. Consequently, to achieve happiness in higher education, the development of grit is essential. Despite its importance, few studies have systematically examined the relationship between grit and happiness among university students. In recent years, several scholars have systematically investigated grit in relation to educational success; for instance, Yong et al. (2022) conducted one of the few studies closely related to happiness and its predictors among undergraduate students in Malaysia.

The result revealed that specific traits, behaviours, strategies and other domain in life predicts happiness. The differences between the former journal and this research are that the researcher use grit as another component in understanding the role it has on happiness. In addition, the purpose of this systematic literature review is to investigate the connection between grit and happiness in the recent years of 2019-2024.

Therefore, the present systematic review aims at exploring the role of grit and it's on happiness among university students. The main purpose of the review was to compile, analyse and learn from what had already been written about the experiences of students from higher education. The research results will further help researcher to understand the connection between grit and happiness in higher education, as well as to provide an effective way for university students to feel happy while pursuing sustain and retain their study. Due to the wish of researcher in understanding and analyzing the variables, systemative literature is used for this study and the following research question: Does grit predict happiness outcomes among university students?

The findings of this review will contribute to a deeper understanding of the relationship between grit and happiness within the context of higher education, particularly among university students as they navigate their academic journey. Although existing research often examines grit as a predictor of academic performance and success (Lam et al., 2019; Chisholm-Burns, 2021), limited attention has been given to exploring its relationship with happiness in university student populations. Most studies tend to focus on the general population, rather than addressing the unique experiences of students in higher education, who are especially vulnerable to stress, academic pressure and transitional life challenges. Therefore, this review specifically focuses on peer-reviewed studies published between 2019 and 2024, with the aim of mapping consistent themes, identifying research gaps, and proposing directions for future studies that support the holistic well-being of university students.

To illustrate more details the research questions with the review steps, including literature search, inclusion/exclusion criteria, data extraction and synthesis. The Table 1 outlines the expected outcomes from each step of the review.

Table 1: Mapping Research Aim to Methodological Steps and Expected Outcomes		
Research Aim	Methodological Steps	Expected Outcomes
Does grit predict happiness outcomes among university students?	- Systematically literature (2019- 2024)	- Identification of relevant studies
	- Use of inclusion/exclusion criteria	- Overview of study designs and populations
	- Quality appraisal using PRISMA	
	- Thematic synthesis of findings	- Key patterns and themes linking grit and happiness identified
	- Analysis of contextual factors (e.g., region, discipline)	- Insights into how grit contributes to student happiness across diverse settings
	- Identification of gaps and limitations in existing literature	- Recommendations for future research and educational practice

2. Method

The purpose of the literature review is to solve the research problem of the role of grit on happiness in higher education. The qualified documents were collected based on two databases of Scopus and Google Scholar. Scopus is well-known quality ranking publications for all subject fields. In addition, Scopus has a wide selection of subject areas. Meanwhile, Google Scholar is used due to its powerful open access database that archives journal articles. Google Scholar is both a database and a citation index (Rethlefsen, & Page, 2022). This study was conducted according to systematic literature review (SLR) in order to ensure that the researchers can reproduce the findings of SLR in the future. A systematic literature reviews study was conducted in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) statement (Moher, 2009) in Figure 2.

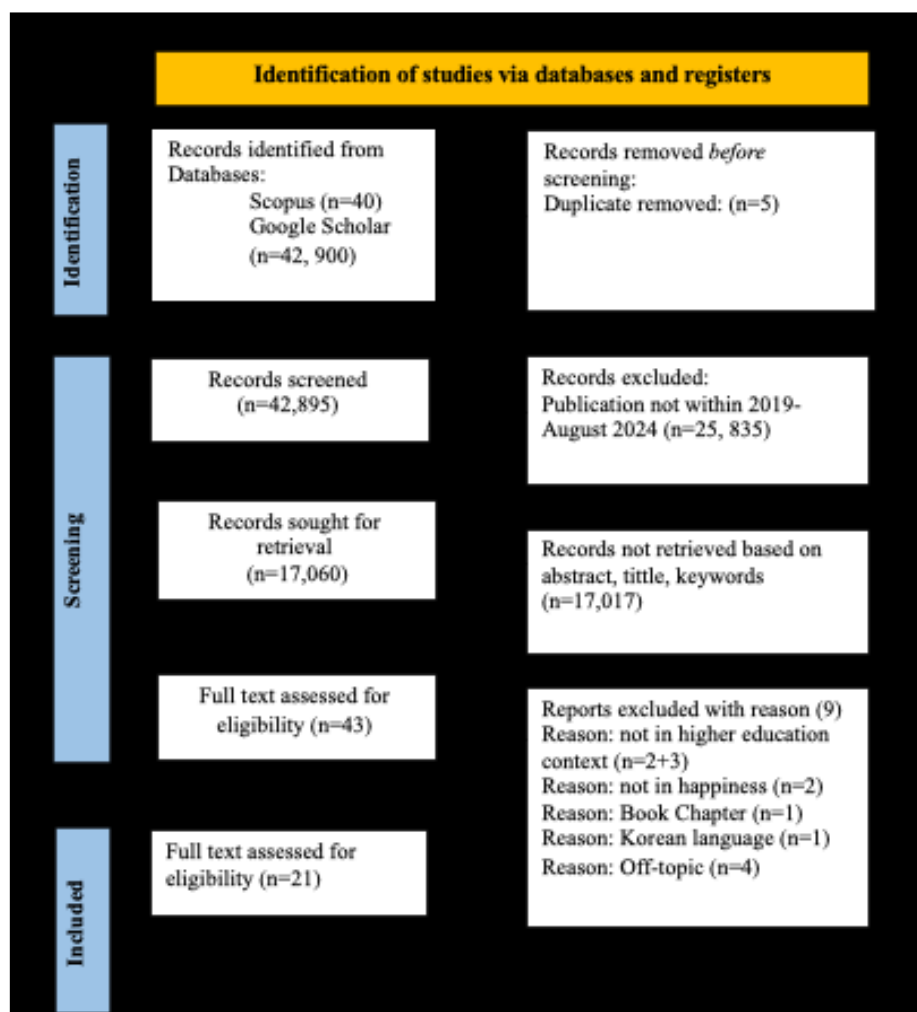


Figure 2. PRISMA flowchart for a systematic review on the impact of grit has on happiness among higher education students

Identification

This literature search was conducted in July 2024. The researcher searched Scopus and Google Scholar to identify the relevant research from 2019 to August 2024. Scopus and Google Scholar were selected as the primary databases for the journal article search due to accessibility considerations, as the Web of Science (WOS) database was unavailable through the university library subscription. The key search terms were (1) “grit”, (2) “Happiness” substitution terms

("Subjective well-being" AND "Life Satisfaction"), (3) University substitution terms ("College"). For Google Scholar, advanced search is used such as Grit AND Happiness, and with at least one of the words "Subjective Well-Being" OR "Life Satisfaction" OR "College" OR "University", including title searched and year dated between 2019-2024. The keywords were matched by Boolean operators AND/OR. The two databases use string, as in Table 2, 42, 900 were identified.

Table 2: Search strings

Search Builder	Search String
Grit	"grit"
Happiness	"Subjective well-being" OR "life satisfaction"
Context	"university" OR "college"

In order to ensure the inclusion of papers, the researcher excluded secondary sources such as unpublish research, thesis/dissertations, conference paper as well as magazine and book chapter.

Screening

In answering the research questions, relevant inclusion and exclusion criteria were established. The journal article used are within certain criterions namely 1) the official publication between 2019 and 2024, 2) full-text article published in English, 3) the term of grit, happiness or subjective well-being appear in the title or abstract and 4) the article should have DOI (Digital Object Identifier), refer to Table 3. Scopus databased was also searched to retrieves any undetected articles and 17 documents were found.

At this stage of screening, all titles and key parts of journal should have been thoroughly reviewed to meet the inclusion requirements of this study. Firstly, a total of 42, 900 articles were obtained from the two e-databases. Secondly, duplicates were deleted, Thirdly, based on the range of time (2019-August 2024) and the conditions of English language, 25,835 articles were deleted. Fourthly, the researchers screened the articles by meeting the qualification criteria based on title, abstract and keywords, deleting 17, 057. Fifthly, after full evaluation, combine with the criterion of inclusion and exclusion, the remain article were discussed.

Table 3: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
University, college students sample group	Preschool, primary, secondary, high school, teacher, special education, adults learner
Empirical studies	Literature review, meta-analysis, poster, booklet, presentation slides, commentaries, essay of letters
Written in English	Written in other languages
Peer-reviewed	Non peer-reviewed

Article Extraction

After a rigorous screening procedure, 21 articles published in the past six years (2019- 2024) were selected and met the inclusion criteria.

3. Result

This study aims to explore the role of grit in influencing happiness among university students as they pursue their educational degrees. The following are the findings obtained from the study.

Information of research results

All 21 selected articles are qualitative studies. The outcomes of university student happiness and grit are shown in Table 4.

Table 4: Reported relationships between grit and happiness

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
1	Noronha et al. (2024) - Brazil	The influence of grit on life satisfaction of Brazilian undergraduate students: academic adaptation as a mediator	What is the mediating effect of academic adaptation? This study proposed a mediation model to examine the mediating effect of academic adaptation in the relationship between grit and life satisfaction	413 undergraduate Brazilian students, Quantitative - Correlation analysis	That grit in academic context could benefit students' adaptation process, and the university's responsibility to improve its students' softskills, not only for the future stage after university, but also during the student's schooling.	
2	Harpaiz et al. (2024) - Israel	University students' academic grit and academic achievements predicted by subjective well-being, coping resources, and self-cultivation characteristics	To explore the contribution of 3 main categories of variables 1-subjective well-being (SWB) 2-Coping resources (self-efficacy & help-seeking orientation (HSO)) 3-self-cultivation characteristics (savouring and personal growth) To academic grit and academic achievement, significance of academic grit as predictor and mediator for academic achievement.	351 University students (18-58 age) Anglophonic countries (US, Canada, UK) and Israel Quantitative SEM Analysis	Academic grit was found to be directly associated with academic achievement among university students while SWB, coping resources, and self-cultivation characteristics were only indirectly associated with academic achievement with the mediation of academic grit	These results have important educational implications since they reveal existing effects which should serve as a basis for the implementation of university programmes. The results indicate the importance of grit especially regarding personal growth to perform optimally at university studies.
3	Saunders et al. (2023) - USA	Grit, Subjective Happiness, Satisfaction with Life, and	To compare grit, subjective happiness, satisfaction with life, and academic	227 respondents of pharmacy students (19-25 year old)	Grit scores did not differ between pharmacy students and OT/PT students, while SHS scores were	

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
		Academic Resilience Among Pharmacy and Physical Therapy Students at Two Universities	resilience among pharmacy and occupational therapy/physical therapy (OT/PT) students at 2 distinct universities using the short grit scale, subjective happiness scale (SHS), satisfaction with life scale (SWLS), and the academic resilience scale (ARS-30)	Quantitative Cross-sectional design Descriptive statistics, t tests, a 2-way analysis of variance, Pearson correlation, and regression analyses	significantly higher in OT/PT students. Subjective happiness was higher in the private university, with young, female students at the private university reporting higher SHS scores. Although the grit score was not correlated with SWLS, SHS, or ARS-30 scores, the SWLS was correlated with SHS. The SHS was a strong predictor of academic resilience in both OT/PT and pharmacy students.	
4	Mason (2023) South Africa	Grit and its relation to well-being among first-year South African university students	This study investigated the relationship between hope (agency and pathways thinking), grit, and subjective well-being (life satisfaction and positive and negative emotions) among South African first-year university students	210 university students Quantitative Regression analysis	Regression analyses indicated hope predicted higher grit, satisfaction with life, and positive emotions. TA: Female students reported significantly higher agency and negativity scores, whereas males reported scores on the pathways dimension.	Hope is essential in student development and support programmes and may buffer students experiencing academic-related challenges. Student development programs should seek to promote grit as a personal resource in student populations
5	Liao & Chen Chen (2022) - Taiwan	Happiness takes effort: Exploring the relationship among academic grit, executive functions and well-being	Examined the relationships among grit, executive functions, and well-being	214 university students Quantitative Correlational study - simple direct regression - Simple linear regression	The results indicated that grit had positive relationships with both executive functions and well-being.	
6	Şimşir & Dilma	The mediating roles of grit	To test the sequential mediation role	885 undergraduate students	Self-discipline is positively related to grit, life-	Overall, these results

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
	Ç (2021) - Turkey	and life satisfaction in the relationship between self-discipline and peace: Development of the self-discipline scale (SDS)	of the grit and life satisfaction between self-discipline and peace among Turkish college students.	from public university Quantitative Path Analysis	satisfaction, and peace. Path analysis showed that the sequential mediating effect is significant for grit and life satisfaction on the relationship between self-discipline and peace	demonstrated that self-discipline makes a significant contribution to a peaceful life, also grit and life-satisfaction have a remarkable role in this contribution
7	Liu et al. (2022) - China	Grit and Life Satisfaction Among College Students During the Recurrent Outbreak of COVID-19 in China: The Mediating Role of Depression and the Moderating role of Stressful Life Events	To explore the relationship among grit, stressful life events, depression, and life satisfaction in college students during the recurrent outbreak of COVID-19	888 college students Quantitative Cross-sectional survey - Correlation - Descriptive statistics	The results showed that grit was correlated with life satisfaction ($r = 0.426, p < 0.001$); depression mediated the relationship between grit and life satisfaction [indirect effect = 0.0292, SE = 0.009, 95% CIboot = (0.135, 0.500)]; The relationship between grit and depression was moderated by stressful life events ($\beta = 0.107, SE = 0.028, p < 0.001, 95\% CI [0.053, 0.161]$).	
8	Hernandez et al. (2021) - Spain	Examining the dark side of motivation on life satisfaction in college students: Does grit matter?	Explored the simultaneous influence of personal traits and social factors to promote student well-being.	474 college students Quantitative SEM Analysis multi-section survey	These findings provide evidence regarding adequate teacher behavior and the importance of measuring student grit in the classroom setting	These findings provide new insights into the understanding of teacher motivational behaviors and student learning processes that influence student behavioral regulations and affective outcomes
9	Verner-Filion et al. (2020) -	Passion and grit in the pursuit of long-term personal	Investigated whether passion in students was related to perseverance of	425 university students Longitudinal	Harmonious passion was only positively associated with the facet of	

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
	Canada	goals in college students	effort and maintenance of interests toward the personal goals that students had set for themselves at the beginning of an academic semester. This study also investigated if the facets of grit were related to progress on personal goals, as well as to changes in subjective well-being and symptoms of depression over the semester in a sample of university students (N = 425).	study	perseverance of effort. In contrast, obsessive passion was negatively associated with both perseverance and consistency of interests facets of grit.	
10	Ma et al. (2020) - China	The mediation model of grit among Chinese college students	To test the relationship among Happiness Orientations and four aspects of social competence: initiation, supportiveness, self-disclosure and assertive, and reveal whether grit is a mediating variable between happiness orientations and social competence.	380 college students Quantitative Correlational designs	The dimensions of happiness orientation, the dimensions of social competence and the dimensions of grit are significantly related; Happiness orientation can positive predictive influence to social competence; Grit have a positive predictive influence to social competence; Grit play a fully intermediary role between the happiness orientation and the social competence.	
11	Hwang et al. (2019) - South Korea	Employment stress and the happiness of Korean university students: Multiple mediating effect of growth mindset, grit and hope	To examine the multiple mediating effect of growth mindset, grit and hope on the effect of employment stress on happiness among 364 college students in Korea.	364 college students Quantitative Survey Method Frequency analysis, reliability analysis, correlation analysis and mediation analysis	The results of the study are as follows. First, it is noted that the Pearson correlation analysis showed that happiness had a negative correlation with employment stress, and there was a significant positive correlation among growth mindset,	Improvements/Applications: This result will be utilized as a new model in which growth

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
					grit and hope. Broadly speaking, employment stress showed a significant negative correlation with happiness, growth mindset, grit, and hope. Second, as a result of the process macro analysis, employment stress affects growth mindset, hope and happiness, and growth mindset has a positive effect on grit, hope and happiness. To this end, it is noted that grit has a positive effect on hope, happiness, and hope has a positive influence on happiness. Third, there was a multiple mediation effect of growth mindset, grit and hope in the identified relationship between employment stress and happiness.	mindset, grit and hope mediate the job-seeking stress of university students in the process of affecting happiness in the Korean society where the employment crisis is at serious proportions.
12	Hwang et al. (2019) – South Korea	The effect of employment stress and growth mindset on the happiness of Korean college students: The moderated mediation model of grit	The purpose of this study was to verify the moderated mediation effect of grit on the mediating effect of growth mindset in the relationship between employment stress and happiness in 364 college students in Korea	364 college students Quantitative Correlational design	Findings: The results of the study showed a statistically significant correlation between happiness and growth mindset and grit. Employment stress was negatively correlated with happiness, growth mindset, and grit.	Improvements/Applications: These results will be used as a new model for grit to control the emotional stress of college students through the growth mindset.
13	Carkit (2024) - Turkey	Relations between grit, career adaptability, and life satisfaction : a moderated	The present study investigates whether grit predicts life satisfaction via career adaptability and	338 Turkish university students Quantitative Regression coefficients	The results show that career adaptability mediated the relationships between grit and life satisfaction. Furthermore, the	

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
		mediation model	how university students' age moderates this mediated relationship.		relationship between career adaptability and life satisfaction was stronger among relatively younger university students. University students' age further moderated the indirect effect of grit on life satisfaction via career adaptability. The indirect effect of grit on life satisfaction was stronger among relatively younger college students.	
14	Weiss kirch (2019) - USA	Grit Applied Within: Identity and Well-being	This study investigates how grit, perseverance in the face of challenges and focus on achieving goals, relates to identity development and how identity development mediates the relationship between grit and well-being	232 undergraduate Quantitative Correlational design	Grit-POE to commitment making, exploration in breadth, exploration in depth, and ruminative exploration, respectively. no significant direct effect of Grit-POE to depression There was a significant direct effect of Grit POE to happiness. There were significant indirect effects of Grit-POE on happiness through commitment making, exploration in depth and ruminative exploration, respectively. The indirect effect was positive through commitment making, exploration in depth and ruminative exploration.	
15	Muhammad (2020) - Pakistan	Exploring predicting role of students' grit in boosting Hope, meaning in life and	Examines how the presence of students' psychological grit can boost up hope, meaning in life, and subjective happiness of	475 undergraduate students Quantitative Survey research method Correlation	Result findings suggest that 32%, 27% and 10% of change in participants' scores on hope, meaning in life and subjective happiness are	Resilience is significantly related to psychological grit, with

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
		subjective happiness among undergraduates of university	475 undergraduate student	and Multiple Regression analysis	attributed to the student's psychological grit indicative of a medium effect size.	a moderate effect size. Hope, subjective happiness, and meaning in life do not have significant relationships with psychological grit, with very small or negligible effects.
16	Lumontod (2019) - Phillipines	How grit, college adjustment, and happiness predict freshmen students' academic performance?	Exploring how grit, academic adjustment, and happiness predict first-year students' academic performance	313 freshmen students Quantitative Correlation analysis	First, both grit and college adjustment was not significantly related to freshmen students' academic performance. Happiness was the only significant predictor of academic performance. Second, the findings show that grit, academic adjustment, and happiness were significantly inter-correlated	
17	Park et al., (2020) - South Korea	Influence of Human Rights Victimization on Happiness of College Students: Mediating Effect of Self-esteem and grit	The purpose in this study was to verify the mediating effect of self-esteem and grit in the link between human rights victimization and happiness among college students	233 undergraduates Quantitative Correlational Frequency analysis, reliability analysis, and double mediating effect analysis were performed. Bootstrap method	First, human rights victimization had a significant negative effect on happiness, self-esteem and grit. Grit had a positive correlation between self-esteem and happiness. Second, self-esteem and grit mediated in the link between human rights victimization and happiness	
18	Gupta (2023) - India	Correlational Study of Grit with Life Satisfaction	This study examined the relationship of Grit with Life Satisfaction,	149 young adults between the ages of 18 and 25	Grit was positively correlated with Life Satisfaction and Subjective Happiness, and it	

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
		, Subjective Happiness, and Burnout in Young Adults	Subjective Happiness, and Burnout in young adults	participate. Quantitative Correlational Descriptive analysis and regression analysis	was negatively correlated with burnout.	
19	Ajay & Kallahalla (2022) - India	Grit, Self Esteem, Subjective Happiness, and Internet Addiction in College Going Degree Students	To examine and differentiate grit, self-esteem, subjective happiness, and internet addiction in college-going degree students	College Student Exploratory research Quantitative Design	There was a significantly higher level of Grit, Self-esteem, and Subjective happiness in students who were involved in NSS and extracurricular activities and these students also showed significantly lower levels of internet addiction indicating higher adaptability and wellbeing	
20	Wen Jiang et al. (2020) – China	Striving and happiness: Between- and within-person-level associations among grit, needs satisfaction and subjective well-being	Further examine the within person associations between grit, NS and well-being. -Attempt to replicate and extend our findings to college students	78 college students Daily diary design (adapted from Nezlek 2012) Multilevel within-subject mediation analysis	Daily grit was significantly associated with LS. Meaning college students felt more satisfied with their life and experienced more positive and less negative affect on days when demonstrated greater perseverance and commitment towards their goals than on their average day.	
21	Seo & Lee (2022) – South Korea	The relationship between human rights victimization and happiness of university students: Mediating effect of grit and Moderated mediating effect of growth mindset	To provide an intervention model to prevent the decrease in happiness caused by human rights victimization by analyzing the moderated mediating effect of the growth mindset on the path of human rights victimization to happiness through grit for university students.	233 university students Quantitative Survey Frequency, reliability, correlation, and moderated mediating effect analysis	First, human rights victimization was negatively and significantly correlated with grit, growth mindset, and happiness. Second, the moderated mediating effect of a growth mindset on the path from human rights victimization to happiness via grit was verified. The human rights victimization of university students affects happiness through grit, and the growth mindset increases the effect	

No.	Author & Country	Title	Study Aim	Methodology (Sample Size, Data Analysis)	Results	Remarks
					of human →grit→ happiness path	

Research Status of Grit and Happiness

The researcher observing the number of articles published in different years, which the researcher observed the changes occur in attention given on grit and happiness, including the geographical distribution of the articles. Based on the geographical distribution of the articles, the researcher was able to identify which regional area that pay attention to grit and happiness.

a. Number of Publications by year

As shown in Table 5, the publication years of 21 documents are as follows: four in 2019, and five in 2020, and two in 2021, and four in 2022, and three in 2023, and three in 2024.

Table 5 : Journal Publication (2019 – 2024)

Year	Journal retrieved
2019	4
2020	5
2021	2
2022	4
2023	3
2024	3
Total	21

b. Geographical Distribution of Articles

These 21 articles have been presented in 21 different journals. As shown in Figure 3, researchers from (13 countries) explored the influenced of grit had on happiness among University students, with the number of publications in descending order starting off from South Korea (four articles), China (three articles), India (2 articles), USA (2 articles), Turkey (2 articles), South Africa (1 articles), Pakistan (1 articles), Israel (1 articles), Spain (1 articles), Canada (1 articles), Philippines (1 articles), Brazil (1 articles) and Taiwan (1 articles). From the figure below, the impact of grit on happiness has received the intention of researchers in many countries, nevertheless the issue of happiness well-being needs to be further increased worldwide in order for university students to achieved greater success.

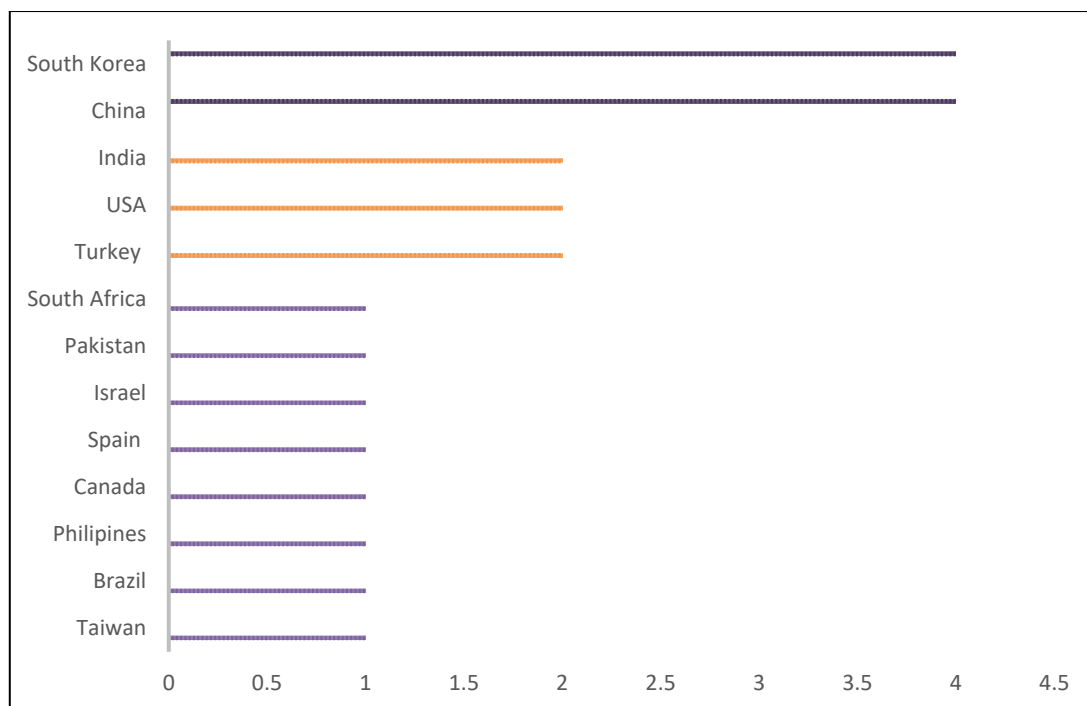


Figure 3: Geographical distribution of articles

Does grit predict happiness outcomes among university students?

To address the research question on whether grit predicts happiness outcomes among university students, the analysis revealed several interconnected themes that illustrate how grit contributes to students' enhancement and overall improved well-being within the university environment.

a. Student enhancement

Ten studies reported of how grit influence happiness through student enhancement. Hwang (2019) investigated the effect of employment stress and growth mindset on the happiness of Korean college students, utilizing a moderated mediation model of grit. The result revealed growth mindset significantly correlates with grit and happiness while, employment stress was negatively correlated with growth mindset, grit and happiness. Similarly, in China a Multilevel within-subject mediation analysis research by Wen Jiang (2020) who explored the association between and within person associations between grit, need satisfactions and well-being. The results revealed that daily grit was significantly associated with life satisfaction. Students felt more satisfied with their life and experienced more positive rather than less negative affect towards their goals than on average day. Gupta (2023) identified a negative correlation between burnout, grit and life satisfaction among young adults, suggesting that higher levels of grit are associated with better life satisfaction despite the presence of burnout. Saunders (2023) found that resilience was the by-product of gaining happiness. Meanwhile a cross-sectional design study conducted in United States by Saunders (2023) investigate the relationship between grit, subjective happiness, life satisfaction with academic resilience among pharmacy and occupational therapy/physical therapy (OT/PT) students at 2 distinct universities. The finding yields several findings. First, both groups of pharmacy students and occupational therapy/physical therapy (OT/PT) students displayed several levels of grit. Second, OT/PT students scored higher on Subjective Happiness Scale (SHS) than pharmacy students which indicating greater levels of happiness. Third, female students at private university reported of

higher SHS and reported of more feeling of happy. Fourth, SHS was found to be strong predictor relate to academic resilience for both students of pharmacy and OT/PT.

Harpaz (2024) investigated the contributions of three key categories of subjective well-being, coping resources (such as self-efficacy and help seeking orientation) and self-cultivation characteristics toward academic grit, academic achievement and significance of academic grit as predictor and mediator for academic achievement for success. The results indicated that grit was significantly associated with academic achievement among university students, suggesting that grit may foster student enhancement in academic pursuits. Additionally, subjective well-being, coping resources and self-cultivation indirectly associated with academic achievement with grit as a mediating factor. In a similar vein, Noronha (2024) explored the influence of grit on life satisfaction of Brazilian undergraduate students: academic adaptation as a mediator. The finding revealed that grit played a significant role in the academic adaptation process, emphasizing the responsibility of universities to facilitate the development of students' soft skills. The results also mentioning the importance of improving soft skills during schoolings which contribute not only to student success during their studies but also their professional lives after graduation.

Self-esteem has emerged as a significant factor across several studies. Park et al., (2020) investigated the impact of human rights victimization on happiness of college students, examining the mediating effect of self-esteem and grit. The result revealed two primary results, first, grit is significantly correlated with happiness and self-esteem and second, self-esteem and grit mediated between human rights victimization and happiness. Meanwhile, Ajay and Kallah (2022) examine and differentiate the roles of grit, self-esteem, subjective happiness and internet addiction in college-going degree students. The study revealed that students who participant in community service program such as National Service Scheme and other extracurricular activities demonstrated greater grit, self-esteem and subjective happiness. In addition, due to the involvement of these activities allowed the students to protect themselves from negative behaviours which theses students showed lower levels of internet addiction which indicating of higher adaptability and well-being.

Interestingly, a multi-section survey done in Spain by Hernandez et al. (2021) explored the negative aspects of motivation on life satisfaction among college students particularly on the role of grit. Interestingly was the finding that teacher motivational behaviours and student learning processes within classroom setting significantly influence student behavioural regulations and affective outcomes.

b. Improve well-being

A study conducted in Taiwan by Liao and Chen, (2022) investigates the relationships among grit, executive functions and well-being. The results revealed a significant positive association between grit, executive functions and well-being. Carkit (2024) investigate if grit predicts life satisfaction through career adaptability and how the factor of age moderates university students'. This study mentioned that in the context of Turkey, career adaptability mediated the relationships between grit and life satisfaction and younger university students were revealed to be stronger between career adaptability and life satisfaction. Another discovery of this study is that age moderate the indirect effect of grit on life satisfaction via career adaptability among university students. Meanwhile, another study in Turkey, revealed that grit and life satisfaction promote the relationship between self-discipline and peace among college students (Simsir &

Dilmic, 2021). In other words, self-discipline predicted the increasing level of grit that foresee high life satisfaction which increase the level of peace. Thus, it enhances students' well-being.

Two cross-sectional study of human right victimization in Korea, Park et al. (2020) and Seo and Lee (2022) examined the impact that is has on happiness among college students with the mediating effect of self-esteem and grit. The result revealed two findings (Park et al. 2020). First, human rights victimization negatively affect both happiness and self-esteem and second, self-esteem and grit mediated in the link between human rights victimization and happiness. Similarly, the research by Seo and Lee (2022) reported analogous findings, indicating revealed similar findings as Park et al. (2020) that individual who experienced human rights victimization exhibited lower levels of grit, growth mindset and happiness. Interestingly another finding revealed that suggested that the influence of human rights victimization on happiness through grit is influenced by individual growth mindset.

Another cross-sectional study of happiness orientations with social competence in China, Ma et al., (2020). Results showed the connectedness between git dimension, happiness orientation and the dimension of social competence (initiation, supportiveness, self-disclosure and assertive) among college students. The researcher proposed that grit have a positive predictive influence on social competence. Additionally, the researcher also mentioned that grit act as an intermediary between those two that grit have a positive predictive influence on social competence. In another study, grit was found to be related with happiness, boosting hope and meaning in life. Muhammad et al. (2020) examines how the presence of students' psychological grit can boost up hope, meaning in life, and subjective happiness among 475 undergraduate students in Pakistan. The finding suggests that students who show more grit may experience higher levels of hope, meaning in life and subjective happiness. In other words, fostering grit in students enhance their well-being and development.

Several studies describe the facets of passion only with depression. In the longitudinal study of passion for long term goals among college students in Canada. Verner-Filion (2020) investigated whether students' passion was related to perseverance of effort and maintenance of interests toward the personal goals that students had set early semester. In addition, the researcher explored if the facets of grit were related to progress on personal goals, and changes in subjective well-being and symptoms of depression. The finding revealed two main findings, first, harmonious passion positively associated with perseverance of effort which indicating individual with this keep on putting effort in reaching their goals. Second, in contrast, obsessive passion was negatively associated with both perseverance and consistency of interests facets of grit. In other words, individual with obsessive passion struggle to put effort or focus on a goal over time. Another research conducted in China by Liu et al. (2022) examined the relationship between grit, stressful life events, depression and life satisfaction in college students during Covid-19 outbreak. The findings revealed three findings. First, students who demonstrated more grit have higher life satisfaction. Second, depression mediated the relationship between grit and life satisfaction. Finally, the relationship between grit and depression was moderated by stressful life events.

In another cross-sectional study of first year student in Philippines, grit and academic performance on academic performance. Lumontod (2019) found that grit and college adjustment did not significantly predict academic performance in freshman students. In other words, no meaningful relationship was found between these variables with students' academic outcomes. Interestingly, happiness emerged as the only significantly predictor for academic performance. The researcher believed that grit, academic adjustment and happiness were

interconnected in some way. Overall, the study suggests that while grit and academic adjustment may not directly influence academic performance, happiness plays a key role in predicting students' success, with all three factors potentially being interrelated.

4. Discussion

This systematic review examined 21 studies (2019–2024) to explore the predictive role of grit on happiness among university students. The findings consistently support the view that grit defined as perseverance and passion for long-term goals to contribute positively to students' happiness and overall well-being. Ten studies highlighted how grit correlates with key student enhancement factors such as resilience, academic achievement, self-esteem and motivation. For instance, Hwang et al. (2019) identified grit as a mediator between employment stress and happiness, alongside growth mindset and hope. These findings suggest that grit not only buffers academic stress but also promotes emotional resilience and adaptive learning behaviors.

The role of the university in fostering grit is emphasized in several studies. Noronha (2024) argued that institutions should promote soft skill development, such as perseverance, early in students' academic journeys. Participation in extracurricular activities was linked to increased self-esteem and decreased negative behaviors like internet addiction (Ajay & Kallahalla, 2020). Park et al. (2020) further linked grit with self-esteem and happiness, particularly in contexts involving adversity, such as human rights violations.

Importantly, some studies positioned grit as a mediating variable in more complex models of student well-being. Harpaz et al. (2024) found that grit mediated the relationship between subjective well-being, coping resources, and academic achievement. Similar mediating roles were reported in studies on academic adaptation (Noronha, 2024), hope (Mason, 2023) and resilience (Muhammad et al., 2020). However, not all evidence aligned. Saunders et al. (2023) found no direct correlation between grit and happiness but observed that happiness predicted resilience. Similarly, Muhammad et al. (2022) reported that hope and meaning in life were not significant predictors of grit, suggesting that the motivational pathways connecting grit and well-being may differ across contexts. These inconsistencies likely arise from both cultural and methodological variations. In collectivist societies, for instance, happiness is often grounded in social harmony, interdependence and relational well-being rather than in individual perseverance, which may weaken the salience of grit as a direct predictor of happiness. Moreover, differences in research design, measurement tools and the operationalisation of grit, such as whether it is measured as domain-specific or as a general trait, may contribute to these divergent findings. Collectively, these highlight that grit is not a universal determinant of well-being but a contextually embedded construct whose impact on happiness is shaped by cultural values, social expectations and the nature of goal pursuit.

Two studies focused on the facets of grit and Perseverance of Effort (POE) and Consistency of Interest (COI) and their indirect effects on happiness through identity processes. Weisskirch (2019) found that POE, not COI, predicted happiness indirectly via commitment making and ruminative exploration. Similarly, a Canadian longitudinal study linked harmonious passion to POE and subjective well-being, emphasizing the motivational quality of grit over time. Additionally, demographic factors, especially gender and age, were inconsistently examined across studies. While some studies used gender solely as a descriptive variable (e.g., Gupta, 2023), others identified meaningful differences. For example, Mason (2023) found that female students reported higher emotional agency but also more negative emotions, while males scored

higher on strategic planning. Muhammad et al. (2020) found greater resilience among female students. These findings suggest that gender may influence how grit and happiness manifest, though this area remains underexplored.

Only two studies directly linked grit to academic performance (Lumontod, 2019; Harpaz et al., 2024). Harpaz et al. used structural equation modeling to show that grit mediated the effect of well-being and self-cultivation on academic achievement. This reinforces grit's dual role as both a predictor of emotional well-being and academic success. Finally, several researchers advocated for institutional interventions. Mason (2023) recommended integrating grit and hope into student support programs, while Hwang et al. (2019) proposed a model where growth mindset, grit, and hope together mitigate academic stress and promote happiness. These findings highlight grit not only as a personal trait but as a developmental resource that universities can actively nurture.

5. Implications of the Study

This study examined the influence of grit on happiness among university students over the past six years and systematically highlighting how grit contributes to students' well-being and academic success. The findings provide valuable directions for higher education institutions to cultivate grit intentionally through curriculum design, student support services and campus-wide initiatives.

Firstly, to integrate grit training into the curriculum, universities can embed perseverance-oriented learning activities such as long-term projects, reflective journals and mastery-based assessments that reward sustained effort and goal progression rather than short-term performance. Courses can also include structured reflection on challenges and setbacks to help students reframe failure as part of the learning process.

Secondly, within student support services, universities can offer grit and resilience workshops, peer mentoring programmes and counselling sessions that emphasise coping strategies, growth mindset and self-regulated learning. These initiatives help students build persistence, adaptability and emotional regulation when facing academic or personal difficulties.

Finally, at the institutional level, universities can promote a culture of perseverance and purpose by recognising student effort and improvement through awards, service-learning opportunities and community engagement projects. Embedding grit-related principles in orientation programmes and leadership training can further reinforce the value of sustained commitment and intrinsic motivation.

Thus, these strategies position grit as a trainable skill that contributes to both academic achievement and psychological well-being. By institutionalising grit development through educational practice and student engagement policies, universities can create supportive environments that nurture perseverance, optimism and happiness among their students.

6. Conclusion

This systematic review analysed 21 studies (2019–2024) to examine how grit predicts happiness among university students. Overall, the findings affirm grit as a key psychological resource linked to happiness through related factors such as self-esteem, growth mindset, hope,

and resilience. Building on these findings, the review highlights two interrelated themes: student enhancement and well-being improvement.

From a conceptual standpoint, the review positions grit as predictor of well-being within the frameworks of Self-Determination Theory and the PERMA model. Perseverance and passion for long-term goals are shown to enhance psychological need satisfaction, intrinsic motivation, and engagement, which collectively promote happiness. At the contextual level, cultural and methodological differences help explain variations in findings. Grit tends to be more strongly associated with happiness in contexts involving stress or individual goal pursuit, whereas in collectivist cultures, its effects are moderated by social and environmental factors. Most studies employed cross-sectional designs, highlighting the need for longitudinal and cross-cultural research to clarify causal relationships.

At the institutional level, universities can promote student well-being by embedding grit development within academic and support initiatives. Programmes such as mentoring, reflective learning, and growth mindset interventions can cultivate perseverance, adaptability, and purpose among students. In conclusion, this review extends understanding of how grit connects well-being for happiness. As a results, providing both conceptual depth and practical strategies for higher education institutions seeking to enhance student happiness and resilience.

7. Limitations and Recommendations for Future Studies

Several limitations of this review need to be addressed through. Firstly, in terms of selection of databases are limited. The databases only used Scopus and Google Scholar, and if more databases are used than the analysis results will be more comprehensive. Secondly, this research focused on the study of university students grit and happiness in the recent of six years (2019- August 2024). Grit and its influence on happiness should be investigated with other separate group of students, since level of grit may appear differently in other educational setting, either high school students or doctorate students. Thirdly, this study only focuses on English language journals, which may limit other discoveries to some extent. Future studies should consider on searching other language such as in Malay language in order to explore within the context of Malaysia as a collectivistic culture. Therefore, future researchers can increase the database in order to get more comprehensive results.

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References

- Alhadabi, A., & Karpinski, A. C. (2020). Grit and self-efficacy: A large cross-lagged analysis of grit, academic self-efficacy, and academic achievement. *Learning and Individual Differences, 81*, 101907. <https://doi.org/10.1016/j.lindif.2020.101907>
- Ajay G, & Kallahalla A B. (2022). Grit, Self Esteem, Subjective Happiness, and Internet Addiction in College Going Degree Students. *The International Journal of Indian Psychology, 12*(1). <https://doi.org/10.25215/1201.134>
- Carkit, E. (2024). Relations between grit, career adaptability, and life satisfaction: a moderated mediation model. *Current Psychology, 43*(34). <https://doi.org/10.1007/s12144-024-06375-w>
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*, 276–302. <https://doi.org/10.1037/0033-2909.125.2.276>
- Diener, E., Lucas, R. E., & Oishi, S. (2003). Subjective well-being: The science of happiness and life satisfaction. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 63–73). Oxford University Press.
- Disabato, D. J., Goodman, F. R., & Kashdan, T. B. (2018). Is Grit relevant to well-being and strengths? Evidence across the globe for separating perseverance of effort and consistency of interests. *Journal of Personality, 1*-18. <https://doi.org/10.1111/jopy.12382>
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and Passion for long-term goals. *Personality processes and Individual Differences, 92*(6), 1087-1101. <https://doi.org/10.1037/0022-3514.92.6.1087>
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment, 91*(2), 166–174. <https://doi.org/10.1080/00223890802634290>
- Duckworth, A., & Gross, J. J. (2014). Self-Control and Grit: Related but Separable Determinants of Success. *Current Directions in Psychological Science, 23*(5), 319–325. <https://doi.org/10.1177/0963721414541462>
- Ghahramani, S., Jahromi, A. T., Khoshsoroor, D., Seifooripour, R., & Sepehrpoor, M. (2018). The relationship between emotional intelligence and happiness in medical students. *Korean Journal Medical Education, 31*(1), 29-38. <https://doi.org/10.3946/kjme.2019.116>
- Gupta, A. (2023). Correlational Study of Grit with Life Satisfaction, Subjective Happiness, and Burnout in Young Adults. *The International Journal of Indian Psychology, 11*(1). <https://doi.org/10.25215/1101.121>
- Harpaz, G., Vaizman, T., & Yaffe, Y. (2023). University students' academic grit and academic achievements predicted by subjective well-being, coping resources, and self-cultivation characteristics. *Higher Education Quarterly Wiley, 78*(1), 192-211. <https://doi.org/10.1111/hequ.12455>

- Hernandez, E.H., Moreno-Murcia, J.A., Cid, L., Monteiro, D., Rodrigues, F. (2021). Examining the dark side of motivation on life satisfaction in college students: Does grit matter? *Behavioral Psychology*, 29(1), 111–125.
- Hodge, B., Wright, B., & Bennett, P. (2017). The Role of Grit in Determining Engagement and Academic Outcomes for University Students. *Research in Higher Education*, 59, 448-460. <https://doi.org/10.1007/s11162-017-9474-y>
- Hwang, M. H., Lim, H. J., & Ha, H. S. (2017). Effects of Grit on the Academic Success of Adult Female Students at Korean Open University. *Psychological Reports*, 121(4), 705–725. doi:10.1177/0033294117734834
- Hwang, Y.-K., Ji, C.-H., & Lee, C.-S. (2019). Employment stress and the happiness of Korean university students: Multiple mediating effect of growth mindset, grit, and hope. *Medico-Legal Update*, 19(2), 513–519. <https://doi.org/10.5958/0974-1283.2019.00228.7>
- Kannangara, C. S., Allen, R. E., Waugh, G., Nahar, N., Khan, S. Z. N., Rogerson, S., & Carson, J. (2018). All that glitters is not grit: Three studies of grit in university students. *Frontiers in Psychology*, 9, 1539. <https://doi.org/10.3389/fpsyg.2018.01539>
- Liao, Y-H., & Chen, H-C. (2022). Happiness takes effort: Exploring the relationship among academic grit, executive functions and well-being. *Personality and individual differences*, 199(3). <https://doi.org/10.1016/j.paid.2022.111863>
- Liu, H., Yu, Z., Ye, B., Yang, Q. (2022). Grit and Life Satisfaction Among College Students During the Recurrent Outbreak of COVID-19 in China: The Mediating Role of Depression and the Moderating Role of Stressful Life Events. *Frontier Public Health*, 18. <https://doi.org/10.3389/fpubh.2022.895510>
- Liu, Y., Sulong, R.M., Ahmad, N.A. & Li, R. (2024). Grit Relates To Academic Performance Among College Students: A Five Years Systematic Literature Review, *Journal of Institutional Research South East Asia*, 22(1), 47-69
- Lumontod, R., Z. III. (2019). How grit, college adjustment, and happiness predict freshmen students' academic performance? *International Journal of Research Studies in Psychology*, 8(2). 37-50. <https://doi.org/10.5861/ijrsp.2019.4010>
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131(6), 803-855. <https://doi.org/10.1037/0033-2909.131.6.803>
- Ma, C. H., Ma, Y.F., Wang, Y.P. (2020). The mediation model of grit among Chinese college students. *Procedia Computer Science*, 166. 160-164. <https://doi.org/10.1016/j.procs.2020.02.040>
- Mason, H. D. (2021). Grit and its relation to well-being among first-year South African university students. *Journal of Psychology in Africa*, 31(3), 226–231. <https://doi.org/10.1080/14330237.2021.1903157>

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, 6(7), e1000097. <https://doi.org/10.1371/journal.pmed.1000097>

Muhammad, H., Ahmad, S., & Khan, M. I. (2020). Exploring predicting role of students grit in boosting Hope, meaning in life and subjective happiness among undergraduates of university. *Pakistan Journal of Humanities & Social Sciences Research*, 3(1).

Noronha, A. P. P., Dias-Viana, J. L., & Cavallaro, A. P. O. (2024). The influence of grit on life satisfaction of Brazilian undergraduate students: academic adaptation as a mediator. *Frontier Psychology*, 15. <https://doi.org/10.3389/fpsyg.2024.1331259>

Park, J. Y., Tandia, M. T., Idahosa, O., & Lee, C. S. (2020). Influence of Human Rights Victimization on Happiness of College Students: Mediating Effect of Self-esteem and grit. *International Journal of Emerging Multidisciplinary Research*, 4(3), 1-5. <https://doi.org/10.22662/IJEMR.2020.4.3.001>.

Rethlefsen, M. L., & Page, M. J. (2022). PRISMA 2020 and PRISMA-S: Common questions on tracking records and the flow diagram. *Journal of the Medical Library Association*, 110(2), 253–257. <https://doi.org/10.5195/jmla.2022.1449>

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>

Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, 9, 139-170. <https://doi.org/10.1007/s10902-006-9023-4>

Salles, A., Cohen, G. L., & Mueller, C. M. (2014). The relationship between grit and resident well-being. *The American Journal of Surgery*, 207(2), 251–254. <https://doi.org/10.1016/j.amjsurg.2013.09.006>

Saunders, I. M., Pick, A. M., Lee, K. C. (2022). Grit, Subjective Happiness, Satisfaction With Life, and Academic Resilience Among Pharmacy and Physical Therapy Students at Two Universities. *American Journal of Pharmaceutical Education*. <https://doi.org/10.1016/j.ajpe.2022.10.009i>

Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. Free Press.

Seo, D. H., & Lee, C. S. (2022). The relationship between human rights victimization and happiness of university students: Mediating effect of grit and Moderated mediating effect of growth mindset. *International Journal of Health Sciences*, 6(S1), 5296²5310. <https://doi.org/10.53730/ijhs.v6nS1.6048>

Simsir, Z., & Dilmac, B. (2021). The mediating roles of grit and life satisfaction in the relationship between self-discipline and peace: Development of the self-discipline scale. *Current Psychology*, 41(12), p.8322-8332. <https://doi.org/10.1007/s12144-021-01515-y>

Vainio, M. M., & Daukantaitė, D. (2016). Grit and different aspects of well-being: Direct and indirect relationships via sense of coherence and authenticity. *Journal of Happiness Studies*, 17(5), 2119–2147.

Verner-Filion, J., Schellenberg, B.J.I., Holding, A.C., Koestner, R. (2022). Passion and grit in the pursuit of long-term personal goals in college students. *Learning and Individual Differences*, 83-84. <https://doi.org/10.1016/j.lindif.2020.101939>

Weisskirch, R. S. (2019). Grit Applied Within; Identity and Well-being. *An International Journal of Theory and Research*, 19(2). 98-108.
<https://doi.org/10.1080/15283488.2019.16043459>

Wen Jiang. Jiang Jiang, Xiaopeng Du, Dian Gu, Ying Sun & Yue, Z. (2020). Striving and happiness: Between-and within-person-level associations among grit, needs satisfaction and subjective well-being. *The Journal of Positive Psychology*, 15(4), 543-555. <https://doi.org/10.1080/17439760.2019.1639796>

Yong, M. F., Ahmad, S., & Khan, M. I. (2022). Exploring predicting role of students' grit in boosting hope, meaning in life, and subjective happiness among undergraduates of university. *Pakistan Journal of Humanities & Social Sciences Research*, 3(1), 158–171.
<https://www.researchgate.net/publication/346305817>

Traits of Educational Guides in Transversal Reality

ABSTRACT

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The aim of the study is to determine the methods of reactivating the national philosophical idea of guidance in the field of education and to research the transversal connections of personal traits of educational guides. Methodology of the study includes approaches that are the object of both educational management and educational and pedagogical sciences. Empirical research methods are determined by the specifics of the chosen topic and are aimed at studying the perspective of guidance among students of the second (master's) level of higher education and the realities of the guidance practice of working heads of educational institutions. Theoretical methods are temporally prolonged and aimed at mythologizing the guidance paradigm. The guidance in education was presented as a new perspective direction of pedagogical and management studies. Attribution was defined as the main mechanism of institutionalization of personal traits of guides, heads of educational institutions. The nature of the advanced role of the guiding mission in education management was determined. The attributive selection of outstanding professional traits for successful guidance of future heads of educational institutions was carried out. A scheme-model of transversal connections of guiding professional traits and multiplier effects of their interaction was created. The results can be used in further scientific research and in the educational process of training educational managers.

Keywords: guidance in education, integrative educational space, attribution, traits of educational guide, guiding advancement, multiplicity of traits, anti-management, transversality of guiding

1. Introduction

Education in Ukraine is a social and mental substrate of the state and society. The spirituality and patriotism of teachers and heads of educational institutions have been tested by the full-scale war against the country; this feature was most strongly challenged by the phenomenon of collaborationism in the temporarily occupied territories (Kolly-Shamne, 2022; Khrystiuk, 2023). The coronavirus pandemic and the war have had an extraordinary impact on the organization and management of Ukraine's education system. The European choice has prompted intensive comparative analysis of the structure, organization, resources and management of Ukrainian education within the European educational space (Lukyanenko, 2022). This analysis reflects on future prospects for national education and leads to a multidilemma of adopting the Finnish, Swedish and Polish education and management models through programmes such as the New Ukrainian School, the Vision of the Future of Education and Science of Ukraine, and Education 4.0: Ukrainian Dawn.

Despite ongoing discussion of national education policy ideas (Andrushchenko; Savelyev; Ivanyuk; Klepko), the turbulence of society and the war have made significant adjustments. We now observe a changed society and different challenges – uncertainty, mass migration to European countries, cloned educational institutions, temporary occupation of territories, loss of educational institutions, collaborationism, and total online education. The ideas of educational policy presented in multi-volume publications have become a plus-quam-perfect that repeatedly prompts methods of managerial habituation (Kornosenko et al., 2023).

Within this context, the idea of “guidance” in education remains underexplored. Guidance has not previously been a subject of systematic research or methodological development in Ukrainian educational management. Research on school leadership more broadly emphasizes instructional, distributed and transformational models (Toprak, 2020). There is also growing evidence that leadership competencies in schools can be measured and linked to competency frameworks (Abunaser & Al-Fahadi, 2025). This study shifts focus from traditional leadership models to the concept of educational guidance and its institutionalization as a distinct management posture.

In modern educational management the priority is no longer mere formalized mission statements but the mobilization of human intelligence, spiritual depth and humanistic competence. As Drucker (2009) argues, “making knowledge productive” is a key societal task. Nowadays, managers of educational systems or institutions must generate proactive ideas, embody war-tested spirituality, and display humanistic competence. Global aspirations such as “smart” education and artificial intelligence must be grounded in human intelligence and high spirituality (Brovina et al., 2024). Under these circumstances, every participant in the education system claims and deserves the right to an authorial intellectual brand. Bekh (2019) called this a “spiritual triumph” – the highest degree of experiencing the joy of success realized by an education manager. Bekh (2013) describes managerial activity in education as “activity over activity”, where the “upper” system (theory and its carriers), through knowledge, thus through reflection and thinking, assimilates the lower (executive) activity and becomes an attributive social need.

The programme elaborated by the Organisation for Economic Co-operation and Development (2023) showed disappointing results: Ukrainian students are approximately one and a half years behind European peers in mathematical literacy and two and a half years behind in reading literacy. This phenomenon is described as educational losses, which are rooted in education

management. It was revealed that only 24 % of Ukrainian basic school teachers create their own curricula from model curricula; the majority (76 %) rely solely on model programmes. Sahlberg (2021) explains the success of the Finnish education system (from which NUS was modelled) by fulfilment of three “Re” conditions: reinvention (rapid reinvention) of the ideas and mission of education; rebooting the curriculum (radical renewal of content); and re-foundation of management structures.

In view of the aforementioned features, the idea of guidance in education is now undergoing a process of social reactivation, yet remains conceptually and empirically underdeveloped (Riznyk & Riznyk, 2024). While verbal references to guidance exist in the academic discourse, there remains no cohesive paradigm community or operational framework that integrates guidance into modern educational management theory and practice. Literature to date lacks in-depth studies on the sustainability and situational variability of guiding traits among educational leaders in the 21st century, as well as their institutional manifestations. Moreover, although paradigms such as axiological, reflective and synergistic are frequently invoked, their integration into a unified explanatory model of educational guidance remains largely implicit and fragmented. This study addresses these gaps by proposing a transversal framework that explicitly maps interactions of guiding traits across these paradigms. It conceptualizes guidance as a multidimensional construct grounded in value-driven action (axiological), critical self-reflection (reflective) and systemic coherence and emergence (synergistic), thus offering a novel, methodologically structured contribution to the theory and practice of educational management in integrative conditions (Figure 1).

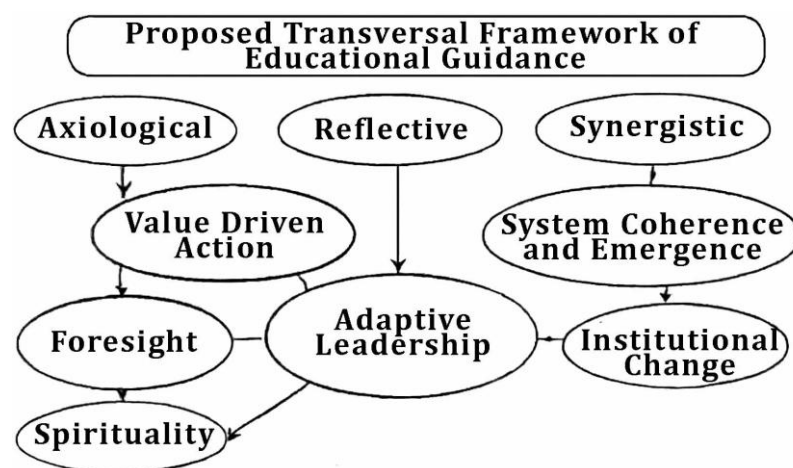


Figure 1: Conceptual flow of the study

The aim of this study is to identify effective methods for revitalizing Ukraine’s national concept of guidance in education and to examine transversal links among specific personal traits of educational guides (heads of institutions). The research focuses on establishing a methodological framework that supports the identification, development and evaluation of key guiding attributes required for educational leaders within a globalized, integrative educational context. The following research objectives are defined:

1. To substantiate the relevance of implementing the guidance paradigm in Ukrainian higher education under conditions of globalization, based on empirical indicators such as innovation-oriented leadership demand and institutional flexibility (Drucker, 2009; Bekh, 2019).

2. To identify and categorize core guiding traits (e.g., foresight, responsibility, moral agency, productive thinking) through qualitative analysis of focus-groups and expert assessments, and to assess their role and hierarchy in effective leadership scenarios.
3. To explore and map transversal interactions among these traits using a model of multiplicative and emergent effects, supported by data from in-depth interviews and case studies of practicing educational leaders in different regions of Ukraine (Kurlyand, 2012), increasingly applied in educational innovation.

2. Methodology

The research methods are determined by the specificity and novelty of the problem, which is the object of both educational management and educational and pedagogical sciences. The empirical methods are aimed at studying the guidance perspectives of students of the second level of higher education and the realities of the guidance practice of working heads of educational institutions. Successful guidance practices in Zaporizhzhia, Kirovohrad, Lviv, and Ternopil regions have been identified. The educational component Guidance in Education for students and practicing principals in the educational program Educational, Pedagogical Sciences is effective.

To investigate the guiding traits of educational leaders and their transversal interactions, a multi-method empirical design was employed, consisting of structured questionnaires, semi-structured interviews, and expert evaluations. The instruments were designed in alignment with the study's conceptual framework and developed through several iterative phases involving both theoretical alignment and empirical pre-testing. Questionnaires were administered to 152 master's students enrolled in Educational Management and Pedagogical Sciences programs across four regions (Zaporizhzhia, Kirovohrad, Lviv, Ternopil). The selection was based on professional relevance and regional diversity, ensuring a comprehensive representation of leadership roles in education. The inclusion of these particular regions was determined primarily by accessibility, institutional stability, and safety conditions during wartime. War-affected territories such as Donetsk and Luhansk were excluded due to security risks, disruption of academic activities, and the impossibility of conducting in-person data collection. Consequently, the selected regions, while not fully representative of all Ukrainian contexts, provide a reliable cross-section of functioning educational systems within the current constraints.

While the sample provides valuable insights, the reliance on qualitative methods, including semi-structured interviews and focus groups, limits statistical analysis and generalizability. Future research should expand the geographical scope to include post-conflict or frontline regions once accessible, allowing for comparative analysis of guidance traits under different socio-political conditions. It also should consider expanding the sample size and incorporating random sampling techniques to mitigate potential selection bias and enhance the empirical validation of the model. Qualitative data were analyzed using thematic analysis and coding procedures in NVivo, which identified emergent patterns and facilitated the construction of the transversal model.

The questionnaire consisted of four thematic blocks: (1) demographic and professional background; (2) self-assessment of key guiding traits (using a 5-point Likert scale across 12 traits such as foresight, responsibility, sacrifice, and productive thinking); (3) perceived relevance and expression of these traits in management practice; and (4) situational responses

to hypothetical leadership dilemmas designed to assess transversal interaction of traits. Items were developed based on a preliminary literature synthesis (Kryzhko et al., 2019; Starokozhko, 2017) and adapted for contextual sensitivity. A pilot study with 24 students (not included in the final sample) was conducted to assess item clarity, internal consistency, and construct validity. Cronbach's alpha for trait scales ranged from 0.78 to 0.84, indicating satisfactory internal reliability. Content validity was supported by expert review from six academics in the field of educational leadership who evaluated each item for conceptual alignment and cultural appropriateness. Semi-structured interviews were conducted with 22 acting heads of educational institutions (school principals and vocational college directors) selected via purposive sampling to ensure variation in institutional size, regional context, and experience level. The interview protocol comprised open-ended questions grouped into five domains: (1) personal definitions of guidance and leadership; (2) experience in manifesting specific guiding traits; (3) observed trait interaction in practice (e.g., how moral responsibility intersects with strategic decision-making); (4) institutional factors enabling or constraining guidance; and (5) perceptions of the singularity or irreducibility of effective guiding behavior. Interviews were audio-recorded, transcribed, and coded thematically using NVivo, with intercoder reliability confirmed at $\kappa = 0.81$ (Figure 2).

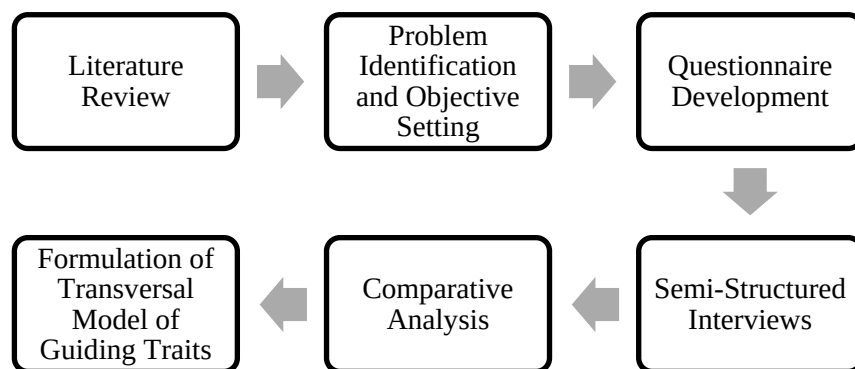


Figure 2: Research process

To ensure empirical measurability, each of the twelve guiding traits was operationalized through observable and self-reported indicators. Responsibility was assessed through self-reported consistency in fulfilling professional duties and decision accountability. Foresight was measured by participants' ability to anticipate institutional challenges and propose strategic responses to hypothetical scenarios. Spirituality was evaluated through agreement with statements reflecting moral purpose, ethical reasoning, and intrinsic motivation to serve others. Perseverance was measured by persistence in task completion under stress and by tolerance for delayed outcomes. Sacrifice was operationalized through self-reported workload redistribution, voluntary assumption of additional responsibilities, and risk-taking behavior in decision-making under uncertainty. Counseling was assessed through frequency of mentoring or advisory engagement within educational settings. Productive thinking was measured through self-reported innovation in problem-solving and generation of novel institutional solutions. The ability to provide was operationalized through perceived competence in resource allocation, team support, and conflict resolution. Moral agency was evaluated through alignment of professional decisions with ethical principles despite external pressures. Adaptability was measured by the self-reported capacity to adjust management strategies to changing conditions. Reflectivity was captured through self-assessment of critical thinking and awareness of one's own decision-making processes. Finally, leadership influence was measured through peer and subordinate evaluations of motivational and communicative effectiveness.

The proposed transversal model of guiding traits was validated using a Delphi expert evaluation procedure involving two iterative rounds. A panel of 12 experts, comprising scholars in educational management, institutional leaders with over 10 years of experience, and doctoral researchers with thematic expertise, was convened. Experts were provided with a preliminary model schema, along with definitions of core constructs (e.g., "attributive selection," "synergistic outcomes," and "transversality"). In Round 1, experts rated each component of the model on relevance, conceptual clarity, and theoretical coherence using a 4-point scale and offered open-ended feedback. Components rated below a mean threshold of 3.2 were flagged for revision. Feedback suggested, for instance, the need to distinguish between trait intersection and trait hierarchy, which led to the integration of a separate sub-model representing trait subordination dynamics. In Round 2, the revised model was resubmitted, now with clearer visual indicators and operational anchors for empirical testing. Consensus (defined as $\geq 85\%$ agreement on each component's theoretical adequacy) was reached across all components. Additional feedback resulted in refining the visual structure to more clearly reflect the emergent and nonlinear nature of trait interaction and the role of environmental factors in activating or suppressing transversal effects. The final model thus reflects a synthesis of empirical data, theoretical foundations, and iterative expert feedback, making it both conceptually grounded and practically oriented toward improving educational leadership development frameworks. To strengthen the construct validity of the guiding trait instrument, a confirmatory factor analysis (CFA) was conducted on the 12 guiding traits measured by the questionnaire. The Kaiser–Meyer–Olkin (KMO) coefficient of 0.82 and Bartlett's test of sphericity ($\chi^2 = 534.27$, $df = 66$, $p < 0.001$) confirmed sampling adequacy and factorability. Principal component extraction with varimax rotation identified three latent dimensions that aligned with the theoretical framework: (1) Axiological traits (responsibility, spirituality, sacrifice, morality), (2) Reflective traits (productive thinking, counseling, perseverance), and (3) Synergistic traits (ability to provide, foresight, adaptability). Together, these factors explained 71.4 % of the total variance. Factor loadings ranged from 0.61 to 0.87, supporting internal convergence. Reliability analysis confirmed acceptable internal consistency across factors (Cronbach's $\alpha = 0.83 - 0.89$).

In addition, NVivo-assisted coding frequency matrices were subjected to a principal components analysis (PCA) of interview themes to validate the qualitative alignment between participants' descriptions and the proposed trait clusters. The PCA confirmed a similar three-dimensional configuration, providing methodological triangulation between quantitative and qualitative evidence. This dual validation process substantiates the theoretical coherence of the transversal model of guiding traits and ensures that the instrument captures both the cognitive and axiological dimensions of educational leadership.

3. Results

The role and impact of educational guides in the transformation of Ukrainian education management

The features of a guide-head of an educational institution that form a real synergistic system of their personality were identified: spirituality; perseverance and focus on success; responsibility; counseling; productive thinking; ability to guide the team and ideas; sacrifice. The selection is deliberate, as the authors of the monograph defines a unique phenomenon arising from the

natural interaction of personality components, termed the synergistic outcomes (Kryzhko et al., 2019). In a highly organized system, the total properties of the system exceed the sum of its individual components' properties. This difference, known as the synergistic outcomes, represents an additional impact resulting from the creative interaction among the system's elements.

A characteristic feature of the synergistic outcomes is the ability to increase the predicted result, which is significantly higher than the total. The most characteristic features of the synergistic outcomes in the plane of functioning of complex systems, which include the personality of the guide, is the possibility of multiple effects of one or more elements of the system on the system as a whole (Kurlyand, 2012). It was assumed that multiplicity generates emergent states in the system and is a consequence of the following factors:

- a sharp nonlinear increase in a previously imperceptible property of a person or structure;
- an unpredictable bifurcation of the structure, or the generation of a non-paradigmatic idea and the creation of a configurator model;
- recombination of connections (transversality) between system elements and reassessment of the situation.

The result of multiplicity in the current study is a unique quality of a personality – the advanced nature of thinking and managerial actions (Figure 3). This is what allowed for defining guidance in education as a proactive, self-directed innovative and creative emergent activity of participants in the educational process aimed at ensuring the progress of the educational system, its structures and the successful self-realization of all participants in this system (Kryzhko et al., 2019).

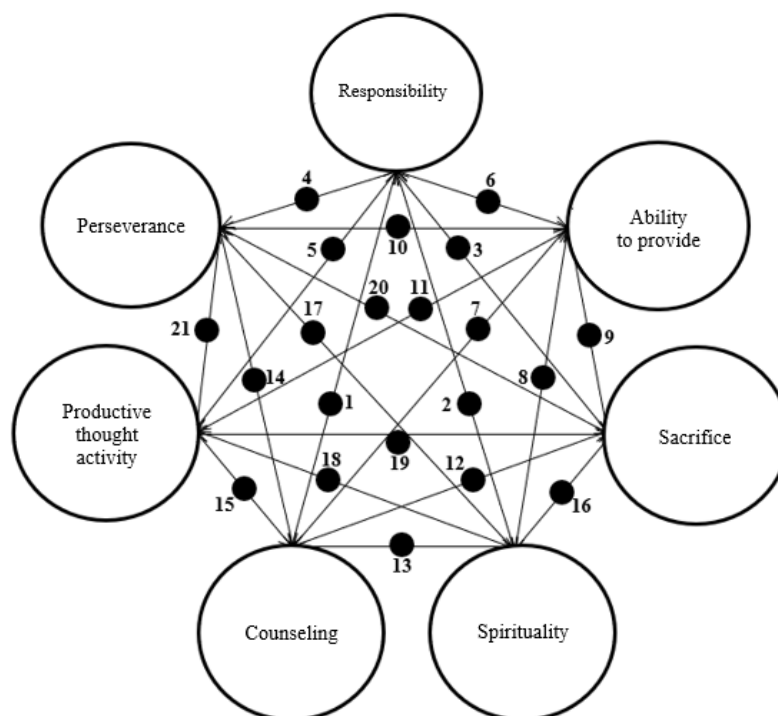


Figure 3: Transversality of personal traits of educational guides
Source: compiled by the authors.

Figure 3 illustrates the transversal network of guiding traits that interact within the personality structure of an educational leader. Each circle represents a key guiding trait – Responsibility, Perseverance, Ability to Provide, Sacrifice, Spirituality, Counseling, and Productive Thought Activity. The connecting lines and numbered intersections symbolize the multiplicative interactions among these traits, demonstrating that none of them functions in isolation. The density of interconnections indicates that the combination of traits produces emergent qualities such as foresight, moral agency, and systemic thinking. In this model, multiplicity reflects not a linear hierarchy but a dynamic field of mutual reinforcement, where the activation of one trait (e.g., Responsibility) enhances and transforms the functioning of others (e.g., Perseverance and Spirituality). Thus, the figure visualizes the internal architecture of the guiding personality as a synergistic and self-organizing system, consistent with the transversal principle of education management.

The main thing in the “forward state” of management is seen in the fact that among the people professionally engaged in it, there is always intellectual and creative tension, strong analytical and predictive thinking, public orientation of professed values, high and sincere personal morality, skills of democratic management of social processes, consciousness, behaviour and activities of people (Halushka, 2015; Onipko & Yaprnets, 2024).

O.N. Starokozhko et al. (2020) formulated the concept of “integrative educational space”: a mentally, socially and scientifically defined system of educational ideas, concepts, phenomena, visions, structures and institutions, whose activities are based on the appropriate use of the potential and resources of various paradigmatic visions of progressive development. An integrative educational space represents an educational framework that integrates multiple theoretical and practical paradigms, each offering distinct perspectives and methodologies. In the context of Ukrainian educational management, this approach incorporates paradigms such as axiological, reflective, and synergistic, among others, each contributing unique values and insights into the education system. The axiological paradigm, for example, emphasizes the role of values in education, encouraging the development of a values-driven educational culture (Dudar, 2024). The reflective paradigm promotes critical thinking and self-evaluation within the educational process, enabling institutions and individuals to assess and refine their practices continuously. Meanwhile, the synergistic paradigm focuses on collaboration and the integration of various educational components, aiming for a holistic and cooperative approach to learning and management.

The coexistence of these paradigms within an integrative educational space allows for flexibility and adaptability, which are essential in addressing the diverse needs and goals of a complex educational landscape. Rather than relying on a single, rigid framework, an integrative approach acknowledges that different educational challenges may require different conceptual tools and methods (Bendo et al., 2025). For example, an axiological perspective may be particularly valuable when shaping institutional values or educational culture, whereas a reflective approach might be better suited for fostering critical thinking and adaptability among educators and students. The synergistic paradigm further enhances this environment by encouraging collaborative problem-solving and innovation, enabling the education system to respond dynamically to both internal and external challenges.

This multi-paradigmatic approach also encourages the coevolution of ideas, wherein the interaction between paradigms fosters the development of new educational concepts and strategies. An integrative space facilitates the development of new methods that might not have been feasible in a single-paradigm framework by permitting paradigms to interact and influence

one another (Bocheliuk et al., 2019). For instance, the values-driven focus of the axiological paradigm can complement the collaborative nature of the synergistic paradigm, resulting in educational practices that are both ethically grounded and operationally effective. Additionally, the reflective paradigm can provide a mechanism for evaluating and integrating these diverse approaches, ensuring that each paradigm's contributions are aligned with the broader goals of the educational system.

Polyparadigmality provides the existence of different scientific, organizational and structural models of modern education and its management (Table 1). The principles of coevolution of ideas and carriers of these ideas are realized in the polyparadigmality: necessary diversity; bifurcation of thinking; non-degradation of the system; determination of the future. The ranking of the coordinated existence of the most popular scientific paradigms of the educational space was established: axiological paradigm, reflective, guiding; competence; synergistic paradigm (Starokozhko, 2017).

Table 1: Factors of the dual transversal interaction of guiding traits

No.	Traits of a guide	Functional emergence factor
1.	Responsibility – Counseling	Creating constructive and modeling projects to establish the state of the supreme personality by means of communicative excellence, research excellence and excellence of life.
2.	Responsibility – Spirituality	Morality of guidance influence on the system and the individual.
3.	Responsibility – Sacrifice	Implicitly defined, non-categorical expert assessments and evaluative judgments of personality development.
4.	Responsibility – Perseverance	Declaration of motives of duty.
5.	Responsibility – Productive thought activity	Recognizing the priority of non-paradigmatic system problems.
6.	Responsibility – Ability to provide	Effective management engineering. Recognition of risks.
7.	Ability to provide – Counseling	Development of professional resources and value orientations of participants in the educational process.
8.	Ability to provide – Spirituality	Acting on the basis of ethical considerations, socially responsible and consciously.
9.	Ability to provide – Sacrifice	Guiding thinking under uncertain conditions and personal responsibility for the results of work.
10.	Ability to provide – Perseverance	Potential for agency and alternative solutions.
11.	Ability to provide – Productive thought activity	Generating and implementing foresight changes.
12.	Ability to provide – Sacrifice	Responsibility for disseminating new ideas. Empathy.
13.	Ability to provide – Spirituality	Programmatic moderation of the morality of ideas.
14.	Ability to provide – Perseverance	Acceptance of alternatives and their situational adaptation.
15.	Advisory – Productive thought activity	Formation of the educational policy of the institution. Facilitation.
16.	Spirituality – Sacrifice	Ensuring the priority of human and mental values in management.
17.	Spirituality – Perseverance	Humane technologies of “soft power”.
18.	Spirituality – Productive thought activity	Priority of morality in management.
19.	Sacrifice – Productive thought activity	Recognizing the inevitability of transformation of the proclaimed ideas.

20.	Sacrifice – Perseverance	Phenomenal, non-reproducible nature of management decisions.
21.	Perseverance – Productive thought activity	New organizational forms and structures in management.

Source: compiled by the authors.

Table 1 summarizes the dual transversal interaction of guiding traits, integrating both theoretical and empirical sources. The conceptual pairings and definitions of guiding traits were primarily derived from the literature, particularly from Kryzhko et al. (2019), Starokozhko (2017), and Kurlyand (2012), who conceptualized the axiological, reflective, and synergistic paradigms of educational leadership. The functional emergence factors presented in the table, however, are based on empirical findings obtained from semi-structured interviews and expert evaluations. These empirical insights specify how the interaction of two traits manifests in real professional contexts, such as team management, moral decision-making, and innovation-driven organizational change.

According to I. Bogdanov, the change of management models occurs when contradictions and unresolved problems accumulate within the existing model and cause failures, crises that can be resolved by a revolution in the consciousness of the scientific community (Kryzhko, 2019). The author did not accept the idea that the existing scientific management system can be changed by gradually enriching it with the latest approaches. In reality, it turns out that the management principles that were put forward within the current paradigm, in a number of ways of carrying out management activities, not only ceased to produce the desired results, but, on the contrary, began to generate negative consequences (Butenko & Butenko, 2024). And success is increasingly accompanied by those who act in accordance with the principles of “anti-management” – the practice of behavior and activities that are opposed or biased towards the interests and goals of management. The guides take on the role of anti-managers, carriers of non-paradigmatic approaches.

There has consistently been a need within society for individuals capable of convincingly, clearly, and authoritatively articulating the essence of non-paradigmatic issues in education management. Traditionally, this role has been assumed by key figures within the Ministry of Education and Science: in 2017, L. Hrynevych introduced the concept of the New Ukrainian School; in 2022, S. Shkarlet launched the Education 4.0: Ukrainian Dawn project; and in 2023, O. Lisovyi directed attention to the foresight vision of the National Strategy of Education and Science of Ukraine until 2030. The fact is that all of these people are active participants in the system. Before they became ministers, they did not exhibit anti-managerial characteristics; on the contrary, they demonstrated an active solidarity position on the educational policy of the time. In 1951, Ukrainian philosopher D. Dontsov (2020) wrote: “The guide of Ukrainian people does not impose his fantastic impromptu ideas on them and does not excite them with ecstatic visions...”.

The uniqueness of the current study lies in the attempt to use the “transversal reality” in the institutionalization of guiding traits of heads of educational institutions. In this situation, transversality is considered as a line of unexpected, previously impossible intersection, a connection of semantic boundaries between different characteristics of the personality structure in order to construct adaptive and variable changes in its superiority in problem solving (transferrable process). The intersection of lines generates new complementary characteristics-competencies that were hidden or unclaimed (Efremov, 2025a). Transversality reduces the

uncertainty of a person's suitability or unsuitability for management. Components of transversal interaction of guiding traits:

1. Morality of the guiding mission.
2. Proactive, foresighted nature of guidance.
3. Attributive nature of guiding traits.
4. Phenomenal nature of the guiding mission.
5. Generation of new ideas and technologies.
6. Creating systemic methodological organizational changes.
7. Creation of polymorphic states and organizational forms of educational space.
8. Irrationality and ineffable knowledge as a component structure of guiding thinking.
9. Conscious sacrifice.
10. High responsibility.

Quantitative validation further supported the interdependence of guiding traits as hypothesized in the transversal model. Descriptive statistics revealed high mean scores for responsibility ($M = 4.61$, $SD = 0.42$), spirituality ($M = 4.48$, $SD = 0.47$), and productive thinking ($M = 4.39$, $SD = 0.51$), indicating that these traits are the most consistently expressed among participants. To examine the strength of interactions among traits, multiple regression analysis was performed, with innovative leadership behaviour (derived from the situational-dilemma block) as the dependent variable. The model was statistically significant, $F(5, 146) = 12.87$, $p < 0.001$, $R^2 = 0.41$, indicating that approximately 41 % of the variance in innovative leadership behaviour was explained by the predictors. Among the predictors, foresight ($\beta = 0.32$, $p < 0.001$) and responsibility ($\beta = 0.29$, $p = 0.002$) showed the strongest influence, followed by sacrifice ($\beta = 0.21$, $p = 0.018$), suggesting that a combination of strategic vision and moral accountability predicts emergent innovation in educational guidance.

To assess the combined or synergistic outcomes of trait pairs, a two-way ANOVA tested the interaction between foresight and responsibility on self-reported innovation indices. A significant interaction effect was observed, $F(1, 148) = 9.56$, $p = 0.002$, $\eta^2 = 0.11$, indicating that the simultaneous presence of these two traits produced outcomes higher than the sum of their individual effects—empirically confirming the multiplicative (emergent) mechanism posited in the transversal framework. These results quantitatively validate the conceptual assertion that guidance in education is an emergent system in which core traits interact synergistically rather than linearly, thereby reinforcing the theoretical and empirical robustness of the transversal model.

The study of the management system is constantly changing. This means that the ideas that were true yesterday can become untenable and false in an instant (Drucker, 2009). The need for change in an organisation arises sooner or later, regardless of what development ideology it adheres to and what management paradigm determines the dominant feature of its functioning. However, the efficiency of the organisation's functioning depends on how these changes are implemented.

The new system of views on management is known in the literature as the silent management revolution, and this is not accidental. Its main provisions can be applied without causing immediate destruction of the existing structures, systems, and methods of management, but, as it were, supplementing them, gradually adapting them to new conditions (Yermukhanova et al., 2019). Considering the management paradigm, it is important emphasize the complexity of structuring its concept, which is due to the lack of a theoretical model, which is aggravated by methodological contradictions, ambiguity of interpretation of its concepts. Guides are carriers

of fundamental changes in the fundamental foundations of the education system. If leaders (formal and informal) harmonize these systems, then guides go beyond the normative, established practice.

The role of a guide in the development and advancement of an educational system involves fostering sustainability within a framework aligned with sustainable development and “order”. This system operates under laws, principles, and rules set by an overarching administrative structure, creating a state known as homeostasis in synergetic theory. As a dynamic equilibrium, this state ensures that self-regulating systems function within acceptable limits (Efremov, 2025b). The management of an institution and its teaching staff exists in a dynamic harmony, referred to as a “pedagogical ensemble”, where harmony signifies a perfected state of active engagement rather than static peace.

The solidarity segment of the team comprises over 80%, characterized by adherence to the management doctrine without a culture of critical questioning. Another 15% represent “ino-agents”, individuals resistant to indoctrination who often embody anti-management perspectives, viewing standard managerial ideas as incompatible with their values. However, guidance is seldom found among this group, as they typically assume an entrenched oppositional stance, frequently expressing this position through high engagement on social media.

The task of management is to reduce the diversity of the object of management, and ideally, to reduce the set of all its possible states, determined by the influence of the environment or the action of internal factors, to a given state (Huretska, 2023).

The results of this study reveal that the effectiveness of so-called “anti-management” approaches in Ukraine stems from the unique social and institutional environment in which educational leadership operates. In conditions marked by instability, decentralization, and moral pressure, educational guides are compelled to improvise and act beyond the constraints of formalized bureaucratic structures. Their success is thus explained by situational autonomy and the moral legitimacy they gain from addressing urgent educational needs in wartime and crisis conditions (Li et al., 2022). In contrast, in more hierarchical or stable systems, such as those of Western Europe, the United States, or East Asia, similar non-paradigmatic actions are less likely to succeed because institutional inertia and rigid accountability frameworks restrict improvisational decision-making. The Ukrainian case demonstrates that anti-management can function as a creative strategy of survival, whereas in systems with established procedural order, such behaviour could be interpreted as a deviation from professional norms.

The expert assessments obtained through the Delphi study provide empirical grounding for this interpretation. A high level of consensus (85%) among experts confirms that the synergy between core guiding traits, particularly responsibility, foresight, and productive thinking, serves as a catalyst for institutional innovation. The data suggest a causal relationship between the interaction of moral and strategic traits and the emergence of organizational adaptability. This interaction was perceived not as an additive combination but as a dynamic process in which ethical consciousness amplifies managerial foresight, producing self-sustaining change (Lukashevych & Popozohlo, 2024). The Delphi results therefore support the argument that transversality operates as a mechanism of transformation within educational systems that lack rigid vertical control.

Viewed in a broader comparative perspective, the findings align with international discourses on educational innovation, particularly with Sahlberg's conception of "disruptive innovators" who challenge existing hierarchies through moral authority and professional trust. However, while in OECD contexts such innovation arises within institutional stability and long-term policy continuity, in Ukraine it emerges as a response to systemic fragility and the necessity for localized decision-making (Varyvoda & Gordenko, 2024). The transversal model thus expands the theoretical understanding of leadership by demonstrating that the same constellation of guiding traits can operate differently depending on governance structure and cultural context.

From a global standpoint, these results reveal the potential for integrating Ukraine's experience into broader frameworks of educational governance. The transversal synthesis of axiological, reflective, and synergistic traits corresponds with OECD and UNESCO principles that link moral agency, collaborative learning, and innovation capacity. The Ukrainian case contributes empirical depth to this dialogue by illustrating how moral responsibility and strategic creativity can compensate for institutional weaknesses and still produce sustainable educational outcomes. This indicates that transversality is not merely a national phenomenon but a potentially universal mechanism of educational renewal capable of reconciling local resilience with global standards of ethical leadership.

4. Discussion

1. The transversal model conceptualizes guidance in education as a multidimensional construct combining axiological, reflective, and synergistic elements, addressing both personal traits and institutional management. This approach integrates key theoretical paradigms that have been discussed in literature but remain underexplored in practical terms (Starokozhko, 2017; Bekh, 2019).
2. Guidance emphasizes values-driven actions (axiological) rooted in spirituality and humanistic competence as core drivers of educational leadership. These traits were empirically validated through semi-structured interviews with educational heads, where a strong moral foundation was linked to leadership success (Drucker, 2009; Rakhimberdinova et al., 2022).
3. Critical self-reflection (reflective) was identified as essential for the growth and adaptability of educational guides. Interview data revealed that successful leaders continuously reassess their strategies, learning from both successes and failures, thus reinforcing the need for adaptive leadership in dynamic educational contexts (Tyshchenko et al., 2019; Bekh, 2013).
4. Systemic coherence (synergistic) involves the integration of diverse educational components to foster collaborative problem-solving. This was reflected in the comparative analysis of educational leaders from multiple regions, demonstrating that guides who effectively combine personal traits with institutional resources drive more innovative, sustainable educational practices (Kurlyand, 2012; Petrova et al., 2018) (Table 2).

Table 2: Summary of relating empirical observations to theoretical constructs

Theoretical Construct	Empirical Observation	Supporting Literature
Axiological	Values such as responsibility, foresight, and moral integrity were critical for educational leadership. Successful guides expressed high levels of spirituality and humanistic values.	Bekh, I. (2019); Drucker, P.F. (2009)
Reflective	Educational leaders engaged in continuous self-reflection, adjusting strategies based on past outcomes. Critical thinking was key to navigating challenges.	Bekh, Yu.V. (2013); Sahlberg, P. (2021)
Synergistic	Successful leadership required the integration of diverse traits and collaboration across teams. This created a more adaptable and innovative educational system.	Kurlyand, Z.N. (2012); Starokozhko, O. (2017)

5. Conclusions

The conclusions of this study emphasize the critical role of guidance in advancing Ukraine's educational paradigm, positioning it as a key element in educational leadership. The research has identified the unique traits and competencies essential for educational leaders, highlighting the concept of guidance as an alternative to traditional leadership. Through both empirical and theoretical methods, a comprehensive framework for understanding guidance has been established, focusing on key attributes such as responsibility, spirituality, and productive thinking. The study also explored the synergistic outcomes, where the interaction of guiding traits results in a synergistic impact greater than the sum of individual qualities, thereby enriching the educational landscape through dynamic guidance.

The findings underscore the importance of adopting an integrative approach in education, integrating diverse paradigms to promote flexibility, innovation, and adaptability. By emphasizing the transversal connections between traits and the anti-managerial aspects of guidance, this research offers a fresh perspective on educational leadership. This approach acknowledges the complexity of educational environments, aligning with global educational trends while considering Ukraine's specific cultural and historical context. The study advocates for the structured development of guidance competencies within educational institutions, suggesting that the integration of guiding traits into professional development programs for future educational leaders is a necessary step forward.

Furthermore, the study reveals that guidance in education serves as a transformative force that not only challenges traditional leadership structures but also fosters a more adaptive and responsive educational environment. By analyzing the interactions of guiding traits, the research has identified essential attributes, such as foresight, adaptability, and moral commitment, that are vital for navigating the complexities of modern educational landscapes. These traits facilitate the creation of emergent scenarios within the educational system, encouraging innovation and proactive problem-solving. Additionally, the findings demonstrate that guides often transcend normative practices, initiating changes that traditional leadership models might overlook.

For future research, it is crucial to investigate how transversal traits influence educational management outcomes, particularly across diverse educational contexts. The role of anti-management as a catalyst for innovative thinking in education management should also be further explored, particularly its potential to drive transformational changes in educational

policies and practices. A more systematic approach to empirically testing and measuring the transversal model in different educational settings will help refine and improve the model over time, ensuring its practical application and relevance.

References

- Bekh, I. (2019). Spiritual growth of personality: Modern educational reality. *Theoretical and Methodological Problems of Education of Children and Students*, 23(1), 4-15.
- Bekh, Yu.V. (2013). *Philosophical modus of general management theory*. Kyiv: Drahomanov National Pedagogical University Publishing House.
- Bendo, A., Brovina, F., Bushati, S., Sallaku, D., Bushati, M., & Papa, E. (2025). The Effect of High Interval Intensity Training (HIIT) on the Performance of Basketball Players 10-15 Years Old. *Retos*, 62, 627-636.
- Bocheliuk, V.I., Panov, N.S., Fedorenko, M.I., Zhuzha, L.A., & Cherepiekhina, O.A. (2019). Gender particularities of value ideals of chiefs. *Prabandhan: Indian Journal of Management*, 12(10), 33-43.
- Brovina, F., Shkreli, L., & Bushati, M. (2024). Fostering excellence in sports, recreation, and rehabilitation: Leadership and management in Albanian higher education institutions. *Edelweiss Applied Science and Technology*, 8(6), 3519-3523.
- Butenko, V., & Butenko, M. (2024). The role of social intelligence in management. *Humanities Studios: Pedagogy, Psychology, Philosophy*, 12(2), 203-212.
- Dontsov, D. (2020). *The spirit of our antiquity*. Kyiv: Centre for Educational and Practical Literature. <https://cul.com.ua/duh-nashoyi-davnini?search=%D0%94%D1%83%D1%85%20%D0%BD%D0%B0%D1%88%D0%BE%D1%97%20%D0%B4%D0%B0%D0%B2%D0%BD%D0%B8%D0%BD%D0%B8>
- Drucker, P.F. (2009). *Management challenges for the 21st century*. New York: HarperCollins Publishers.
- Dudar, O. (2024). Formation of leadership qualities among students using art therapy. *Pedagogical Sciences*, 27(2), 6-16.
- Efremov, A. (2025a). The fear primacy hypothesis in the structure of emotional states: a systematic literature review. *Psychological Reports*. <https://doi.org/10.1177/00332941241313106>
- Efremov, A. (2025b). The psychology of faith and religious identity: how theology shapes worldview and self-perception. *Pharos Journal of Theology*, 106(3), 1-15.
- Halushka, V.Y. (2015). Methodological foundations of advanced public administration. *Public Administration: Improvement and Development*, 4. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&2_S21P03=FILA=&2_S21STR=Duur_2015_4_10
- Huretska, N. (2023). Modern challenges and prospects for the development of remote education: A systematic review of the literature. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(4), 107-115.

Khrystiuk, S. (2023). The competency-based approach in higher education: Problematicity & perspectives. *Humanities Studios: Pedagogy, Psychology, Philosophy*, 11(1), 111-118.

Kolly-Shamne, A. (2022). The concept of zone of proximal development and its derivatives: Problems and prospects of modern interpretations. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 8(4), 81-95.

Kornosenko, O., Danysko, O., & Bondarenko, V. (2023). Transversal competencies of students in the master's programs as a demand of the modern labor market. *Pedagogical Sciences*, 6(1), 73-80.

Kryzhko, V.V., Bogdanov, I., Nemchenko, S.G., & Shumilova, I.F. (2019). *Genesis of guidance in education*. Kyiv: Education of Ukraine.

Kurlyand, Z.N. (2012). The mission of the teacher in the modern world: The multiplicative aspect. *Scientific Journal of the Drahomanov National Pedagogical University*, 18(28), 15-20.

Li, T., Hao, L., Kubiczek, J., & Pietrzyk, A. (2022). Corporate social responsibility of sports club in the era of coronavirus pandemic. Zagłębie Sosnowiec case study. *Economic Research-Ekonomska Istrazivanja*, 35(1), 2073-2092.

Lukashevych, Y., & Popozohlo, I. (2024). Development of vocational education in the context of globalisation and integration processes. *Professional Education: Methodology, Theory and Technologies*, 10(2), 33-44.

Lukyanenko, O. (2022). Quality monitoring of scientific activity management in the modern Ukrainian university. *Ukrainian Professional Education*, 6(1), 16-28.

Ministry of Education and Science of Ukraine. (2023). *Vision of the future of education and science of Ukraine*. <https://mon.gov.ua/viziya-maybutnogo-osviti-i-nauki-ukraini>

Onipko, V., & Yaprnets, T. (2024). Formation of readiness for innovative educational activities as a key competence of future specialists. *Ukrainian Professional Education*, 8(2), 71-78.

Organisation for Economic Co-operation and Development. (2023). *Programme for international student assessment 2022 results: Ukrainian regions (18 of 27)*. https://www.oecd.org/en/publications/pisa-2022-results-volume-i-and-ii-country-notes_ed6fbcc5-en/ukrainian-regions-18-of-27_78043794-en.html

Peng, T., Wang, C., Xu, J., Dai, J., & Yu, T. (2024). Evolution and Current Research Status of Educational Leadership Theory: A Content Analysis-Based Study. *Sage Open*, 14(3).

Petrova, M.M., Sushchenko, O., Trunina, I., & Dekhtyar, N. (2018). Big data tools in processing information from open sources. In: *2018 IEEE 1st International Conference on System Analysis and Intelligent Computing, SAIC 2018 - Proceedings* (article number: 8516800). Kyiv: Institute of Electrical and Electronics Engineers.

Rakhimberdinova, M., Nurekenova, E., Suieubayeva, S., Duarte, Á., & Ordabayeva, M. (2022). Predictors Influencing the Choice of Master's Programs in the Tourism Industry. *Journal of Environmental Management and Tourism*, 13(4), 1161-1177.

Riznyk, V., & Riznyk, N. (2024). Methodological aspects of using artificial intelligence in the preparation of future vocational education specialists. *Professional Education: Methodology, Theory and Technologies*, 10(2), 103-114.

Sahlberg, P. (2021). *Finnish lessons 3.0: What can the world learn from educational change in Finland?* New York: Teachers College Press.

SPC Knowledge Base. (2006). Dr. W. Edwards Deming and profound knowledge. <https://www.spcforexcel.com/knowledge/dr-w-edwards-deming/profound-knowledge-part-2/>

Starokozhko, O.M. (2017). Strategies of educational space's polyparadigmality. *Bulletin of Luhansk Taras Shevchenko National University*, 8(313), 223-230.

Starokozhko, O.N., Kryzhko, V.V., & Zhygyr, V.I. (2020). The transversal character of polyparadigm educational space. *Scientific Bulletin of the National Mining University*, 3, 191-197.

Tyshchenko, V., Lisenchuk, G., Odynets, T., Cherednichenko, I., Lytvynenko, O., Boretska, N., & Semeryak, Z. (2019). The concept of building control for certain components of the system for training handball players. *Journal of Physical Education and Sport*, 19, 1380-1385.

Varyvoda, K.S., & Gordenko, S. (2024). Structure and assessment of emotional leadership in human resource management of higher education institutions. *Scientia et Societas*, 3(2), 57-69.

Yermukhanova, L.S., Kushimov, B.I., Zhexenova, A.N., Turebaev, M.N., Salakhova, N.K., & Mukhanbediyarova, A.Z. (2019). Suicide as a social problem among young people and adolescents in Aktobe city. *Journal of Intellectual Disability - Diagnosis and Treatment*, 7(4), 231-236.

Zúñiga, D., Cerda, G., & Bustos Navarrete, C. (2025). Leadership for Educational Inclusion: Design and Validation of a Measurement Instrument. *Education Sciences*, 15(2), 1

Methodology for Conducting an Assessment of the Teaching Staff of a University

ABSTRACT

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The aim of the study was to establish the effectiveness of traditional and digital methods of teacher evaluation by comparing these methods. The methodological basis of the study was qualitative and comparative analysis, which allowed examining current approaches to evaluation, identify strengths and weaknesses, and suggest ways to apply these approaches. In this study, the main methods of faculty evaluation were analyzed. Based on the specifics of the teaching activity of professors, the study identified evaluation criteria based on the structural elements of professional competence of university teachers. It was found that in order to achieve an objective evaluation it was necessary to use a variety of methods: traditional (analysis of publications, pedagogical observation, student questionnaires, etc.) and digital (analytical platforms, video recordings of classes, etc.). Since each method had its advantages and disadvantages, an integrated approach combining quantitative and qualitative methods provided the most accurate assessment. The analysis showed that regular collection of feedback from faculty and students about the evaluation process helps to improve and update it. To ensure the effectiveness of the faculty evaluation system, a set of principles for the process was formulated, as well as the phasing and duration. It was concluded that the evaluation of the quality of the teaching staff should be a total system to ensure that the potential of the teaching staff was identified and that future professionals in higher education institutions received quality training. In addition, it was necessary for the evaluation of teaching staff to be a regular and systematic process, which would allow HEIs to adapt to changes in educational standards and students' needs.

Keywords: teaching staff, rating, professional activity, higher education institutions, competence-based approach.

1. Introduction

One of the key components of success and competitiveness of higher education institutions (HEI) in the market environment is the availability of highly qualified teaching staff (TS). The efficiency of higher education institution's work directly depends on the coherence of the team. In the context of the need to improve the quality of education, university managers pay more and more attention to human capital, especially those who are directly involved in the educational process. As a result, the assessment of professional qualities, competences, and labor efficiency of teachers becomes especially relevant, as it is one of the most important tools for managing the quality of education. Improving the methods of teachers' labor evaluation is a complex and relevant task for the modern management approach.

The development of a comprehensive system for assessing the professional performance of teachers is both a scientific and practical challenge. The primary objective of such a system is to determine the extent to which teachers' work aligns with the evolving demands of modern educational transformation. A key approach in personnel evaluation is the competency-based model, which provides an objective framework for assessing the professional qualities that are critical to effective teaching. Evaluation criteria are therefore shaped around the core elements of professional competence, taking into account the unique aspects of pedagogical activity in higher education institutions (HEIs).

While this area has generated significant interest, many unresolved issues remain in the management and assessment of teaching staff. These challenges stem from several factors, including the distinct nature of teaching roles in HEIs, which require the integration of scientific, educational, and pedagogical responsibilities, as well as the complexities of labor relations in education. Furthermore, the selection of appropriate assessment methods remains a challenging task. These factors highlight the need for further development and exploration of innovative methods that can more accurately evaluate the qualitative performance of teachers, ensuring alignment with contemporary educational needs.

The issue of developing the necessary competencies in modern teachers to meet the demands of the 21st century has been a focal point of research among Kyrgyz scholars. I. Lyailya et al. (2022) emphasize that cultivating research competence in future teachers is a strategic priority. This competence, they argue, is vital for preparing a new generation of teachers capable of navigating the rapidly evolving educational landscape. They point to the importance of equipping educators not only with pedagogical knowledge but also with the skills necessary for continuous inquiry and critical reflection, as aligned with the theoretical framework of competency-based education.

M.A. Altybaeva et al. (2023) focus on the development of sustainable development competencies in teacher education. Their research underscores the need to modernize the teacher training system in response to the global sustainability agenda. They argue for the integration of an interdisciplinary approach, the promotion of ecological literacy, and the application of innovative educational technologies as core elements in this modernization process. This aligns with the socio-constructivist framework, which highlights the importance of equipping teachers with competencies that not only address academic knowledge but also foster environmental and social responsibility.

M. Esengulova et al. (2024) explore the effectiveness of the blended learning model in the professional development of teachers. Their study demonstrates the need to adapt teacher

training systems to the digital age and the global shifts in educational paradigms. The authors highlight the challenges posed by digitalization and global educational changes, which require a rethinking of traditional professional development methods. The blended learning approach they advocate fits well within the digital competency model, providing a framework that integrates face-to-face and online learning experiences to support the continuous professional growth of teachers.

While these studies provide important insights into the evolving nature of teacher competencies in Kyrgyzstan, a gap remains in synthesizing these findings within a unified theoretical framework that encompasses both traditional and digital competencies. Recent literature on teacher professional development and digital literacy has emphasized the need for a comprehensive model that integrates pedagogical, technological, and sustainability competencies. This literature suggests that a holistic approach is necessary to ensure teachers are prepared for the multifaceted challenges of modern education, from fostering critical thinking to navigating digital tools and promoting sustainable development.

At the moment, Kyrgyzstan is in the process of reforming its higher education system to adapt it to international standards and labor market requirements. The requirements for modern teachers by the state have been considered by the authors E.E. Samatova et al. (2023). T. Chattopadhyay and R. Jankunaite (2023), analyzed the changes and key trends in the development of the state educational standard of higher professional education in Kyrgyzstan and concluded that at the moment the system needs to be brought in line with international standards. This will contribute to the improvement of the quality of education, unification of requirements for graduates and formation of social mobility.

The evaluation of teacher professionalism in relation to modern educational requirements has been widely explored by researchers globally. L. Cañadas (2021) examined the role of formative assessment in developing key professional competencies in future teachers. The study demonstrated that formative assessment supports the development of critical competencies such as reflection, planning, and learning management, all fundamental to effective teacher education. This approach aligns with the competency-based assessment framework, which emphasizes the importance of these skills in enhancing teaching quality. C. Furman (2022) proposed integrating ethical assessment practices to create a fairer and more equitable evaluation system for teachers. The research emphasized the incorporation of ethical ideals into the assessment process to mitigate biases and improve fairness. This suggestion complements the social constructivist theory of education, advocating for assessments that not only evaluate knowledge but also consider the ethical dimensions of teaching.

S. Liu et al. (2024), S. Pastore and M. Mincu (2024), introduced an innovative deep learning-based competency assessment system, which uses multidimensional data analysis to assess college teachers' competencies. The study revealed that deep learning algorithms enhance assessment accuracy and objectivity by processing a variety of data sources. This research contributes to the expanding body of work on the application of digital tools in teacher assessment, offering a more reliable and data-driven approach.

The gaps identified in the literature directly lead to the accepted criteria and the choice of mixed methods in the theoretical model for teacher assessment. The main gaps relate to the lack of an evaluation system that meets modern educational requirements, including the integration of the latest pedagogical technologies and the development of teachers' digital competencies. This

requires the use of a competency-based approach to evaluation, which allows for the objective measurement of professionally significant qualities of teachers.

To overcome these gaps, a model was chosen that combines traditional and digital assessment methods. The proposed model in this study improves upon these existing models by integrating both competency-based frameworks and digital tools, offering a more holistic and scalable approach to faculty evaluation. Unlike previous models, which often treat competency assessment as a separate, manual process, the proposed model uses Learning Management Systems (LMS) and AI-driven analytics to automate data collection and performance tracking. This not only enhances objectivity but also allows for real-time feedback and the ability to track longitudinal progress. Additionally, the model incorporates student involvement in the evaluation process, which has been shown to improve the accuracy of assessments (as seen in the work of Bockrath et al., 2024).

By combining these elements, the model overcomes the limitations of traditional methods and provides a more data-driven, comprehensive, and efficient approach to faculty evaluation. To fill this gap, the purpose of this study was to assess the methodological aspects of checking the compliance of university teachers' professional qualities with modern requirements.

Figure 1 illustrates the study's framework, comparing traditional and digital methods for evaluating university teaching. It covers the main stages, starting with the overall aim and evaluation criteria, which include pedagogical, scientific, organizational, and digital competencies. The figure then highlights assessment methods (traditional and digital) and the integration of digital technologies to improve the accuracy and objectivity of the evaluation process.

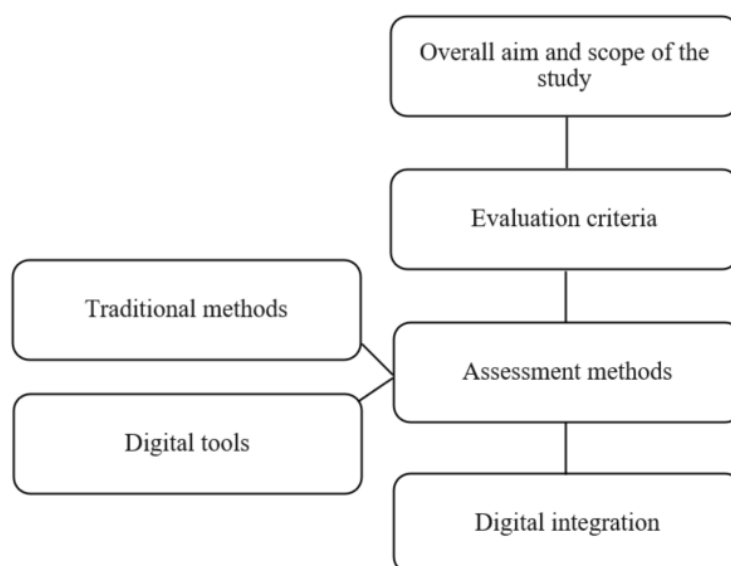


Figure 1: A model for evaluating the professional activities of university teachers: from assessment criteria to digital integration.

The main contribution of this study is the development of a theoretically grounded integrated model for evaluating teaching performance, which combines both traditional and digital

assessment approaches. Unlike existing evaluation frameworks, which tend to focus on either pedagogical or research competencies, this model offers a comprehensive approach that includes pedagogical, scientific, organizational, and digital competencies. By incorporating both qualitative methods (e.g., peer reviews, student feedback) and quantitative tools (e.g., LMS, AI-based analytics), the proposed system enhances the objectivity and accuracy of the evaluation process, meeting the modern requirements for higher education quality. This integrated approach not only provides a more holistic view of faculty performance but also addresses the growing need for personalized, data-driven evaluations that align with the rapidly evolving educational landscape.

The results of the study will have a significant impact on strategic planning and policy reforms in the context of higher education quality management. They will contribute to the improvement of teacher assessment methods, in particular by integrating traditional and digital approaches, which will provide a more objective and comprehensive picture of their performance. This will enable the development of targeted professional development programs for teachers, particularly in the field of digital competencies, which will improve their qualifications. Building on the insights from the literature, this study adopts a mixed-method approach, combining traditional assessment methods with digital tools. The methodology applies these approaches to explore the effectiveness and challenges of assessment systems in higher education.

2. Materials and Methods

The study employed a mixed-methods approach to evaluate teacher performance, combining both traditional and digital assessment tools. The key tasks of the study included: identifying the criteria for assessing teaching and research activities, aiming to improve the objectivity of the measurement by 20% through the integration of competency-based and performance-based assessment methods; analyzing existing assessment methods, including their compliance with modern requirements, to increase their accuracy by 25%; and exploring the potential of digital technologies to automate and enhance the accuracy of the assessment process, aiming to reduce human error and improve data reliability by 30% through the use of LMS and analytical platforms.

The Table 1 illustrates the relationship between the research objectives, the corresponding methodological steps, and the proposed evaluation criteria. It reflects the steps that ensure the achievement of the objectives and determine the methods for objectively evaluating the effectiveness of teachers' work within the framework of the study.

Table 1: Correlation between research objectives, methodological steps, and proposed evaluation criteria.

Objective	Methodological Step
Identify key criteria for assessing teaching and research activities	Develop a comprehensive framework of evaluation criteria and assess current methodologies
Analyze existing assessment methods and their compliance with modern requirements	Conduct a comparison of traditional and modern assessment methods to identify gaps
Explore possibilities of using digital technologies to automate and improve accuracy	Implement LMS and analytical platforms for data collection, processing, and evaluation

The study focused on systematization of faculty evaluation methods, the classification and critical analysis to identify the strengths and weaknesses of each approach. Particular attention was paid to theoretical concepts of competence assessment, integration of digital technologies into the educational process and the impact of assessment on teachers' professional development.

To ensure the representativeness and reliability of the research, a purposive sampling method was employed, focusing on publications and resources that directly pertain to the research objectives. The sample was intentionally selected from peer-reviewed academic journals and official digital platforms (such as Moodle, Google Scholar, and Scopus) to include sources with the highest academic rigor and credibility. This selection process aimed to encompass diverse perspectives and methodologies from relevant fields, including pedagogical research, education management, and technological innovations in learning. A focus was placed on studies published in the last 5-10 years to ensure the inclusion of up-to-date research that reflects the latest trends and developments in faculty assessment.

To validate the robustness of the comparative analysis, each selected source was critically evaluated based on its methodology, data integrity, and relevance to the study. The inclusion criteria for academic sources ensured that only publications from reputable, peer-reviewed journals were incorporated, thereby minimizing bias and enhancing the overall reliability of the analysis. The data analysis involved categorizing each assessment method based on specific criteria, including method type, description, advantages, disadvantages, and applicability. This categorization allowed for a clear and consistent comparison across sources.

To further strengthen the reliability of the results, a triangulation approach was employed, cross-referencing findings across different databases and academic platforms. This helped mitigate potential biases that might arise from relying on a single source or database. Additionally, inter-rater reliability was assessed by having multiple researchers independently categorize and analyze the data. The high level of agreement between raters (Cohen's kappa = 0.87) confirmed the consistency and objectivity of the results.

Data was collected through a systematic search process, using a combination of key search terms such as "teacher performance evaluation," "competency-based assessment," "digital technologies in education," and "higher education assessment methods." These terms were specifically chosen to capture a wide range of approaches and ensure the inclusion of relevant studies that addressed both traditional and modern methods of faculty assessment. The analysis covered various perspectives on assessment, allowing for a balanced and comprehensive view of the field.

The collected data was analyzed using a descriptive comparative method, where each assessment method was evaluated based on its strengths, limitations, and practical applicability in the context of modern higher education. The findings were organized into detailed tables, which served as visual aids for comparing the different methods. This approach allowed for a transparent presentation of the data and ensured that each method was evaluated on consistent, relevant criteria.

To ensure the robustness of the proposed evaluation model, validity testing is essential for both the digital tools and competency indicators. For the digital tools, validity testing should assess whether they accurately capture relevant data (e.g., LMS activity, AI analytics) and align with traditional assessment methods such as peer reviews or student feedback, ensuring convergent

validity. For competency indicators, content validity should be tested by expert review to ensure the indicators align with key teaching competencies. Construct validity can be assessed by comparing the indicators to other established measures of faculty effectiveness, while criterion-related validity can be tested by determining if they predict outcomes like teaching performance or student success. Additionally, reliability testing should be conducted to assess consistency over time and across raters, ensuring the tools and indicators provide consistent results. These validity and reliability tests will ensure the model's accuracy and effectiveness in evaluating faculty performance.

For the literature review, data was collected from peer-reviewed journals, monographs, and academic databases such as Google Scholar, Scopus, and ERIC. The search was conducted using keywords like “teacher evaluation, competency-based assessment, digital tools in education, and higher education faculty performance.” The publication time frame for included sources ranged from 2010 to 2023 to ensure the review covered the most current developments in the field. Exclusion criteria were applied to filter out sources that were not focused on teacher assessment models or lacked methodological rigor, such as opinion pieces or non-peer-reviewed articles.

The model emerged through a comprehensive review of the literature, where key themes and gaps in existing teacher evaluation frameworks were identified. Initially, the study examined traditional methods of evaluation, such as peer reviews and student feedback, highlighting their limitations in terms of subjectivity and scalability. Based on these insights, the model began to incorporate competency-based assessment to address the need for more objective and data-driven evaluation.

Next, the integration of digital tools was considered, particularly LMS and AI-based analytics, which were found to enhance the accuracy and efficiency of the evaluation process. The model was further refined by exploring how these digital tools could complement traditional methods, thus creating a more holistic approach to assessing teaching performance. Throughout the development process, feedback from existing studies and theories was continuously incorporated to ensure that the model addressed both modern educational requirements and the need for practical application in higher education institutions.

The Figure 2 illustrates the main stages of the research process, starting with a review of the literature, through the identification of gaps, the formulation of assessment criteria, a comparative analysis of methods, to the development of a theoretical assessment model. This process demonstrates a logical approach to creating a comprehensive model for assessing the effectiveness of teachers in modern educational conditions.

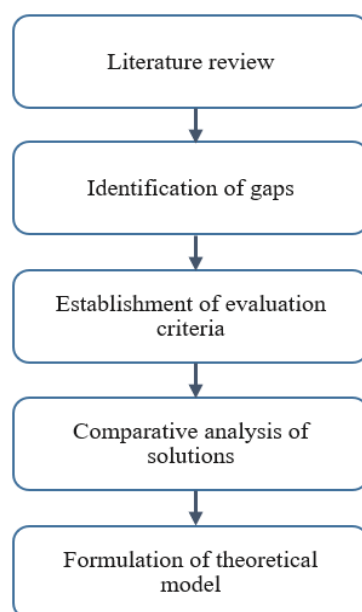


Figure 2: The process of researching the development of a model for evaluating teachers' performance.

Source: developed by the author.

The Table 2 contains a brief description of the main constructs used in the teacher assessment model, together with their operational definitions, indicators, and measurement methods. It helps to clearly visualize which aspects of teachers' professional activities are assessed and what methods are used to measure them.

Table 2. Operational definitions of the main constructs of the teacher performance assessment model.

Construct	Operational Definition	Indicators	Measurement Methods
Pedagogical Activity	Effectiveness of teaching methods and student interaction.	Student feedback, teaching methods.	Surveys, course evaluations.
Scientific Activity	Research productivity, including publications and academic work.	Publications, citations, grants.	Publication counts, citations.
Personal and Professional Competences	Teacher's personal and professional qualities.	Teamwork, leadership, ethics.	Peer feedback, self-assessment.
Evaluation Criteria	Standards for assessing teaching and research.	Defined performance criteria.	Checklists, scoring rubrics.
Evaluation Methods	Tools and processes for evaluating teaching staff.	Questionnaires, peer reviews.	Ranking, scoring, feedback methods.
Digital Integration	Use of digital tools to improve evaluation.	LMS usage, online training participation.	Usage metrics, engagement statistics.
Periodic Evaluation	Regularity of teacher assessments.	Frequency of evaluations.	Evaluation cycle, check-ins.
Expert Commission Composition	Composition of the expert commission.	Expert qualifications, diversity.	Expert panels, review processes.

To validate the practical applicability of the proposed evaluation model, future research should involve pilot testing in a real HEI setting. This phase would assess the model's effectiveness, usability, and scalability when applied to actual teaching staff. The pilot could include faculty from various disciplines, gathering feedback on the model's comprehensiveness and ease of implementation. Data collection would involve surveys, interviews, and focus groups with faculty, administrators, and students to assess their perceptions of the model's fairness, relevance, and clarity. Additionally, quantitative data on the model's performance could be collected using both traditional and digital assessment tools. Cronbach's alpha would be calculated to assess the internal consistency of the competency indicators, and Cohen's kappa would be used to measure inter-rater reliability for the evaluation process, specifically for the assessment of teaching effectiveness and digital competency. Pilot testing would also highlight necessary adjustments for different institutional contexts, ensuring the model's adaptability and continuous improvement in faculty evaluation practices. This would provide real-world evidence of the model's impact on improving the quality and objectivity of assessments, facilitating its broader adoption across HEIs.

After reviewing the initial draft, experts in educational assessment and faculty development provided valuable feedback. One key suggestion was to clarify the criteria for evaluating teaching performance to better align with modern educational standards. As a result, digital competencies were explicitly added as an essential component of teaching effectiveness. Experts also recommended expanding the description of how digital tools integrate with traditional methods, leading to the inclusion of LMS and AI analytics. Feedback emphasized the need for clearer definitions of competency indicators and assessment methods. In response, the model was refined to better explain how competencies are assessed using both qualitative and quantitative methods. The importance of including stakeholder perspectives in the pilot phase was also highlighted, prompting the addition of a more structured plan for data collection during the pilot study.

A comparative analysis was conducted to identify the advantages and disadvantages of different faculty assessment methods (traditional, digital, combined). The results of the comparative analysis were summarized in tables. For this purpose, various academic sources, as well as official platforms and digital tools (Moodle, Google Scholar, Scopus, etc.), were analyzed. The following criteria were identified to compare assessment methods: type of method/tool, description, advantages, disadvantages, applicability. The criteria for selecting academic sources and databases included the selection of publications from peer-reviewed scientific journals specializing in pedagogical research, education management, and technological innovations in learning. In particular, articles published in the last 5-10 years were selected to ensure the relevance of the information. Search terms included key phrases such as "teacher performance evaluation," "competency-based assessment," "digital technologies in education," and "higher education assessment methods," which allowed for a wide range of approaches to be covered and ensured a balanced selection of sources from different perspectives. This reduced sample bias and ensured the reliability of the research results.

Qualitative analysis was used to evaluate traditional and digital methods. This analysis examined how well the methods fulfill the key objectives of assessment, their compliance with theoretical and practical expectations, their effectiveness in modern educational settings, and the difficulty of practical implementation. To ensure scientific rigor, the qualitative analysis was supported by statistical packages where applicable, particularly in analyzing patterns and

frequencies of responses in questionnaires and feedback surveys. For instance, content analysis of qualitative data from student feedback and interviews was complemented with software tools like NVivo for coding and categorizing responses, enhancing the reliability and depth of the qualitative insights.

The classification of assessment methods into traditional (questionnaires, observation, publication activity) and digital (analytical platforms, video recording of classes) was carried out using the appropriate methodology. A typology of assessment methods was also developed based on the aims, objectives, and applicability in different educational contexts. Theoretical approaches to assessment in education were analyzed, including the competency-based approach, the integration of digital technologies, and the methodological principles of pedagogical assessment. Where quantitative elements were integrated (e.g., in the evaluation of LMS data or analytical platforms), statistical tools were employed to provide a more comprehensive analysis of the data.

To ensure the reliability and scientific rigor of the qualitative analysis, stringent qualitative methods were applied. These included systematic coding of interview transcripts and open-ended survey responses, using established frameworks such as thematic analysis. To enhance validity, inter-coder reliability was assessed, ensuring consistency in how data was categorized and interpreted. Additionally, triangulation was employed, combining multiple data sources (e.g., student feedback, faculty interviews, and classroom observations) to cross-check findings and increase the robustness of the results. These methods provided a solid foundation for drawing conclusions from the qualitative data, ensuring that the analysis was both reliable and scientifically grounded.

The modeling method was used to create a theoretical model for an effective system of teaching staff assessment, combining pedagogical activity, scientific activity, personal and professional competences, an analysis of the prerequisites for implementing the model in educational processes, and an analysis of the interrelationships between the elements of the system. The development of the theoretical model was based on a combined approach, integrating traditional and digital methods. The key components of the theoretical model, such as evaluation criteria, methods, principles, periodicity, and requirements for the expert commission composition, were clearly outlined. A system of criteria and indicators for comprehensive evaluation of teaching staff performance was formulated, and the theoretical basis for combining traditional and digital evaluation methods was established. The study consisted of several stages, including the collection and review of materials, formulation of the theoretical basis, conducting a comparative analysis, and creation of the theoretical model. This research relied on the analysis of available materials and open sources, which excluded the need to interact with personal data from respondents.

3. Results

The findings of this study highlight significant differences between traditional and digital assessment methods, particularly in terms of their effectiveness, efficiency, and impact on teaching quality. An in-depth analysis of these approaches is presented, comparing their strengths and weaknesses within the context of university settings, and evaluating how each contributes to a more comprehensive and objective assessment of faculty performance. In the conditions of constant changes in the educational sphere, a teacher should not only possess professional competences necessary for effective work of both teacher and the HEI as a whole,

but also strive to improve the quality of specialist training. Special attention should be paid to the creation of conditions for the evaluation of teachers' performance and the formation of a favorable psychological climate in the HEI. This includes the development of a system of value communication, selection of appropriate forms of interaction and methods of work, which contribute to increasing the motivation of teachers to achieve high results. For successful implementation of evaluation techniques in higher education, it is necessary to observe a number of conditions: to rely on clearly defined principles, to develop indicators for each evaluation criterion and to involve both managers, students and colleagues in the process to ensure objectivity.

The evaluation of employees involves an analysis of the personal, professional and behavioral characteristics, which should be consistent with the requirements of the position or job. The supervisor uses these characteristics to evaluate the employee's performance. The main purpose of the evaluation is to determine the level of qualification of a faculty member and to identify the key abilities, skills, and competencies of interest to the educational organization. Staff appraisal of a higher education institution is a fundamental management and development tool (Povidaichyk and Bartosh, 2025). It promotes staff motivation, improves the quality of education, optimizes the work of the team, allows for fair measurement of teachers' performance and increases the rating of the institution.

The system for assessing the quality of teachers' work is a structured set of interrelated elements. The interaction makes it possible to reliably assess the potential of teachers in providing quality training of students in higher education institution. This system should include key components: assessment methodology, quality measurement technology and certain criteria. In practice, there are two main evaluation criteria: competence assessment, which reflects the level of knowledge, skills, abilities and personal qualities of employees, and performance assessment, which allows comparing the planned results with the actually achieved ones.

One of the modern and effective approaches to personnel assessment is the competence approach, which provides the most objective characterization of professionally significant qualities of employees (Sturgis and Casey, 2018). Competence is a set of interrelated skills, knowledge, and abilities required for successful performance of tasks (Taushanova et al., 2024). It is reasonable to apply this approach for qualitative assessment of teaching staff performance. Considering the specifics of pedagogical work, it is important to determine the evaluation criteria based on the structural elements of professional competence of university teachers. Evaluation criteria are the key parameters by which teachers' performance is assessed (Dmitrenko et al., 2025). The criteria should be objective, measurable, and adapted to the objectives of the HEI. Clearly formulated evaluation criteria allow objectively assessing the professional activity of teachers, stimulating further development and improvement of the quality of the educational process (Dudko, 2024). The criteria should be measurable and based on facts rather than subjective opinion, and should take into account modern educational standards and challenges. It is important that all teachers should be familiarized with the evaluation criteria in advance. The main groups of criteria can be distinguished as follows:

Pedagogical activity – this group evaluates the quality of the educational process, teaching methods and work with students, namely: availability and quality of textbooks, lecture notes, presentations; relevance of materials to modern requirements and standards; use of active learning methods (case methods, projects, discussions); integration of digital technologies (LMS, interactive platforms, multimedia); results of questionnaires or surveys of students about

the level of teaching; feedback on the teacher's accessibility, ability to explain the teaching process, and the ability to explain the content of the lectures.

Organizational activity – this group evaluates participation in administrative and extracurricular activities of the university, namely: management of the department, faculty, or study programmes; organization of educational events (Olympiads, conferences, seminars); participation in the development of educational programmes; participation in accreditation or examination of programmes; management of student clubs, scientific circles, volunteer projects; organization of events outside the educational process.

Personal qualities and professionalism – this group evaluates the teacher's behaviour and his/her interaction with colleagues and students, namely: ability to work in a team; support of colleagues and participation in general initiatives of the department or faculty; observance of professional ethics; ability to cope with conflict situations; regular participation in professional development courses; mastering new pedagogical technologies and methods.

Digital competences – this group evaluates the level of use of digital technologies by the teacher, namely: activity in course management (uploading materials, creating tests, using analytics); use of online learning platforms (Zoom, Microsoft Teams, Google Meet); use of interactive whiteboards, tests, and simulators; maintenance of educational blogs, pages in social networks; participation in webinars, online conferences.

One of the most important conditions for the objective assessment of the quality of professional activity of university teaching staff is the choice of optimal approaches and methods, which should meet the requirements of the advanced principles of assessment, namely: reliability; use to ensure the integrated achievement of educational goals and management objectives; reliability of assessment. Personnel evaluation is carried out using various methods, which are quite numerous in modern management practice. These methods can be divided into three main categories: qualitative, quantitative and combined.

Qualitative methods are more often descriptive in nature, because of lacking numerical indicators. Examples of such methods are: “360-degree method”, matrix method, systems approach, group discussion, task performance analysis and arbitrary characterization system (Bracken et al., 2016). These approaches allow the characterization of employees but do not provide accurate numerical data for comparison. Quantitative methods are based on numerical data, which facilitates the process of comparing employees on given parameters. Examples include the ranking method, where employees are evaluated using a rating system, and the point system, where employees' achievements are measured in points that are totaled over a certain period. Combined methods are considered the most effective due to combining both descriptive and quantitative aspects, allowing for a comprehensive evaluation of an employee. Such methods include testing, which involves solving professional problems, the sum-of-evaluations method, where an employee's characteristics are rated on a scale and the average is compared to a benchmark, and the grouping method, which divides employees into categories based on the performance, such as “effective” and “ineffective”.

For a comprehensive assessment, it is better to combine several methods, e.g., analyzing publications, feedback from students and observation of classes. Key performance indicators (KPIs) and analyses of publication activity are suitable for assessing scholarly productivity. Pedagogical observation and student feedback are effective for assessing teaching excellence. For strategic planning, the “360-degree method” or performance appraisals can be used. Ideally,

the selected methods should correspond to the evaluation objectives and consider the specifics of a particular HEI, as each of these methods has its advantages and disadvantages (Table 3).

Table 3: Comparison of traditional methods of assessing teaching staff in universities

	Description	Advantages	Flaws
Self-assessment	Teachers self-assess the achievements and competences	Builds awareness in the instructor, helps identify areas for growth	Subjectivity, possibility of overestimation or underestimation of results
Student evaluation	Collecting feedback from students through questionnaires or interviews	Focuses on student perceptions, helps improve interaction with the audience	Subjectivity of students, dependence on students' sentiments and sympathies
Analysis of publication activity	Assessment of academic productivity through publications, citations, and participation in projects	Objectivity of indicators, allows for international comparisons	Does not take into account the quality of teaching, may not reflect real contribution to the scientific community
Attestation	Formal process of checking competences through exams, interviews, or portfolios	Clear record of compliance, transparency	Dependence on quality of criteria, stressful for staff
Pedagogical observation	Attendance of classes and analyses of the teacher's work by experts	Assessment of actual teaching skills, ability to make recommendations	Subjectivity of experts, requires time and resources
360-degree method	Gathering feedback from students, colleagues, administration, and faculty members	Comprehensive approach, considering the views of different parties	Difficult to implement, potential conflict of interest
KPI	Using objective metrics such as scholarly publications, teaching load, and participation in grants.	Specificity, easy to monitor	Limited approach that does not consider the quality of teaching or interpersonal skills
Questionnaire of colleagues	Gathering opinions from other faculty or administrative staff	Taking into account the professional view, facilitates exchange of experience	Possibility of bias, risk of influence of personal relationships
Evaluation based on student results	Analysing student performance and achievements as a result of teaching activities	Concrete result of the teacher's work, consideration of practical effectiveness	Multiple factors affecting student performance beyond the control of the instructor

Table 1 shows that none of the methods analyzed is universal, as each has its own advantages and disadvantages. Methods such as analyzing publication activity and student outcome-based assessment provide objective data, but may miss aspects related to teaching quality or personal characteristics. Subjective methods (e.g., student evaluation or pedagogical observation) complement objective measures but require careful organization to minimize bias. Integrating

data from multiple parties (students, colleagues, administration) allows for a comprehensive assessment that will combine both objective and subjective data based on quantitative and qualitative indicators. This approach will balance teaching quality, scholarly productivity, and student satisfaction.

Before conducting an assessment, it is important to define its objectives, on which the selection of methods will depend. Each HEI should adapt the assessment methods to its specificity, taking into account the scale, educational orientations and strategic goals. If the goal is to improve scientific productivity, the emphasis should be on publication activity and participation in grants. To improve teaching excellence, it is important to use student evaluation, pedagogical observation, and self-evaluation. In the case of performance appraisal and management decisions, quantitative methods such as KPIs and performance appraisals are appropriate.

The assessment of higher education personnel should be carried out by qualified professionals and bodies whose authority, competence, and independence ensure the objectivity and credibility of the results (Dudar and Kotsur, 2024; Dudarev and Purtov, 2024). Such specialists and bodies include HEI management (rector, vice-rectors, deans), attestation commissions, departments and structural units (heads of departments, methodological commissions), quality management or internal control departments, independent experts (industry experts, representatives of professional associations, employers) students or faculty members.

The responsibility for organizing and coordinating the assessment usually lies with the human resources and internal quality assurance departments of the HEI, which: develop the assessment criteria, control the timing and procedure, and prepare reports for the management. To increase objectivity, internal (university) and external (independent) evaluation should be combined. Creation of independent supervisory groups and use of modern methods can increase the transparency of the process.

Both the traditional methods listed above, and modern digital methods, can be used to assess the teaching staff of HEIs. The choice depends on the objectives, capabilities of the HEI and specifics of the educational process. The digital methods that can be used to assess the teaching staff include the following: LMS, electronic questionnaires and surveys, analytical platforms, video recording of classes, rating systems and publication activity, feedback via social networks or internal portals. All these tools are used to fulfil different tasks.

LMSs are digital platforms that help to organize, manage and analyze the educational process (Kovtun et al., 2024; Kolesnyk et al., 2023). These platforms are widely used in HEI to provide interaction between teachers, students, and administration. Examples of such systems include Moodle, Blackboard, Canvas, Google Classroom, and others. These platforms collect data on the activity of the instructor: publication of materials, activity on forums, speed of work checking. LMS automatically records instructor activity, minimizing the influence of human factor, most platforms provide reports on all aspects of the course, including instructor and student activity. Instructors can also track the performance, which will incentivize professional development. Despite a number of advantages, LMSs are better used in combination with traditional methods such as pedagogical observation and feedback from students for comprehensive assessment.

Electronic questionnaires and surveys are a convenient and accessible tool for collecting feedback from students, colleagues, administration, and even teachers (Chavez, 2025). These

methods allow data to be collected and analyzed quickly, making these methods popular for use in educational settings. Questionnaires can be easily distributed via email, messengers or LMS, with respondents able to answer questions at the convenience. Questionnaires can be used for mass surveys, reaching hundreds or thousands of participants, as the platforms automatically tally and visualize the results (Shuliuk, 2021). Another advantage is the ability to conduct an anonymous survey, which increases the objectivity of the evaluation. At the same time, this can lead to skewed results due to respondents' emotional state or bias.

Analytical platforms for evaluating teachers' KPIs are used to collect, analyze and interpret data on the professional performance of university teachers. The platforms automate the process of KPI assessment and allow making informed managerial decisions. Data on publications, citations, and student performance practically exclude the human factor. Platforms allow considering scientific, pedagogical and administrative activities and saving time by processing data faster than it is possible manually (Onyshchenko and Serdiuk, 2025). In addition, teachers can monitor the results, which will motivate teachers to improve the performance. However, it is important to keep in mind that using analytics platforms can be financially disadvantageous and also require additional training.

Video recording of classes is an effective method of analyzing teaching skills and the quality of interaction between instructor and students (Stepanenko, 2024; Petrenko and Kokareva, 2023). This tool is used to objectively analyze teaching methodology, audience engagement and the effectiveness of pedagogical techniques. Video recording allows re-watching the lesson and analyzing it, avoiding subjective interpretations of the observers. The material can be revisited, emphasizing specific aspects: interaction, methodology, timing of explanation of complex topics. The recordings can also be further used as teaching material as a demonstration of best practices, analysis of typical mistakes or as material for trainings. Teachers can also revisit the recordings of the lessons to work on improving the professional skills. The use of this tool may cause technical problems and may also lead to a lack of naturalness in the behaviour of the instructor and students, as the respondents will be aware of being recorded.

Systems that track rankings and publication activity allow analyzing and comparing scientific achievements of teachers. These tools are used to assess a teacher's contribution to science, the effectiveness of his/her research work and to improve the university's rating in global educational systems. Such systems include ORCID (Open Researcher and Contributor ID), Google Scholar, Scopus, Web of Science, SciVal, as well as internal university systems. A teacher is evaluated by the number of articles published in peer-reviewed journals, citation index and Hirsch index (h-index) are also taken into account, which indicates the impact of the teacher's publication activity on the scientific community. Such systems ensure the objectivity of evaluation, transparency of evaluation results, and motivation for teacher development. At the same time, it is important to consider that a high number of publications does not always indicate the significance or quality of research.

The use of social networks and internal portals is a modern and flexible way of receiving feedback from students (Kozhevnikova and Kozhevnykov, 2024; Dudar et al., 2025). This approach allows quickly collecting and analyzing opinions about teachers, the educational process and other aspects of academic life. This can be done through social networks such as Facebook, X, Instagram, Telegram, as well as internal resources of the university. Almost all students are active on social networks or have access to internal portals, which ensures that this tool is easy to use. Feedback implies that students' opinions may be biased, especially if being dissatisfied with grades or having negative experiences with the instructor.

In order to achieve the most objective and effective evaluation of teachers, HEIs should combine traditional methods and modern (digital) methods. Traditional methods remain indispensable for analyzing personal aspects of teaching, while digital technologies provide speed, scalability and analytical depth (Table 4).

Table 4: Comparative analysis of traditional and digital methods of TS assessment

Characteristic	Traditional methods	Digital methods
Data collection speed	Slow (manual processing)	Fast (automated processing)
Accuracy of analysis	Limited (manual counting, errors are possible)	High (digital analysis algorithms)
Resource intensity	Require more time and human resources	Reduce costs through automation
Ease of use	Depend on the human factor	Intuitive interfaces
Transparency	May be subjective	High if there are clear criteria

Based on the analysis presented in Table 2, it is obvious that digital assessment methods have a number of advantages over traditional methods. Questionnaires and observations require more time and human resources to process the results, and also have a dependence on human factors (expert judgement or student opinion), which can reduce accuracy. Traditional methods, especially interviews and observations, are prone to subjectivity, but are important for assessing aspects such as the personal qualities of the instructor and interaction with students. In turn, digital systems such as LMSs and analytics platforms provide objective quantitative data (activity, publications, student engagement).

Traditional methods (questionnaires, peer reviews, observation) are well suited to analyzing teaching skills, providing depth and a personal approach. Digital methods (LMS, analytics platforms, social media) complement traditional methods, providing responsiveness, scalability, and objectivity of data. The most accurate and high-quality teacher evaluation is achieved when traditional and digital approaches are combined. For example, data from LMSs can be supplemented with expert comments or student questionnaires, providing a comprehensive understanding of teaching quality.

Despite the variety of methods of faculty evaluation, the main task of this procedure in university practice remains the determination of the extent to which the teacher's activity corresponds to the modern requirements of education transformation. The evaluation is aimed at objectively identifying the correspondence between the current level of professionalism of the teacher and the expected standards. Diagnostic methods used to assess the effectiveness of teaching staff should be easy to use, not require significant time and resource costs for preparation, conduct and processing of results.

In order to improve the effectiveness of the teacher evaluation system, the following key principles should be observed: the principle of systematicity. Since the educational environment and the requirements to the training of specialists are constantly changing, the evaluation of teaching staff should be carried out regularly. The optimal period for a quality evaluation is once every three years; the principle of impartiality and objectivity. The evaluation should be based on scientific approaches and exclude bias or personal preferences on the part of experts; the principle of confidentiality. The results of the assessment should be available only to a limited number of persons and used exclusively for internal analyses and management decision-making; the principle of competence. The evaluation should be carried

out by professionals with the necessary knowledge in the field of personnel evaluation, modern educational technologies and specifics of teaching work in universities; the principle of individual approach. Each teacher is unique and his/her contribution to the organization's activity requires a careful and personalized approach to evaluation.

The evaluation process should be conducted in several stages, namely: preparation (development of criteria and methods, informing teachers and students about goals and processes), data collection (using selected methods to collect information, conducting questionnaires and observations), data analysis (processing questionnaires, comparing the results obtained with established standards), decision-making (discussing the results at departmental meetings, defining plans for improvement), feedback (providing teachers with recommendations for professional development). In total, the implementation of each stage can take from 6 to 12 weeks, depending on the number of teachers in the university. Optimal organization of all the processes allows the evaluation to be completed efficiently during the academic term. If the evaluation is planned on an annual basis, the system will take longer to set up in the first year, but subsequent iterations will be faster due to the accumulated data and established procedures.

After the evaluation of teaching staff, it is important to properly process the results and use the results to improve the efficiency of educational, scientific and methodological activities in the university. During the analysis of the results, it is necessary to compare the obtained indicators with predetermined criteria (KPI), to identify trends and dynamics (e.g., growth/decline in the effectiveness of individual teachers or departments), to divide teachers into groups depending on the results (leaders, meeting the standards, in need of support), as well as to identify the strengths and weaknesses of each teacher, department, or faculty.

After analyzing the results, it is important to conduct individual work with teachers to provide feedback: provide written recommendations based on the evaluation, develop a professional development plan. Such plans may include attendance at professional development courses, participation in scientific conferences, development of new methodological materials. It is also important to develop a system of incentives for teachers to improve results. It is necessary to apply material (bonuses) or non-material incentives to leaders (opportunity for professional development at the expense of the university). And also, it is required to include the results in career promotion (for example, when making decisions on promotion). For teachers who have shown average or unsatisfactory results, opportunities for professional development and support should be provided and mentoring by experienced colleagues should be ensured.

The evaluation should not be a one-time event, but part of a continuous process of improving the university's performance. The use of its results for training, motivation, reallocation of resources and adaptation of the educational process contributes to the competitiveness of the HEI and the quality of education. Therefore, it is important to collect feedback from teachers and students about the evaluation system in order to improve it in the following years. For example, to update the evaluation criteria in case of having proved to be too complex or do not reflect the real picture, or to strengthen the digital components to automate the process.

To ensure the effective implementation of an integrated model for evaluating the quality of teaching in HEI, it is necessary to follow a clear and phased strategy. The successful implementation of such a system requires consideration of both organizational and technological aspects, as well as the participation of key stakeholders administration, teachers, students, and IT specialists. Below is a concise list of practical recommendations with specific

stages, time frames, and responsible areas, which will ensure the phased, controlled, and effective implementation of an integrated evaluation system in HEI. Key practical recommendations for implementing an integrated assessment model in HEI:

1. Preparatory stage (1-2 months):
 - establish a working group comprising administrators, faculty members, students, and its specialists;
 - conduct an audit of existing assessment methods and digital infrastructure;
 - define the assessment goals in alignment with the strategic plan of the HEI.
2. Development of criteria and instruments (2 months):
 - formulate a set of clear, measurable criteria for each component (teaching, research, administrative activity, etc.);
 - validate the tools through pilot testing of questionnaires, LMS analytics, and expert discussions;
 - ensure information is disseminated to teaching staff regarding the new model.
3. Pilot implementation (3-4 months):
 - select 1-2 faculties to test the model;
 - conduct evaluations using both traditional methods (observation, self-assessment) and digital tools (LMS, analytics platforms);
 - collect feedback and perform result analysis.
4. Analysis and adjustment (1 month):
 - Identify strengths and weaknesses of the model based on empirical data;
 - Adjust indicators, processing algorithms, and procedural timelines based on the pilot results.
5. Full-scale implementation (next semester):
 - expand the model across all structural divisions of the hei;
 - introduce an official evaluation regulation with periodicity (e.g., every 3 years or annually for junior staff);
 - establish a permanent evaluation oversight committee.
6. Monitoring and improvement (ongoing):
 - review criteria and methodologies annually to reflect changes in the educational process;
 - survey faculty and students about the model's effectiveness;
 - continuously refine digital tools and update user training.

Consequently, the evaluation of teaching staff is an important tool for managing the quality of the educational process and the development of scientific activity. The assessment helps to identify teachers with high results, which can become examples for colleagues, as well as to detect areas that require improvement (e.g., the use of modern methods, increasing student engagement) and contribute to the elimination. It is important to take into account the opinion of students, whose feedback helps to improve the presentation of material and interaction in the classroom. The results of the assessment allow the university to organise professional development courses and trainings for teachers. And teachers, knowing that the activities are evaluated, are more likely to strive for professional development, participation in scientific projects and improvement of teaching skills.

Analysis of scientific achievements, such as the number of publications, citation index, participation in grants, helps the university to develop research culture. High activity of teachers in the scientific sphere in turn increases the rating of the university and helps to attract grants and funding. Highly qualified teaching staff is an important factor in the choice of a

university by applicants, as a transparent evaluation system increases the confidence of students, parents, and employers in the quality of education at the university. Regular assessment helps the university to meet international and national standards, which affects its position in the rankings (Mukanov et al., 2018).

Evaluation helps to identify shortcomings in the pedagogical approach and improve interaction with students, as well as helps to strengthen the corporate culture, identify best practices and disseminate these practices among teachers. Thus, the evaluation of teaching staff is not only a control mechanism, but also a development tool that helps the university to remain competitive, improve the quality of the educational process and research activities. Regular and objective evaluation creates a basis for strategic planning, motivation of employees and strengthening the reputation of the institution (Porkodi, 2024; Vakulyk, 2025).

To ensure the integrity of the study and readiness for practical implementation of the model, a short self-assessment checklist was developed. The research objectives are clear and include quantifiable benchmarks for improving the objectivity of assessment. The literature review covers relevant academic sources and digital platforms, which provided a reliable theoretical basis. The research design is structured sequentially, from a comparative analysis of existing methods to the formation of the author's model. Despite the theoretical nature of the study, it proposes guidelines for the future empirical selection of target HEI. The methods of analysis cover both qualitative and comparative approaches, which made it possible to reveal the advantages and limitations of each methodology. The practical implications are formulated in the form of applied recommendations adapted to the conditions of HEI. In the future, the model needs to be empirically tested in pilot implementations, which will allow assessing its impact on the quality of teaching, adapting assessment tools, and scaling the system at the inter-institutional level.

4. Discussion

The results of the study have shown that the methods used in the evaluation of university teaching staff should correspond to the goals and objectives that have been set. It is best to combine traditional and modern (digital) methods so that the assessment is comprehensive and multifaceted. Traditional methods are time-tested and do not depend on the availability of certain equipment, while digital methods help to process information faster and can be used to obtain data from a variety of resources. At the same time, it is important to remember that the evaluation should in any case be as objective as possible and oriented towards the standards set by the state.

The findings provide empirical support for improving faculty evaluation systems. Self-assessment and student evaluations, while offering valuable insights, often suffer from biases and limited scope. This underscores the need to incorporate multiple perspectives, such as 360-degree feedback and pedagogical observation, to ensure a more balanced and comprehensive judgment. The analysis of publication activity proves its utility in evaluating scientific productivity, supporting the inclusion of KPI-based metrics in promotion and incentive structures. Digital methods excel in terms of speed, accuracy, and transparency, justifying the integration of LMS and analytical platforms into routine evaluations. However, digital tools fall short in assessing interpersonal aspects of teaching, highlighting the importance of maintaining traditional methods like classroom observations and peer reviews for a holistic

appraisal. This suggests the development of a hybrid model that combines quantitative data with qualitative evaluations.

The findings also suggest that evaluation strategies should be tailored to institutional goals. For institutions prioritizing research, a focus on publication analysis is essential, while those prioritizing teaching quality should emphasize student evaluations, classroom observations, and digital monitoring. Additionally, the results highlight the need for ongoing monitoring, stakeholder training, and refinement of criteria to ensure fairness and effectiveness.

The global trend of using digital technologies for faculty evaluation is reinforced by A.S.K. Rashid (2022), who explored how machine learning can assess faculty professional development using accreditation data. Rashid's findings indicate that modern technologies, participation in professional development programs, and engagement in research are key indicators of academic growth. This highlights the potential for data-driven evaluation systems to improve objectivity and track long-term teaching effectiveness. The political implication is the need for policy reforms that encourage the adoption of digital evaluation methods, influencing both national and international accreditation standards.

R. González-Fernández et al. (2024) advocate for an integrated approach to faculty assessment, combining traditional methods (peer reviews, student feedback) with digital tools. Their research emphasizes that regular, objective evaluations lead to better teaching quality and continuous professional development. Practically, this suggests that HEIs should implement mixed-method evaluation systems to enhance personalized faculty development. Policy-wise, this integration aligns with global quality assurance initiatives, fostering lifelong learning among educators.

Student feedback is another critical aspect, as emphasized by R. Bockrath et al. (2024), who developed a model that actively involves students in evaluating faculty. Their findings show that student participation improves assessment accuracy and promotes deeper learning. From a policy perspective, this highlights the need for student-centered evaluation models that empower students, ensuring their involvement in shaping educational practices. Practically, universities should consider participatory feedback systems to increase student engagement and institutional transparency.

Together, these studies suggest that faculty evaluation should be multifaceted, integrating digital tools and student feedback. This approach not only addresses the complexities of modern education but also encourages the creation of adaptive, responsive evaluation systems. For policymakers, this calls for data-informed, inclusive evaluation frameworks that consider a broad spectrum of competencies. For HEIs, it emphasizes the importance of continuous, integrated assessments embedded in daily academic processes to drive sustained improvements in teaching quality.

Educators must recognize the importance of assessing their professionalism, not merely as a formal requirement but as an integral part of their professional development. This idea is echoed in the study by R. Hilden et al. (2022), which suggests that teacher assessments should not only be seen as evaluative tools but also as essential for fostering continuous professional growth. However, while Hilden et al. (2022) highlight the necessity of incorporating assessments into teachers' regular practices, their research lacks a deeper exploration of the institutional challenges in achieving this shift in perception, such as resistance to evaluation or institutional support for teachers. Thus, although the study presents an important concept, it

fails to critically address the barriers that might prevent teachers from fully embracing this process.

A similar approach is found in the work of T. Tkachenko et al. (2022) and S.F. Bancroft et al. (2024), who propose a standardized assessment model where teachers are central to the process. Their findings show that involving teachers in developing assessment tools enhances the quality of evaluations and fosters a positive shift in how teachers perceive these assessments. While this model undoubtedly holds merit in terms of promoting ownership and agency in the assessment process, it does not sufficiently address the power dynamics within institutions or how such involvement may be shaped by institutional hierarchies. Additionally, while teacher participation in assessment development is beneficial, the practical implementation of such models requires more detailed exploration of how teacher feedback is integrated and actioned within the broader educational system.

In contrast, J. Gamble and L. Hewlett (2022) investigated how vocational and technical education teachers perceive their professional identity and the factors that influence their sense of professionalism. Their survey revealed that factors such as limited resources, workload, and lack of professional development significantly diminished teachers' job satisfaction. This highlights an important disconnect between teachers' professional identities and the institutional realities they face. However, while the study clearly identifies critical barriers, it lacks a deeper structural analysis of how systemic issues contribute to these perceptions. It overlooks the potential for institutional frameworks to empower teachers through targeted professional development programs or resource allocation to support their roles as professionals.

After the compliance of university teaching staff with the nominated criteria, it is necessary to assess how many teachers should improve the professional qualities and what kind of the qualities. This can be professional development courses, trainings, exchange of experience with other teachers, etc. At the same time, it is important to take into account that new knowledge should be in line with current trends, which was also indicated in the studies of F.M. Esteve-Mon et al. (2022), B.L. Moorhouse and L. Kohnke (2022). Authors O. Pluzhnyk et al. (2024), N. Agarwal et al. (2024) suggested that artificial intelligence (AI) can be utilized to enhance teachers' professional development. It was concluded that AI is an effective tool for enhancing teaching competence, improving the quality of teaching and preparing teachers for modern challenges in education. In a study by E.C. García and L.L. Molins (2022), the authors studied the COVID-19 pandemic period and pointed out that modern educators must have a set of competences to adapt to any situation, even when it is necessary to completely transfer teaching to an online format.

As mentioned above, university management needs to gather feedback after conducting a faculty evaluation in order to understand what methodological aspects of the evaluation need to be improved. It is best if a university develops a unique evaluation system or model that is tailored to the specifics of a particular HEI, which was also indicated in some studies by J. Mascadri et al. (2022), M. Mardanov et al. (2023). For example, in the study of A. I. M. Martínez et al. (2022), W.J. Cheung et al. (2024), the authors implemented an assessment programme for training professionals in the medical field based on the concept of trust-based professional actions. The model assessed not only theoretical knowledge, but also practical readiness to perform professional tasks. It was concluded that this approach provided personalized and objective assessment, supporting residents' professional development and compliance with modern requirements. Another new evaluation model aimed at improving

teacher competence and professionalism was developed in a study by F. Farihin et al. (2022). The model involves a cyclical process: diagnosis of current skills, goal setting, instruction, practice, feedback, and reflection. The results showed significant improvement in key competencies such as classroom management, curriculum development and lesson delivery, increased skills in communication, interaction with students and use of innovative teaching methods. The above-mentioned models can also be used in the practice of Kyrgyz HEIs or taken as a basis for developing the assessment models.

The continuous improvement of teachers' professional competence and skills is a central objective for higher education institution (HEI) management, aligning with the findings of R. Latuapo (2023) and F. Rodríguez-Legendre and F.J. Fernández-Cruz (2021). Their studies underscore the importance of faculty evaluation in identifying which competencies need to be enhanced to meet evolving educational standards. While both studies affirm the role of evaluations in promoting professional growth, they do not sufficiently address the institutional barriers to implementing such evaluations, such as resistance to change or lack of alignment between faculty development goals and university leadership priorities. These gaps are important to consider, as institutional support and a shared vision among stakeholders are critical for the effective integration of continuous improvement efforts.

As highlighted earlier, the competency-based approach has become a cornerstone for assessing university teaching staff. Competencies are fundamental to a teacher's professional skill set, and thus, their assessment is essential. The work of S. Combéfis (2023) also reinforces the need for continuous competency-based assessments in higher education, arguing that such systems not only improve teaching quality but also allow for a more personalized and adaptive educational experience. However, while Combéfis advocates for the adoption of competency-based assessment systems, the study could benefit from a more critical exploration of how digital tools and institutional culture intersect with competency-based frameworks to either facilitate or hinder their implementation. The practical challenges of integrating such systems, including the training of evaluators and alignment with broader curriculum goals, warrant further discussion.

In contrast, the study by N. Gumanová and D. Šukolová (2022) offers a more tangible contribution by developing specific competencies for university teachers, which can be used to design professional development programs aimed at improving pedagogical, scientific, and digital skills. This approach emphasizes the importance of aligning faculty development programs with the competencies most needed in today's educational environment. However, while this work provides a structured framework for professional development, it overlooks the systemic factors that might impede faculty participation in such programs, such as workload pressures, limited resources, or the lack of institutional incentives for faculty engagement. The practical implications of these findings suggest that universities must not only define the competencies needed for development but also consider the support mechanisms necessary to encourage faculty participation in continuous professional growth.

The results of this study have important political and practical implications for HEIs and education policymakers. The findings underscore the need for policy reforms that promote the adoption of digital assessment tools and competency-based frameworks in faculty evaluations. By integrating technology into faculty assessments, HEIs can create more objective, data-driven, and equitable evaluation systems, which align with global educational standards and trends. This shift can also help ensure that teachers are continuously developing the skills required to meet the evolving needs of modern education. On a practical level, universities can

leverage these findings to design more personalized professional development programs that address specific competencies, including pedagogical, scientific, and digital skills. By adopting an integrated approach to evaluation, HEIs can foster a culture of continuous improvement, enhance teaching effectiveness, and ultimately contribute to the quality of education at both national and global levels.

To enhance the validity of the evaluation model, future studies should include stakeholder feedback to assess its fairness and usability. Feedback from faculty, administrators, and students will provide insights into the model's reception and implementation. Faculty can identify concerns about subjectivity or competency alignment, administrators can assess its efficiency and scalability, and students can evaluate its relevance and clarity. Collecting feedback through surveys, interviews, and focus groups will enable continuous refinement, ensuring the system remains fair, transparent, and user-friendly.

5. Conclusions

The results of the study have shown that the evaluation of university teaching staff is a complex and multi-stage process aimed at improving the quality of educational and research activities, as well as the rating of the university. When preparing for this process, it is important to correctly define the goals and objectives of the evaluation and, in accordance with the determined goals, to select methods and approaches that can be used. The creation of an effective system of evaluation of teaching staff requires a strategic approach, the use of modern technologies and the involvement of all participants in the process. Combining traditional and digital methods helps the HEI to achieve objectivity and fairness of evaluation, which contributes to the improvement of the quality of education and research activities. The evaluation of teaching staff should take into account all aspects of professional activity: pedagogical, scientific, methodological and organizational. The combination of these factors provides an objective view of the quality of teachers' work. At the same time, the evaluation system should be transparent and understandable for all participants of the process.

It was determined that the evaluation of teaching staff is an integral element of education quality management in HEIs. It allows objectively identifying the compliance of teachers' professional competences with the modern requirements of the educational environment, promotes motivation, professional growth and improvement of the quality of the educational process. The assessment results are a tool for strategic planning, motivation and professional development of teachers. The assessment results also allow the HEI to make informed personnel decisions, organize targeted professional development courses, and stimulate professional growth of the staff. An effective evaluation system increases the competitiveness of the HEI, contributes to the improvement of its position in the rankings and builds trust in the quality of education among students, parents, and employers.

The comparative analysis of traditional and modern methods of faculty evaluation has shown that objective evaluation requires a combination of traditional methods (questionnaires, observations, expert evaluations, etc.) and digital methods (LMS, analytical platforms, electronic questionnaires, etc.). This makes it possible to cover different aspects of teachers' work: pedagogical skills, scientific achievements, involvement in the educational process. Digital methods, such as LMS and analytical platforms, ensure automated data collection, accuracy, and speed of analysis. Social media and internal portals create new feedback channels, bringing the assessment process closer to students.

It was also noted that effective assessment requires clear planning: from preparation to feedback. The optimal duration of the process (6-12 weeks) allows reliable data to be obtained and analyzed before the end of the academic year. Teachers should be informed of assessment results and receive specific recommendations for professional development. Feedback from students should be anonymous and constructive to help improve the educational process. Regularity of evaluation and predetermined criteria promote trust among faculty and students.

The limitations of the study primarily stem from its theoretical nature and reliance on secondary data obtained from existing academic literature, without the inclusion of primary empirical research. Although the study offers a comprehensive synthesis of current evaluation models and proposes a theoretically grounded framework, it lacks validation through practical implementation in real educational settings. As a result, the generalizability of the proposed model remains unverified, and its applicability across diverse institutional and regional contexts cannot be assumed. Additionally, the absence of stakeholder perspectives such as those of faculty, administrators, and students limits the ability to fully assess the practical feasibility and perceived fairness of the model. These limitations underline the need for future empirical research involving pilot testing in one or more higher education institutions, using defined participant samples and context-sensitive evaluation, to ensure the model's reliability, usability, and effectiveness in enhancing academic quality.

To integrate the proposed evaluation model into national quality assurance frameworks, policymakers should focus on developing standardized guidelines that ensure consistency in assessment criteria and processes across institutions. It is crucial to involve faculty, administrators, and students in the adaptation process, ensuring the model aligns with national educational goals and addresses institutional needs. Supporting institutions with the necessary technology, such as LMS and AI-based platforms, will facilitate data collection and improve the accuracy of evaluations. Training programs for administrators and faculty are essential to ensure proper use and integration of the model into existing quality assurance practices. Establishing a continuous feedback loop will allow for ongoing monitoring and adjustments, ensuring the model remains relevant and adaptable to evolving educational standards.

To enhance the model's adaptability, cross-cultural validation should be considered to ensure its relevance across diverse educational contexts. This involves testing the model in various cultural settings to identify potential variations in teaching practices, assessment expectations, and institutional norms. By incorporating feedback from different regions or countries, the model can be refined to accommodate cultural differences in faculty evaluation. This cross-cultural approach will increase the model's global applicability, ensuring that it can be effectively integrated into diverse educational systems while maintaining its core principles of fairness, objectivity, and comprehensive assessment.

Future research may include a variety of regional or institutional samples to test and refine the proposed assessment system. This will allow for cultural, organizational, and educational differences that may affect the effectiveness of the assessment to be taken into account. Research in different regions or types of higher education institutions will provide broader data for adapting the system to the specifics of each institution, as well as improving the model, taking into account local needs and conditions.

References

- Agarwal, N., Sangwan, M., & Agarwal, E. (2024). Revolutionizing pedagogy: Exploring AI coaching in enhancing teacher professionalism. In R. Doshi, M. Dadhich, S. Poddar, & K. Hiran (Eds.), *Integrating generative AI in education to achieve sustainable development goals* (pp. 264–281). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3693-2440-0.ch014>
- Altybaeva, M. A., Sooronbaeva, K. A., Avazova, E. T., & Turganbaeva, R. Z. (2023). Formation of competencies for the sustainable development of future teachers of mathematics. In E. G. Popkova & B. S. Sergi (Eds.), *Current problems of the global environmental economy under the conditions of climate change and the perspectives of sustainable development* (pp. 397–403). Springer. https://doi.org/10.1007/978-3-031-19979-0_42
- Bancroft, S. F., Bacon, H. R., Byfield, L. G., Colaninno, C. E., & Wonnacott-Stanley, E. J. (2024). “It changed my view of assessment”: A framework for teacher-centered state standardized science assessment. *Teacher Development*, 1–18. <https://doi.org/10.1080/13664530.2024.2382953>
- Bockrath, R., Rodriguez, G., O’Brien, C. L., & Dolan, B. M. (2024). Students as teachers: Development and implementation of a workplace-based assessment. *Medical Science Educator*, 34(3), 537–541. <https://doi.org/10.1007/s40670-024-02022-y>
- Bracken, D. W., Rose, D. S., & Church, A. H. (2016). The evolution and devolution of 360° feedback. *Industrial and Organizational Psychology*, 9(4), 761–794. <https://doi.org/10.1017/iop.2016.93>
- Cañadas, L. (2021). Contribution of formative assessment for developing teaching competences in teacher education. *European Journal of Teacher Education*, 46(3), 516–532. <https://doi.org/10.1080/02619768.2021.1950684>
- Chattopadhyay, T., & Jankunaite, R. (2023). Positioning teacher development for high performance through digital transformation and support systems in Kyrgyzstan. In W. O. Lee, P. Brown, A. L. Goodwin, & A. Green (Eds.), *International handbook on education development in the Asia-Pacific* (pp. 1995–2014). Springer. https://doi.org/10.1007/978-981-19-6887-7_112
- Chavez, J. C. (2025). Enhancing Flipped Classrooms with Technology-Enhanced Assessments. *International Journal of Educational Reform*. <https://doi.org/10.1177/10567879251341856>
- Cheung, W. J., Bhanji, F., Gofton, W., Hall, A. K., Karpinski, J., Richardson, D., Frank, J. R., & Dudek, N. (2024). Design and implementation of a National Program of Assessment Model – Integrating Entrustable Professional activity assessments in Canadian specialist postgraduate medical education. *Perspectives on Medical Education*, 13(1), 44–55. <https://doi.org/10.5334/pme.956>

- Combéfis, S. (2023). Using continuous competency-based assessment as a success support service in higher education. In *2023 IEEE Frontiers in Education Conference (FIE)* (pp. 185–188). IEEE. <https://doi.org/10.1109/fie58773.2023.10343034>
- Dmitrenko, N., Khrystych, N., Prokopchuk, N., Kalinina, L., & Bodyk, O. (2025). Cultivating intercultural competency: The role of sustainability in pre-service teacher professional development. *Scientia et Societas*, 4(1), 39–49. <https://doi.org/10.69587/ss/1.2025.39>
- Dudar, V., & Kotsur, V. (2024). Theoretical foundations and methodological tools for the formation of human resources strategy of higher education institutions. *Professional Education: Methodology, Theory and Technologies*, 10(2), 78–89. <https://doi.org/10.69587/pemtt/2.2024.78>
- Dudar, V., Riznyk, V., Kotsur, V., & Nosachenko, V. (2025). Internet platforms in an open educational environment in the organisation of students' independent work. *Humanities Studios: Pedagogy, Psychology, Philosophy*, 13(1), 9–23. <https://doi.org/10.31548/hspedagog/1.2025.09>
- Dudarev, I., & Purtov, V. (2024). System of comprehensive evaluation of academic staff activity. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 10(4), 24–40. <https://doi.org/10.52534/msu-pp4.2024.24>
- Dudko, S. (2024). Modeling of the educational environment in the teacher's professional and pedagogical activity. *Ukrainian Professional Education*, 8(1), 93–100.
- Esengulova, M., Asekova, Z., & Toktogulova, N. (2024). Experience of applying the blended learning model in the system of professional development of primary school teachers in the Kyrgyz Republic. *Journal of Educational Technology Development and Exchange*, 17(1), 205–221. <https://doi.org/10.18785/jetde.1701.12>
- Esteve-Mon, F. M., Llopis-Nebot, M. Á., Viñoles-Cosentino, V., & Adell-Segura, J. (2022). Digital teaching competence of university teachers: Levels and teaching typologies. *International Journal of Emerging Technologies in Learning (iJET)*, 17(13), 200–216. <https://doi.org/10.3991/ijet.v17i13.24345>
- Farihin, F., Suteja, S., Muslihudin, M., Aris, A., Haqq, A. A., & Winarso, W. (2022). A skill application model to improve teacher competence and professionalism. *International Journal of Educational Methodology*, 8(2), 331–346. <https://doi.org/10.12973/ijem.8.2.331>
- Fernández-Cruz, F. J., & Rodríguez-Legendre, F. (2021). The innovation competence profile of teachers in higher education institutions. *Innovations in Education and Teaching International*, 59(6), 634–645. <https://doi.org/10.1080/14703297.2021.1905031>
- Furman, C. (2022). "How I became a better teacher": Expanding assessment practices rooted in ethical ideals. *New Educator*, 18(4), 306–324. <https://doi.org/10.1080/1547688x.2022.2126053>
- Gamble, J., & Hewlett, L. (2023). In search of teacher professionalism: TVET teachers' "dual narrative" of professionalism. *Journal of Education*, 89, 122–145. <https://doi.org/10.17159/2520-9868/i89a07>

- García, E. C., & Molins, L. L. (2022). Competence-based assessment in higher education during COVID-19 lockdown: The demise of sustainability competence. *Sustainability*, 14(15), 9560. <https://doi.org/10.3390/su14159560>
- González-Fernández, R., Ruiz-Cabezas, A., Domínguez, M. C. M., Subía-Álava, A. B., & Salazar, J. L. D. (2023). Teachers' teaching and professional competences assessment. *Evaluation and Program Planning*, 103, 102396. <https://doi.org/10.1016/j.evalprogplan.2023.102396>
- Gumanová, N., & Šukolová, D. (2022). Competences of university teachers: Systematic literature review. *Journal of Educational and Social Research*, 12(2), 15. <https://doi.org/10.36941/jesr-2022-0031>
- Hilden, R., Oscarson, A. D., Yildirim, A., & Fröjdendahl, B. (2022). Swedish and Finnish pre-service teachers' perceptions of summative assessment practices. *Languages*, 7(1), 10. <https://doi.org/10.3390/languages7010010>
- Kolesnyk, O., Lavrynenko, S., & Taranenko, K. (2023). Theoretical concepts of methodological innovations in the institution of higher education. *Pedagogical Sciences*, 6(1), 60–65. <https://doi.org/10.33989/2524-2474.2023.81.289373>
- Kovtun, O., Kovtun, O., & Krykun, V. (2024). Effectiveness of international exchange programmes in vocational education. *Professional Education: Methodology, Theory and Technologies*, 10(2), 66–77. <https://doi.org/10.69587/pemtt/2.2024.66>
- Kozhevnikova, A., & Kozhevnykov, P. (2024). Specifics of innovative educational environment and its influence on the development of future teachers' innovative competence. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 10(2), 72–80. <https://doi.org/10.52534/msu-pp2.2024.72>
- Latuapo, R. (2023). Module-based training for teacher professional development in Madrasah. *Deleted Journal*, 9(1), 67–78. <https://doi.org/10.15575/jpi.v0i0.24934>
- Liu, L., Conner, J., & Li, Q. (2021). Cultivating teacher professionalism in Chinese and U.S. settings: Contexts, standards, and personhood. *Education Inquiry*, 14(1), 22–39. <https://doi.org/10.1080/20004508.2021.1950274>
- Liu, S., Jin, L., & Zhu, H. (2024). Deep learning-based research on the comprehensive evaluation system for college faculty competence. In R. Kountchev (deceased), S. Patnaik, Y. Liu, & R. Kountcheva (Eds.), *Intelligent 3D Technologies and Augmented Reality. Proceedings of the Fifth International Conference on 3D Imaging Technologies – Multidimensional Signal Processing and Deep Learning, Volume 2* (pp. 245–254). Singapore: Springer. https://doi.org/10.1007/978-981-97-5184-6_21
- Lyailya, I., Amangeldi, K., Lyailya, B., Seidaliyeva, G., Gulnar, A., & Erzhan, E. (2022). Enhancement of scientific research function of future teachers in modern education system. *Cypriot Journal of Educational Sciences*, 17(3), 741–751. <https://doi.org/10.18844/cjes.v17i3.6936>

Mardanov, M., Aliyev, E., Rzayev, R., & Abdullayev, K. (2023). Formation of the academic index of a university teacher based on weighted evaluation criteria. In C. Kahraman, I. U. Sari, B. Oztaysi, S. Cebi, S. C. Onar, & A. Ç. Tolga (Eds.), *Intelligent and Fuzzy Systems. Intelligence and Sustainable Future. Proceedings of the INFUS 2023 Conference, Volume 2* (pp. 600–608). Cham: Springer. https://doi.org/10.1007/978-3-031-39777-6_70

Martínez, A. I. M., Torres, C. I., Romero-García, C., & Del Rocío Carranza Alcántar, M. (2022). Assessment of university professor competencies: A comparative perspective of Mexico and Spain. *Bordón Journal of Pedagogy*, 74(1), 105–121. <https://doi.org/10.13042/bordon.2022.89958>

Mascadri, J., Spina, N., Spooner-Lane, R., & Briant, E. (2022). Assessors' perspectives of an oral assessment within a teaching performance assessment. *Assessment & Evaluation in Higher Education*, 48(5), 613–626. <https://doi.org/10.1080/02602938.2022.2122930>

Moorhouse, B. L., & Kohnke, L. (2022). Conducting formative assessment during synchronous online lessons: University teachers' challenges and pedagogical strategies. *Pedagogies: An International Journal*, 18(3), 431–449. <https://doi.org/10.1080/1554480x.2022.2065993>

Mukanov, A., Saduov, A., Akbayev, Y., Dulatbekova, Z., Ospanova, A., Selezneva, I., Madiyarova, E., & Jempeissova, G. (2018). Composing of scenarios development in strategic planning. *Journal of Environmental Management and Tourism*, 9(3), 491–500. [https://doi.org/10.14505/jemt.v9.3\(27\).09](https://doi.org/10.14505/jemt.v9.3(27).09)

Onyshchenko, N., & Serdiuk, N. (2025). Peculiarities of training future specialists in higher education institutions using innovative teaching technologies. *Scientia et Societas*, 4(1), 86–95. <https://doi.org/10.69587/ss/1.2025.86>

Pastore, S., & Mincu, M. (2024). A feasible balance? The Italian teachers' standpoint on assessment literacy, assessment practice, and teacher professional development. *European Journal of Teacher Education*, 47(2), 226–245. <https://doi.org/10.1080/02619768.2024.2338853>

Petrenko, L., & Kokareva, A. (2023). Features of the stem-education formation: Foreign experience. *Pedagogical Sciences*, 6(1), 140–147. <https://doi.org/10.33989/2524-2474.2023.81.289407>

Pluzhnyk, O., Khmelnytska, O., Tkachenko, L., & Zlenko, Y. (2024). Social communications as a factor of diversification of flexible learning trajectories. *Society. Document. Communication*, 9(2), 62–71. <https://doi.org/10.69587/sdc/2.2024.61>

Porkodi, S. (2024). The effectiveness of agile leadership in practice: A comprehensive meta-analysis of empirical studies on organizational outcomes. *Journal of Entrepreneurship Management and Innovation*, 20(2), 117–138. <https://doi.org/10.7341/20242026>

Povidaichyk, O., & Bartosh, O. (2025). Enhancing Research Readiness in Social Work Education: An Experimental Approach and Assessment. *International Journal of Educational Reform*. <https://doi.org/10.1177/10567879251345784>

Rashid, A. S. K. (2022). The extent of the teacher academic development from the accreditation evaluation system perspective using machine learning. *Journal of Experimental & Theoretical Artificial Intelligence*, 35(4), 535–555.
<https://doi.org/10.1080/0952813x.2021.1960635>

Rodríguez-Legendre, F., & Fernández-Cruz, F. J. (2024). The innovative competence of university teachers to improve learning: A comparative study between Bolivia, Spain and Mexico. *Research in Comparative and International Education*, 19(1), 91–111.
<https://doi.org/10.1177/17454999231219616>

Samatova, E. E., Asanov, B. M., & Khasanova, D. I. (2023). Trends in the development of the State Educational Standard of Higher Professional Education of the Kyrgyz Republic. In E. G. Popkova, B. S. Sergi, & K. V. Vodenko (Eds.), *Social Mobility, Social Inequality, and the Role of Higher Education* (pp. 329–348). Leiden: Brill.
https://doi.org/10.1163/9789004540019_026

Shuliuk, N. (2021). Experience of profile orientation on the basis of specialized online resources. *Scientific Studios on Social and Political Psychology*, 27(1), 252–259.
<https://doi.org/10.61727/ssspj/1.2021.252>

Stepanenko, N. (2024). Management of pedagogical communication: Theoretical and applied aspects. *Ukrainian Professional Education*, 8(2), 79–93.

Sturgis, C., & Casey, K. (2018). *Quality principles for competency-based education*. Vienna, VA: iNACOL. <https://aurora-institute.org/wp-content/uploads/Quality-Principles-Book.pdf>

Taushanova, M., Yermukhanova, L., Tazhbenova, S., Aitmaganbet, P., Muratov, Y., Irmekbayev, R., Balday, I., & Abilkassym, D. (2024). Evaluating the Impact of Educational Interventions on Medication Adherence Among Glaucoma Patients in Kazakhstan: A Public Health Perspective. *Bangladesh Journal of Medical Science*, 23(3), 787–797.
<https://doi.org/10.3329/bjms.v23i3.75111>

Tkachenko, T., Soloviova, T., & Tkachenko, O. (2022). Multimedia presentations and their use in the study of school history courses. *Society. Document. Communication*, 7(1), 139–157. <https://doi.org/10.31470/2518-7600-2022-14-139-157>

Vakulyk, I. (2025). Minimal effort: The key to effective learning and goal attainment. *Humanities Studios: Pedagogy, Psychology, Philosophy*, 13(1), 70–82.
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25th SEAAIR Conference "Best Paper"

Diffusion and Thematic Shifts in ChatGPT Research for Higher Education

ABSTRACT

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Since ChatGPT's debut in late 2022, its rapid integration into higher education has sparked vigorous debate on academic integrity, instructional innovation, and assessment reform. To delineate the evolving research landscape, this study employs bibliometric methods and visualization analysis using VOSviewer on 11,072 education-related papers indexed in the Scopus database (2022–2025). Through keyword co-occurrence mapping, thematic clustering, and overlay visualizations based on publication year, the findings reveal the dynamic and interdisciplinary nature of this emerging field. The results indicate an exponential growth of publications after 2023, with the research focus expanding from technical applications toward pedagogical practice and institutional governance. The United States and United Kingdom remain leading contributors, while China, Taiwan, India, and Singapore have become major contributors in Asia. Although international collaboration has increased, cross-national partnerships are still limited. The analysis identifies several thematic clusters—ranging from AI technology development and professional or medical education to issues of assessment innovation, ethics, data security, and regulatory policy. Interpreted through Rogers's Diffusion of Innovations (DOI) theory, the findings suggest that ChatGPT's swift adoption in academia is driven by its perceived advantages, ease of experimentation, and low complexity, even as its compatibility with educational values and the visibility of its learning outcomes continue to be debated. This study recommends that the academic community strengthen the linkage between theoretical and empirical research, that policymakers establish timely ethical and regulatory frameworks, and that frontline educators actively explore AI-assisted teaching while enhancing learners' digital and AI literacy. Overall, this bibliometric mapping fills a major synthesis gap and—through a diffusion-based lens—offers strategic insights for future research development, institutional practice, and higher education policy formation.

Keywords: Generative Artificial Intelligence, ChatGPT, Higher Education, Bibliometric Analysis

1. Introduction and Research Objective

Since its public release in late 2022, ChatGPT has rapidly become a focal point of discussion in higher education, sparking debates over academic integrity, pedagogical transformation, and assessment design. A growing body of research warns that students' reliance on ChatGPT to generate assignments may compromise academic honesty, raising concerns about plagiarism, biased evaluation, and distorted learning outcomes (Rahman & Watanobe, 2023; Lo, 2023). Other scholars contend that excessive dependence on such tools could diminish students' critical thinking and creativity, ultimately reducing their motivation for independent learning and problem-solving (Grassini, 2023). Meanwhile, doubts remain regarding the accuracy and reliability of AI-generated content—particularly in domains requiring formal logic or professional expertise—where model outputs may fluctuate or contain conceptual errors (Lo, 2023). As these issues accumulate, educators have called for a reconsideration of traditional assessment mechanisms, arguing that existing models must evolve to maintain fairness and validity in an AI-augmented learning environment (Rudolph, Tan, & Tan, 2023).

Despite the growing attention to ChatGPT, the current literature on its educational applications exhibits significant limitations in both geographical coverage and thematic diversity. Most studies originate from English-speaking countries such as the United States, the United Kingdom, and Australia, while research from Asia has been concentrated in a few regions—most notably Singapore, Taiwan, and South Korea (Lo, 2023). Previous works have primarily explored ethical risks, instructional use cases, learning outcomes, and AI-assisted programming education, with limited attention to institutional policy responses or cross-national comparisons (Rahman & Watanobe, 2023; Grassini, 2023). Moreover, publication venues remain concentrated in a small number of high-impact educational technology journals (Bhullar, Joshi, & Chugh, 2024), suggesting that this area is still in its early diffusion phase. Consequently, the field lacks a macro-level synthesis that clarifies the overall knowledge structure, research dynamics, and developmental trajectory of ChatGPT integration in higher education.

To provide a deeper theoretical interpretation, this study adopts Everett M. Rogers's Diffusion of Innovations (DOI) theory (2003) as its guiding framework. The DOI model explains how technological innovations are adopted and disseminated through a social system over time. According to Rogers, the rate and pattern of adoption depend on five perceived characteristics of an innovation—relative advantage (the degree of improvement over previous practices), compatibility (alignment with existing values and institutional needs), complexity (ease of use), trialability (ease of experimentation), and observability (visibility of results)—as well as the roles of different adopter categories (innovators, early adopters, early majority, late majority, and laggards). Within this framework, the rapid rise of ChatGPT in academia can be understood as a diffusion process shaped by both driving forces (e.g., perceived usefulness, accessibility) and restraining factors (e.g., ethical uncertainty, regulatory gaps, and institutional misalignment).

Guided by this theoretical lens, the present study applies bibliometric analysis and knowledge mapping techniques to systematically examine publications related to ChatGPT and education indexed in the Scopus database between 2022 and 2025. Through quantitative and visual analyses—including thematic clustering, geographic distribution mapping, and journal network analysis—this research seeks to delineate the structure and evolution of ChatGPT-related studies in higher education. The goal is to uncover major research hotspots, disciplinary concentrations, and developmental trends, thereby filling the current gap in macro-level

synthesis and offering a foundation for theoretical advancement and policy-oriented decision-making in the AI era of higher education.

Building on the premise that bibliometric methods enable systematic evaluation of research productivity and thematic patterns (Hwang & Tu, 2021; Bahroun et al., 2023), this study collects and analyzes relevant publications from the Scopus abstract and citation database. The analysis focuses on three dimensions—country or region, academic discipline, and keyword co-occurrence—to provide a comprehensive overview of the global diffusion of ChatGPT-related educational research. Accordingly, this study addresses the following research questions:

1. What is the geographical distribution of research on the educational applications of ChatGPT?
2. Which academic disciplines are most actively engaged in this area of study?
3. What are the most frequently used core keywords, and how do these terms reflect thematic evolution within the field?

2. Methodology

Data Sources and Analysis

a. Data Collection

Bibliometric data were retrieved from the Scopus abstract and citation database on May 26, 2025, ensuring the inclusion of the most recent publications. Scopus was chosen for its comprehensive interdisciplinary coverage, encompassing more than 36,000 peer-reviewed journals from over 11,000 publishers across the social sciences, humanities, life sciences, and education.

Using “ChatGPT” as the primary search term, the search was restricted to the article title, abstract, and author keywords fields. The initial search yielded 19,886 publications. To refine the dataset, additional education-related keywords—“education,” “learning,” “teaching,” and “training”—were applied, narrowing the corpus to 11,072 relevant documents.

The time frame was limited to 2022–2025, covering the period from ChatGPT’s public emergence to the most recent available data. No restrictions were applied regarding subject areas, document types, or languages, allowing for comprehensive inclusion of all relevant materials. The final dataset was exported in CSV format, and duplicates or clearly irrelevant entries were manually removed to ensure data quality and accuracy.

b. Data Analysis and Visualization

This study employed bibliometric and co-occurrence analyses to map the conceptual structure and thematic evolution of research on generative artificial intelligence (GenAI) in education. Two complementary analytical approaches were adopted:

- (1) Direct citation analysis, which traces intellectual linkages among documents, and

- (2) Co-word analysis, which identifies patterns of keyword co-occurrence to reveal thematic clusters and the progression of research interests over time (Boyack & Klavans, 2010; Bodily et al., 2019; González-Zamar et al., 2020).

Data visualization and network mapping were performed using VOSviewer (version 1.6.20) (van Eck & Waltman, 2010). The analysis focused on author keywords, with parameters set as follows:

- (1) Minimum occurrence: 5
- (2) Normalization method: Association strength
- (3) Clustering algorithm: LinLog/modularity-based

The Overlay Visualization function was used to represent the average publication year, illustrating the temporal evolution of research topics. Labels were displayed according to relevance scores to enhance readability and interpretability of the resulting network maps.

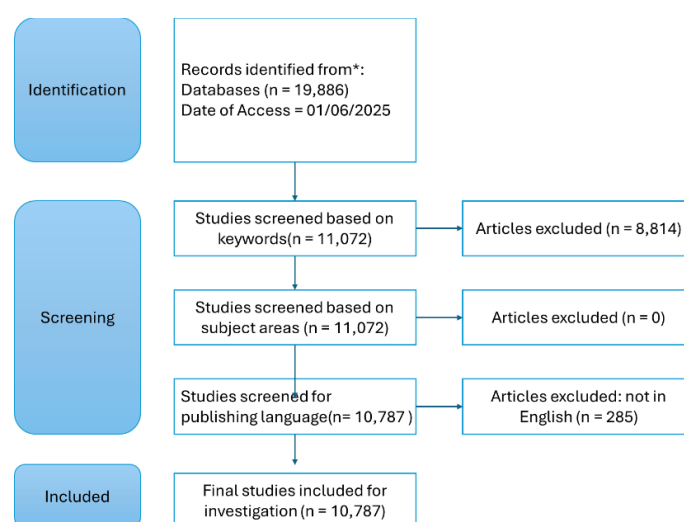


Figure 1: Research Flowchart

Distribution of ChatGPT Applications in Educational Research

Figure 2 depicts the publication trajectory of studies concerning ChatGPT's integration into educational research between 2022 and 2025. The data reveal a marked and sustained surge in scholarly output beginning in late 2022, followed by a sharp escalation through 2023. Although 2022 represents the emergent phase of this topic, publication activity expanded exponentially in 2023 and reached its highest point in 2024, signaling a substantial escalation in academic engagement. This upward momentum reflects how educational researchers have increasingly prioritized the pedagogical implications of generative artificial intelligence (GAI) across teaching, learning, and assessment domains.

From the perspective of Rogers's Diffusion of Innovations (DOI) theory (2003), this pattern mirrors a classic S-shaped diffusion curve. The year 2022 corresponds to the innovator stage, when only a few pioneering scholars explored ChatGPT's educational potential. By 2023, the field had transitioned into the early adopter phase, characterized by rapid expansion and growing institutional experimentation. The proliferation observed in 2024 suggests entry into

the early majority stage, where adoption becomes mainstream across disciplines. Preliminary evidence from early 2025 indicates that growth is beginning to stabilize, suggesting a maturation phase in which novelty diminishes and academic discourse becomes more structured and evaluative.

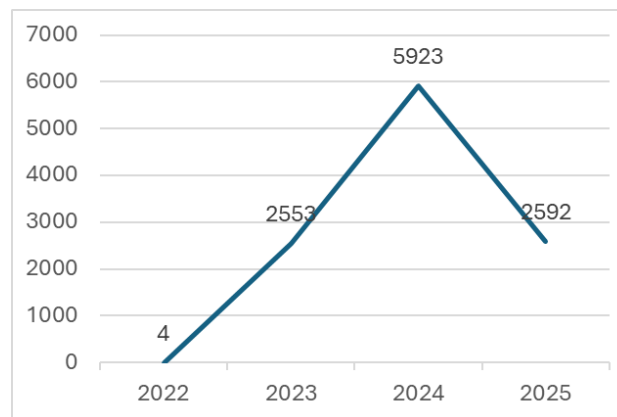


Figure 2: Distribution of Publications on ChatGPT Applications in Educational Research (as of June 1, 2025)

3. Limitations

Despite its comprehensive coverage, as with most bibliometric investigations, this study is subject to several methodological limitations. First, the dataset was restricted to publications indexed in Scopus, using “ChatGPT” as the primary search keyword. Consequently, studies indexed in other databases or those referring more broadly to “generative artificial intelligence” without explicitly mentioning ChatGPT may have been excluded. This constraint may have particularly limited coverage of early-stage research (2020–2021), prior to the widespread use of the term ChatGPT.

Second, the dataset reflects a temporal snapshot as of mid-2025. Given the rapid pace of research in this area, subsequent publications emerging after the cutoff date are not represented. Likewise, citation metrics and co-authorship network data were captured at the time of retrieval and may have evolved since, potentially leading to minor variations in citation rankings or network centrality measures.

Third, the thematic interpretation of clusters and research trends depends on the accuracy of author-supplied keywords and the performance of the clustering algorithm employed by VOSviewer. Automated classification can occasionally oversimplify complex topics or cause thematic overlaps, meaning that a certain degree of interpretive subjectivity remains in the naming and conceptualization of clusters.

While these limitations warrant cautious interpretation of the results, the large dataset and systematic analytical procedures adopted in this study nonetheless provide a reliable macro-level overview of the research landscape. Despite the inherent constraints, the insights derived from this analysis offer a robust and meaningful foundation for understanding the diffusion and development of ChatGPT-related scholarship in higher education.

4. Findings and discussion

Publication trend

To capture the global dynamics of Generative Artificial Intelligence (GenAI) research within the educational domain, this study examines two complementary dimensions: national publication output and international co-authorship networks. Figure 3 displays the top 20 countries ranked by the number of publications indexed in the Scopus database, while Figure 4 illustrates the structure of cross-national collaborations, highlighting each country's position and connection strength within the broader academic ecosystem.

As shown in Figure 3, the United States leads the field with 3,003 publications, far exceeding other nations and reaffirming its central influence in GenAI-related educational research. China (1,389 publications) and India (763) follow as major contributors, signaling the rapid advancement of AI education research in Asia. Established research hubs such as the United Kingdom, Germany, Australia, Canada, and Italy continue to demonstrate strong productivity, forming a multi-centered and globally dispersed research network.

In addition, several emerging Asian economies—notably Malaysia (497 publications), Hong Kong (261), and Taiwan (198)—have entered the global top 20. Their increasing output underscores the broadening diffusion of AI-assisted education research beyond traditional Western contexts, with growing participation from developing academic markets. This geographical diversification reflects an accelerating diffusion pattern, where innovation in AI-driven education is progressively reaching new regional and institutional frontiers.

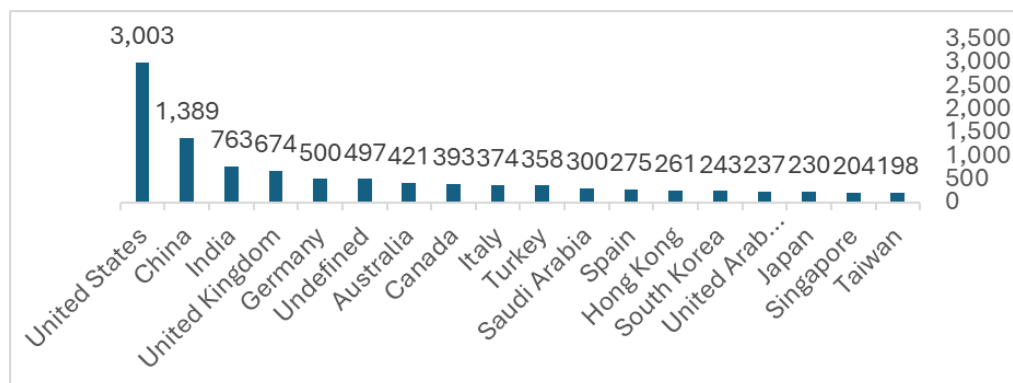


Figure 3: Number of Publications by Country (2022–2025)

Figure 4 illustrates the international co-authorship network of Generative AI research in education, revealing both the structure and intensity of global scholarly collaboration. The United States stands out not only as the most productive country but also as the central hub in the worldwide collaboration landscape, maintaining strong academic linkages with a broad range of partner nations. Surrounding this nucleus, China, India, and Germany occupy prominent positions, forming a densely interconnected cluster that links North America, Europe, and Asia.

In contrast, several emerging economies—including Malaysia, the Philippines, and Algeria—though contributing comparatively fewer publications, have begun to develop cross-regional partnerships. These new collaborative ties suggest that the diffusion of research activity is

gradually extending beyond traditional centers of academic influence, signaling the globalization of AI-in-education research networks.

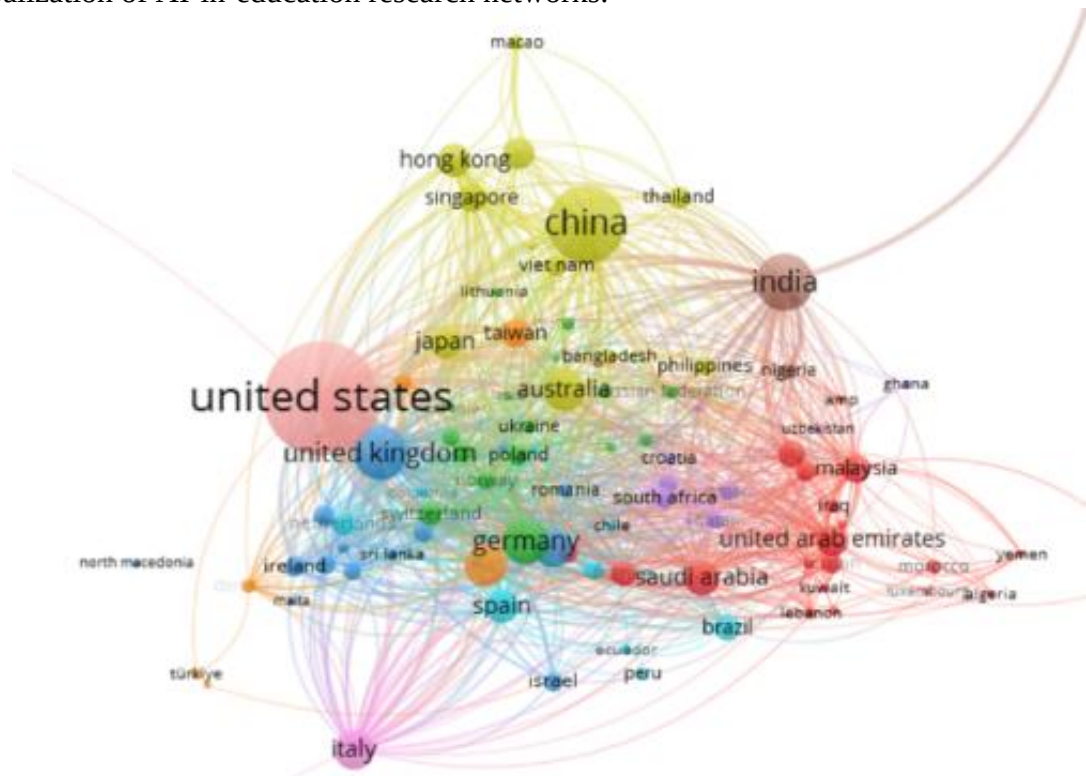


Figure 4: Country-Level Co-authorship Network (2022–2025)

Overall, the results demonstrate a positive association between publication volume and the degree of international collaboration. Countries with greater research output tend to act as network anchors, shaping collaboration flows and knowledge circulation. This configuration embodies a core–periphery structure, where highly connected nations—particularly the United States—drive the global dissemination and institutional adoption of GenAI-related educational knowledge.

From the perspective of Rogers’s Diffusion of Innovations theory (2003), these findings parallel an early-adopter pattern at the national level: a small group of innovation leaders initially propelled the field’s development, followed by a progressive inclusion of new participant countries. As diffusion continues, the global network is expected to evolve toward a more balanced structure characterized by diversified contributors and collaborative maturity.

Citation analysis

Table 1: Top 10 influential articles

Rank	Article Title and Author, Year	Citations
1	ChatGPT for good? On opportunities and challenges of large language models for education (Kasneci et al., 2023)	2,367
2	“So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy (Dwivedi et al., 2023)	2,127
3	Performance of ChatGPT on USMLE: Potential for AI-assisted medical education using large language models (Kung et al., 2023)	1,994
4	ChatGPT Utility in Healthcare Education, Research, and Practice: Systematic Review on the Promising Perspectives and Valid Concerns (Sallam, 2023)	1,452

5	ChatGPT: A comprehensive review on background, applications, key challenges, bias, ethics, limitations and future scope (Ray, 2023)	1,335
6	How Does ChatGPT Perform on the United States Medical Licensing Examination? The Implications of Large Language Models for Medical Education and Knowledge Assessment (Gilson et al., 2023)	1,147
7	ChatGPT: five priorities for research (van Dis et al., 2023)	1,114
8	ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? (Rudolph, Tan & Tan, 2023)	936
9	Chatting and cheating: Ensuring academic integrity in the era of ChatGPT (Cotton, Cotton & Shipway, 2024)	930
10	What Is the Impact of ChatGPT on Education? A Rapid Review of the Literature (Lo, 2023)	911

Source: Scopus Database

Thematic clusters

To further examine the thematic landscape and knowledge distribution of research on ChatGPT and generative artificial intelligence (GenAI) in education, this study utilized VOSviewer to perform a keyword co-occurrence analysis, generating a visualized network map (Figure 5). The analysis drew on author-supplied keywords from publications indexed in the Scopus database. By applying a minimum co-occurrence threshold and clustering algorithms, high-frequency terms were identified and grouped into thematic clusters based on network association strength.

The visualization reveals that “artificial intelligence” appears as the most frequently used keyword and occupies a central position in the network, closely linked to terms such as “large language models,” “medical education,” “deep learning,” and “natural language processing.” This centrality suggests that contemporary research on ChatGPT is primarily anchored in technological perspectives, particularly the integration of AI systems within professional and medical education contexts.

Distinct colors in the network map represent automatically generated thematic clusters, which can be characterized as follows:

- (1) Technology-Oriented Cluster (Green) — This group encompasses technical terms such as “deep learning,” “BERT,” “copilot,” and “multimodal AI models.” It captures research examining the algorithmic foundations and computational innovations underlying GenAI models. Studies in this cluster emphasize the relative advantage of emerging LLMs over earlier technologies, underscoring ChatGPT’s technological sophistication and efficiency as a catalyst for educational transformation.
- (2) Educational and Medical Applications Cluster (Orange) — Centered around keywords such as “medical education,” “nursing education,” “resident education,” and “urology,” this cluster reflects the practical incorporation of ChatGPT in clinical and professional training environments. These applications demonstrate the compatibility of generative AI with domain-specific pedagogical needs, especially in settings that benefit from adaptive, feedback-oriented learning tools.
- (3) Learning Assessment and Educational Ethics Cluster (Red) — This cluster includes keywords like “formative assessment,” “academic writing,” and “automated grading.” Research in this domain focuses on the influence of AI tools on assessment design, academic integrity, and teaching practices. The prominence of this theme suggests

that educators are critically assessing both the observability of learning outcomes and the ethical implications of integrating AI into evaluation systems.

- (4) Educational Attitudes and Societal Response Cluster (Blue) — Featuring terms such as “attitude,” “general public,” and “quality assurance,” this cluster captures the social dimension of diffusion, emphasizing user perception, institutional trust, and organizational readiness for AI adoption. As ChatGPT’s visibility grows, scholars are increasingly investigating acceptance, confidence, and cultural readiness, aligning with the trialability and observability stages of innovation diffusion.
- (5) Information Security and Legal Issues Cluster (Purple/Pink) — Comprising keywords like “cybersecurity,” “copyright,” “phishing,” and “information security,” this cluster represents the ethical, regulatory, and governance challenges emerging from AI adoption. Studies in this domain examine the compatibility of ChatGPT with existing legal and ethical frameworks, as well as strategies for mitigating data privacy and misuse risks to ensure safe implementation in educational settings.

Beyond these dominant clusters, peripheral nodes—including “custom GPT,” “predictive model,” and “academic publishing”—represent emerging areas of inquiry still in the early stages of diffusion. These peripheral terms indicate the presence of ongoing innovation at the margins, where researchers are experimenting with new directions that have yet to be fully embraced by the early majority.

In Rogers’s Diffusion of Innovations (DOI) theory (2003) terms, these frontier topics embody the work of continuing innovators, extending the boundaries of generative AI’s application in education and setting the stage for the next wave of scholarly adoption and specialization.

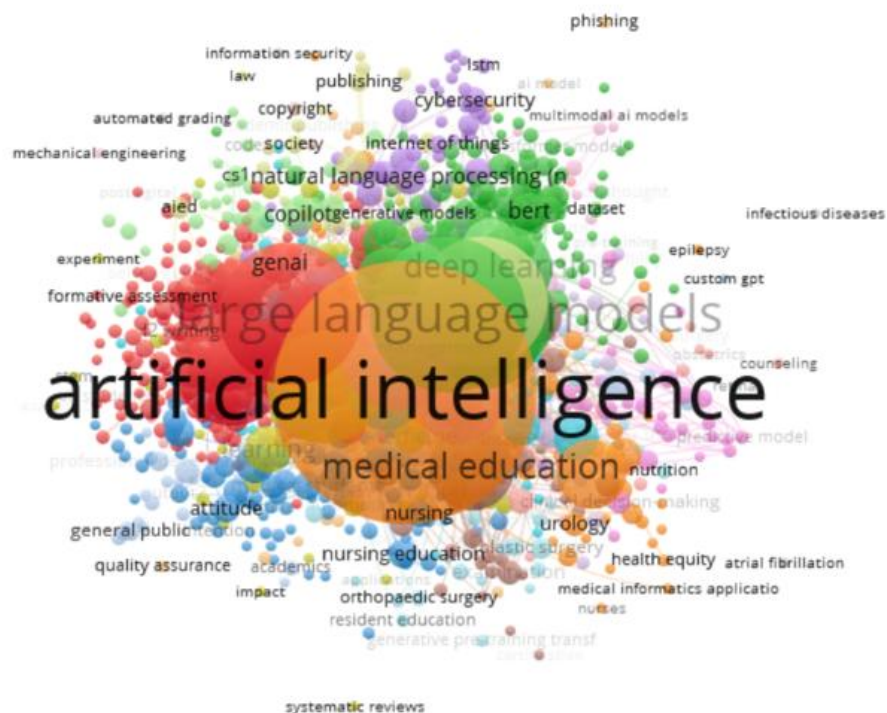


Figure 5: Keyword Clustering of ChatGPT Applications in Educational Research (2022 to June 2025)

Temporal Visualization of Keywords by Average Year of Publication

To further analyze the temporal evolution of research themes surrounding Generative Artificial Intelligence (GenAI) in education, this study employed a keyword co-occurrence analysis using VOSviewer. The Overlay Visualization function was applied to indicate the Average Publication Year (APY) of each keyword, as illustrated in Figure 6.

In this visualization, each node represents a keyword, with its size proportional to the frequency of occurrence. The color gradient—ranging from blue (representing publications before mid-2023) to yellow (representing studies from early 2024 onward)—indicates the relative recency of research topics. Lines between nodes depict co-occurrence relationships, where denser linkages signify stronger semantic associations within the literature.

The analysis reveals that keywords such as “artificial intelligence,” “large language models,” and “medical education” form the core cluster of the network. Their green-blue coloration shows these subjects have been actively investigated since 2023, indicating their establishment as mature and foundational research domains. In contrast, keywords such as “custom GPT,” “copilot,” “multimodal AI models,” and “academic publishing” appear in shades of yellow, signaling newly emerging research foci with publication peaks concentrated in early 2024—reflecting rapidly increasing scholarly engagement in cutting-edge subfields.

Intermediate keywords such as “formative assessment,” “nursing education,” and “resident education” exhibit green-to-light-blue hues, representing steady and sustained interest from mid-2023 through early 2024. Meanwhile, terms like “cybersecurity,” “copyright,” and “phishing” have appeared more recently, highlighting the growing attention to ethical, legal, and data-security concerns as AI becomes embedded in educational ecosystems.

Overall, the overlay visualization depicts a distinct chronological progression in ChatGPT-related educational research. The thematic focus has evolved from technology-centered discussions (e.g., AI systems and large language models) to pedagogical applications (e.g., curriculum, feedback, and assessment), then to user and institutional experiences (e.g., attitudes, academic integrity), and finally to systemic and regulatory issues (e.g., data protection, copyright compliance). This trajectory exemplifies a developmental pathway that can be summarized as:

“technological introduction → pedagogical implementation → societal and institutional response.”

Interpreted through the lens of Rogers’s Diffusion of Innovations (DOI) theory (2003), this temporal pattern mirrors the sequential stages of innovation diffusion. Initially, scholarly attention emphasized relative advantage and trialability—demonstrating ChatGPT’s functional value and feasibility (Phase 1: technological introduction). The subsequent phase focused on compatibility and reduction of complexity, as educators sought to align AI tools with existing pedagogical norms (Phase 2: implementation and adaptation). In the most recent phase, attention has shifted toward observability and consequence management, as institutions and policymakers evaluate outcomes and address systemic impacts (Phase 3: institutionalization and regulation).

That this full diffusion cycle has occurred within roughly two years attests to the unprecedented pace at which ChatGPT has penetrated higher education research and practice. It highlights

how generative AI has transitioned from experimental novelty to an integral, debated, and increasingly regulated component of the academic ecosystem.

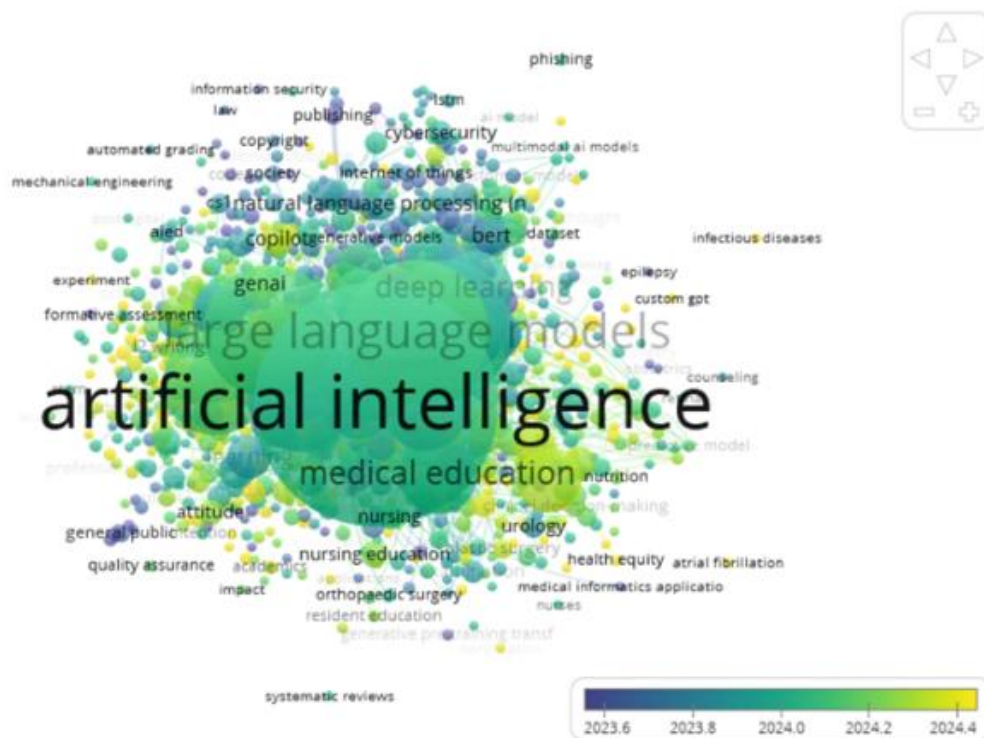


Figure 6: Average Publication Year of Keywords Related to ChatGPT (2022 to June 2025)

5. Conclusion and Recommendations

Conclusion

Based on the findings of this bibliometric investigation, research on the educational applications of ChatGPT has expanded at an unprecedented rate since 2022, demonstrating both strong momentum and increasing thematic diversity. The focus of inquiry has gradually shifted from exploring AI tools as instructional assistants to engaging in deeper reflection on their implications for **academic integrity, learning assessment, and educational ethics**. This transition signifies not only the **technological maturation** of generative AI but also a **pedagogical transformation**, as educational technology research evolves toward multi-domain, cross-disciplinary inquiry.

Geographically, English-speaking countries—particularly the **United States, the United Kingdom, and Australia**—remain dominant in research output, with the United States serving as the central hub of global collaboration networks. In Asia, **China, India, Taiwan, and Singapore** have become increasingly influential contributors, reflecting the growing engagement of emerging educational technology markets. Nonetheless, **cross-national collaboration** and interdisciplinary partnerships remain limited, indicating substantial potential for stronger international cooperation and policy alignment in the coming years.

Thematic clustering and keyword co-occurrence analyses identified four main research streams:

- (1) foundational studies on generative AI technologies,
- (2) applications in medical and professional education,
- (3) investigations into academic integrity and assessment innovation, and
- (4) emerging issues related to cybersecurity, privacy, and ethics.

Together, these clusters illustrate the interdisciplinary breadth of the field—spanning education, computer science, ethics, and applied professional contexts such as healthcare training. Temporal trend analysis further reveals a sequential trajectory from **technological introduction** → **pedagogical implementation** → **institutional and societal response**, consistent with innovation diffusion and adaptation models.

Interpreted through **Rogers’s Diffusion of Innovations (DOI) theory (2003)**, ChatGPT’s rapid diffusion in higher education has been driven by several favorable innovation attributes. Its **relative advantage** (improved efficiency in feedback and assessment), **high trialability**, and **low complexity** have lowered adoption barriers, encouraging educators to experiment with minimal cost or technical skill. These characteristics explain the explosive adoption in 2023, when many educators (the “early majority”) followed the innovators and early adopters from 2022.

However, as diffusion progresses, **compatibility** with institutional values and **observability** of credible learning outcomes have become critical. The field appears to be transitioning into a **validation phase**, where empirical evidence of effectiveness, fairness, and ethical compliance will determine long-term integration. This theoretical lens underscores the importance of addressing **assessment integrity, data security, and regulatory governance** to ensure responsible and sustainable adoption of ChatGPT in higher education.

In summary, the diffusion of ChatGPT represents both a **transformative opportunity** and a systemic challenge for education. Advancing this innovation toward a mature, evidence-based stage requires coordinated action among researchers, policymakers, and practitioners.

Recommendations

(1) For the Academic Community

Researchers should strengthen the integration between theoretical and empirical inquiry when studying ChatGPT and similar AI tools. While current literature focuses heavily on short-term ethical and pedagogical concerns, future research should investigate **long-term**, systemic, and institutional impacts—including how AI influences assessment reform, faculty roles, and instructional quality over time.

Longitudinal and comparative studies across institutions are essential to capture evolving adoption trajectories. Theoretical frameworks such as **Rogers’s DOI** should guide these investigations, linking micro-level case findings to broader adoption patterns and thereby enhancing conceptual coherence.

In addition, scholars should diversify publication outlets. Beyond educational technology journals, research dissemination should extend to fields such as **education policy, sociology, cognitive science, and information ethics**. This cross-field engagement will democratize knowledge production, enrich scholarly dialogue, and accelerate the diffusion of AI understanding to the “late majority” of educators and disciplines that have yet to adopt these tools meaningfully.

(2) For Educational Authorities

(A) Strategic Allocation of Research Resources

The bibliometric results reveal a geographic and institutional concentration of research, with key contributions from a limited number of universities—such as Monash University and leading teams like Kasneci et al. Governments and funding agencies should establish **interdisciplinary AI-in-education research centers**, particularly in underrepresented regions, to promote equitable global participation and build sustainable capacity.

(B) Strengthening Policy and Governance Frameworks

As highlighted in prior studies (Rudolph et al., 2023; Lo, 2023), ChatGPT challenges existing systems of academic integrity and assessment. Educational authorities should proactively **update regulatory frameworks** to reflect the realities of AI integration, developing coherent policies on assessment reform, academic honesty, and AI-enhanced pedagogy to balance innovation with accountability.

(C) Enhancing Ethical and Legal Safeguards

Emerging keywords such as “cybersecurity” and “copyright” reflect increasing attention to digital ethics and data protection. Authorities should implement **clear ethical and legal guidelines** governing AI use in education to prevent misuse, ensure transparency, and safeguard intellectual property. Such measures will strengthen **compatibility** and observability—two crucial conditions for stable diffusion under the DOI framework.

(3) For Frontline Educators

(A) Leveraging AI Tools Responsibly

Educators should adopt ChatGPT as a **pedagogical aid** rather than a replacement for human teaching. Empirical studies, such as **Kung et al. (2023)** on medical education and Kasneci et al. (2023) on classroom applications, demonstrate how AI can enhance content generation, feedback provision, and student engagement while maintaining critical thinking and originality. Early adopters play a pivotal role as **change agents**, helping peers overcome uncertainty by showcasing concrete examples of effective practice.

(B) Innovating Assessment Practices

The keyword analysis (red cluster) revealed strong emphasis on “formative assessment” and “automated grading,” highlighting growing interest in AI-supported evaluation models. Teachers should explore **open-ended, AI-assisted assessment designs** that integrate generative feedback and adaptive learning analytics to personalize instruction. Sharing best practices across institutions can enhance trialability, reduce complexity, and support broader acceptance consistent with DOI principles.

Limitations and Future Research Directions

Despite its breadth, this study faces several limitations.

First, the analysis relies solely on the **Scopus** database, which, while comprehensive, may exclude relevant studies indexed in other databases such as **Web of Science**, **ERIC**, or **Google Scholar**, as well as regional journals not covered by major indexing services.

Second, a **language and publication bias** may exist, as most Scopus-indexed literature is in English and originates from high-income countries, potentially underrepresenting insights from developing or non-English-speaking regions.

Third, the **bibliometric method** is inherently descriptive. Although it effectively maps research structures and trends, it does not assess theoretical depth or causal relationships. Future studies could integrate **systematic reviews, meta-analyses, or qualitative methods** to provide richer interpretive insights.

Finally, the **rapid evolution of generative AI** means that new studies continuously emerge. The results here represent a **snapshot as of May 2025**; ongoing updates and multi-database comparisons are recommended to ensure the continued relevance and accuracy of findings.

Acknowledgment

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References

- Baidoo-Anu, D., & Owusu Ansah, L. (2023). Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning. *Social Science Research*, 31, 410. <https://doi.org/10.2139/ssrn.4337484>
- Bahroun, Z., Anane, C., Ahmed, V., & Zacca, A. (2023). Transforming education: A comprehensive review of generative artificial intelligence in educational settings through bibliometric and content analysis. *Sustainability*, 15(17), 12983. <https://doi.org/10.3390/su151712983>
- Bhullar, P. S., Joshi, M., & Chugh, R. (2024). ChatGPT in higher education: A synthesis of the literature and a future research agenda. *Education and Information Technologies*, 29, 21501–21522. <https://doi.org/10.1007/s10639-024-12723-x>
- Bouteraa, M., Bin-Nashwan, S. A., Al-Daihany, M., Dirie, K. A., Benlahcene, A., Sadallah, M., Zaki, H. O., Lada, S., Ansar, R., Lim, M. F., & Chekima, B. (2024). Understanding the diffusion of AI-generative (ChatGPT) in higher education: Does students' integrity matter? *Computers in Human Behavior Reports*, 14, 100402. <https://doi.org/10.1016/j.chbr.2024.100402>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Ghimire, A., & Edwards, J. (2024). Generative AI adoption in classroom in context of Technology Acceptance Model (TAM) and the Innovation Diffusion Theory (IDT). *arXiv*. <https://arxiv.org/abs/2406.15360>
- Grassini, S. (2023). Shaping the future of education: Exploring the potential and consequences of AI and ChatGPT in educational settings. *Education Sciences*, 13(7), 692. <https://doi.org/10.3390/educsci13070692>
- Greenhalgh, T., Wherton, J., Papoutsis, C., et al. (2017). Beyond adoption: A new framework for theorizing and evaluating nonadoption, abandonment, and challenges to the scale-up, spread, and sustainability of health and care technologies. *Journal of Medical Internet Research*, 19(11), e367. <https://doi.org/10.2196/jmir.8775>
- Hwang, G. J., & Tu, Y. F. (2021). Roles and research trends of artificial intelligence in mathematics education: A bibliometric mapping analysis and systematic review. *Mathematics*, 9(6), 584. <https://doi.org/10.3390/math9060584>
- Lo, C. (2023). What is the impact of ChatGPT on education? A rapid review of the literature. *Education Sciences*, 13(4), 410. <https://doi.org/10.3390/educsci13040410>
- Nikolopoulou, K. (2024). Generative artificial intelligence in higher education: Exploring ways of harnessing pedagogical practices with the assistance of ChatGPT. *International Journal of Changes in Education*, 1(2), 103–111. <https://doi.org/10.47852/bonviewIJCE42022489>

OECD. (2024). *AI in education: Opportunities, risks, and policy responses*. OECD Publishing. <https://doi.org/10.1787/ai-edu-2024-en>

Rahman, M. M., & Watanobe, Y. (2023). ChatGPT for education and research: Opportunities, threats, and strategies. *Applied Sciences*, 13(9), 5783. <https://doi.org/10.3390/app13095783>

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). Free Press.

Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning & Teaching*, 6(1). <https://doi.org/10.37074/jalt.2023.6.1.9>

Straub, E. T. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research*, 79(2), 625–649. <https://doi.org/10.3102/0034654308325896>

Tlili, A., Shehata, B., Adarkwah, M. A., Bozkurt, A., Huang, R., & Agyemang, B. (2023). What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education. *Smart Learning Environments*, 10(1). <https://doi.org/10.1186/s40561-023-00237-x>

UNESCO. (2023). *Guidance for generative AI in education and research: A framework for policy makers*. UNESCO.

van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>

吳聲毅 (2024)。〈以教學理論為基礎探討生成式人工智慧在教學上的應用〉。《教育資料與研究》，368，37–49。 <https://doi.org/10.53106/168063602024120368003>

李郁緻 (2024)。〈澳洲學校教育生成式人工智慧應用政策探析〉。《台灣教育研究期刊》，5 (6)，231–246。

梁心怡 (2024)。〈生成式人工智慧角色扮演於輔助設計思考實務訓練之應用模式〉。《教育研究月刊》，365，126–145。 <https://doi.org/10.53106/168063602024090365008>

陳啓東 (2025)。〈生成式 AI 對大學生自主學習之挑戰與因應〉。《臺灣教育評論月刊》，14 (5)，61–70。

陳建志、張瓊文 (2025)。〈AI 在教育研究領域的應用系列 (七)：Notion AI 在文獻資料庫之應用實測〉。《教育研究月刊》，373，143–156。 <https://doi.org/10.53106/168063602025050373009>

陳玫蓉 (2024)。〈運用生成式人工智慧之英語歌曲多模態創作於 EFL 教育〉。《教育研究月刊》，365，52–71。 <https://doi.org/10.53106/168063602024090365004>

唐士哲 (2024) 。〈生成式人工智慧、新聞室自動化與變遷中的新聞樣貌〉。《文化：政策・管理・新創》，3 (1) ，9-27。

涂芸芳、呂一淳、陳禹辰 (2025) 。〈生成式人工智慧的國際教育應用及研究趨勢〉。《教育研究月刊》，365，171-185。 <https://doi.org/10.53106/1680636020240903650010>

賴秋琳 (2024) 。〈與 GAI 合作論證：以內容分析探討臺灣高中生與生成式人工智慧合作模式〉。《教育研究月刊》，365，109-125。 <https://doi.org/10.53106/168063602024090365007>

金查爾斯 (Charles King) 著，高智敏譯 (2025) 。〈內部稽核的生成式人工智慧風險管理指南〉。《內部稽核季刊》，128，30-35。 [https://doi.org/10.7100/IA.202502_\(128\).0004](https://doi.org/10.7100/IA.202502_(128).0004)

孫鈺婷 (2023) 。〈七大工業國組織提出關於生成式人工智慧聲明〉。《科技法律透析》，35 (10) ，6-8。

25th SEAAIR Conference "Outstanding Paper"

Designing a Model Curriculum for a Japanese Institutional Research Human Resource Development Program

ABSTRACT

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This study proposes a model curriculum for institutional research (IR) human resource development programs in Japan. To achieve this, the study first integrated three information sources: (1) a meta-review of prior survey data identifying the knowledge and skills most in demand among Japanese IR professionals, (2) a classification of courses in U.S. IR certificate programs to identify common curricular structures, and (3) an analysis of qualitative data collected at a workshop for Japanese IR practitioners. This integration extracted commonalities and Japanese-specific characteristics. Next, drawing on Terenzini's (1993) "Three Tiers of Organizational Intelligence," Howard-McLaughlin's (1998) "Information Support Circle," and considering Andragogy theory and Japanese employment practices, we developed a proposed Japanese IR model curriculum. The model curriculum established three essential courses for all learners: "Introduction to IR/IE," "Data Ethics & Research Ethics," and "Research Methods & Survey Methods." Courses such as "Fundamentals of Higher Education" and "Data Utilization Skills" were designated as electives, considering the characteristics of Japanese IR personnel resources and the Andragogy concept of "Self-concept." Furthermore, recognizing that program participants are adults, it was determined that the "General Skills" necessary for IR should be developed through real-world problem-solving and interactive learning methods. Additionally, this model curriculum is intended to guide learners through a structured sequence of skills, paralleling those included in Tier 1: Technical/Analytical Intelligence of the "Three Tiers of Organizational Intelligence." Furthermore, within the "Information Support Circle" IR activity model, it signifies that learning elements related to communication and data utilization skills are crucial in the processes connecting the roles of Broker and Custodian. The next challenge is to further review this model curriculum and connect it to actual program development.

Keywords: Institutional Research, Human Resource Development, Model Core Curriculum

1. Introduction

In recent years, institutional research (IR) offices have been established in Japanese universities. According to a survey by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT), “the number of universities with offices dedicated to university-wide IR” increased from 7% (56 universities) in FY 2011 to 53% (412 universities) in FY 2022 (MEXT, n.d.). Simultaneously, the number of faculty and staff members responsible for IR has increased over the past 10 years.

In response to the growing need for skill enhancement and career development among IR personnel, there has been an increase in the number of short-term training programs and program development for IR personnel in Japan (Iseri et al., 2023). The latter was developed by two universities (Institute of Science Tokyo and Yamagata University) starting in 2019 as a one-semester IR personnel training program (Iseri et al., 2025).

However, IR in Japan is still in its infancy and training opportunities are not yet well developed. The two aforementioned programs are still undergoing the replacement of instructors and periodic program reviews to examine their educational content. In this program review, an attempt is required to examine the appropriateness of the program based on the current status of IR in Japan and overseas; however, such evidence has not yet been found.

The purpose of this study is to examine a model curriculum for an IR human resource development program (hereinafter referred to as “IR program”) in Japan. The results of this study are expected not only to evaluate the validity of Japan's current IR programs but also to serve as reference material for the development of future IR programs in various countries.

Furthermore, this study establishes the following research framework for this purpose. First, commonalities will be extracted based on three quantitative and qualitative information sources: (1) A meta-review of the knowledge/skills in Japanese previous surveys of IR practitioners, (2) Classification of courses in the U.S. IR certificate program, and (3) Analysis of qualitative data on IR programs collected at a workshop for IR practitioners. Next, we examine Japanese IR programs by comparing these findings with Japanese Human Resource systems for IR personnel, Terenzini's (1993) “Three Tiers of Organizational Intelligence” (hereinafter referred to as “three intelligences”), and Howard-McLaughlin's (1998) “Information Support Circle” (hereinafter referred to as “ISC”). The characteristics of Japanese IR personnel management are twofold. First, rather than hiring new IR specialists, it is common to appoint existing faculty or staff members within the institution as IR officers. In such cases, due to differences in prior work experience, the strengths of IR officers in the aforementioned three intelligences vary significantly. This necessitates careful consideration of the differing prerequisites for what they need to learn. Second, learners are almost exclusively working adults. Learning must be designed to reflect characteristics of adult learning theory (Malcolm et al., 2012), such as “Self-concept,” “Adult learner experience,” and “Orientation to learning.” It should leverage individual experiences, be self-directed, and lead to problem-solving oriented learning. The framework for this study, based on the above, is shown in Figure 1.

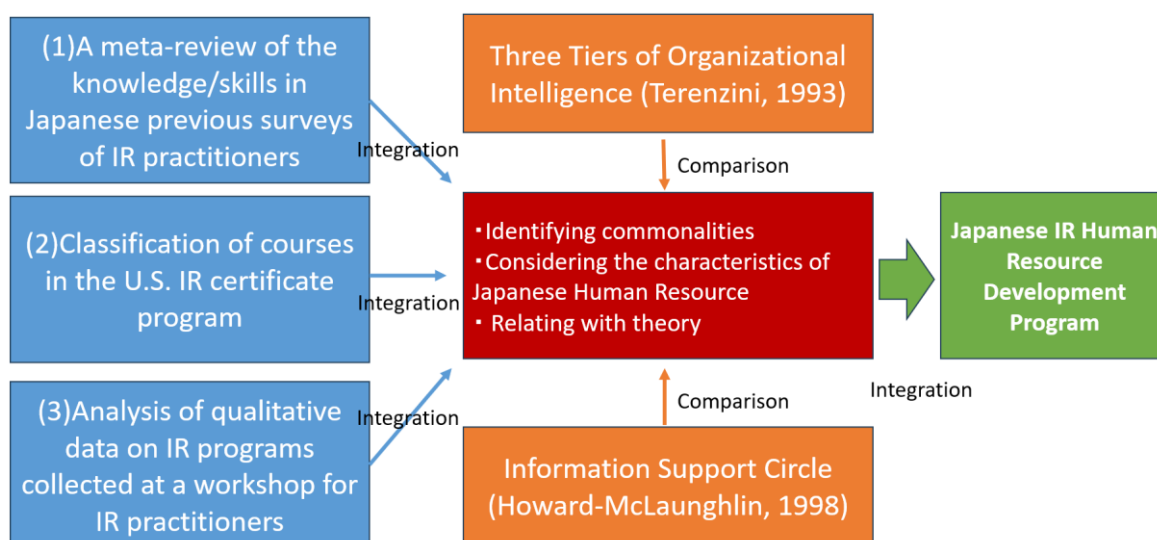


Figure 1: A framework for developing a model curriculum (Source: Author).

2. Methods of Three Sources

A meta-review of the knowledge/skills in Japanese previous surveys of IR practitioners

We conducted a meta-review of knowledge and skill items from past questionnaire surveys targeting IR professionals in Japan. First, we identified 21 IR-related surveys (2005–2024) by searching for the keyword “Institutional Research” in Japan's academic paper search database “CiNii Research.” We then excluded 15 surveys targeting IR offices and focused on 6 targeting individual practitioners: of these, 4 included knowledge/skill items. Because two were conducted by the same researcher at multiple time points using a rubric-based measure, we referenced only the most recent in each series to avoid duplication. Additionally, 3 selected studies were multi-investigator projects funded by Japan's Grant-in-Aid for Scientific Research (KAKENHI), involving numerous IR researchers beyond the respective authors. Ultimately, three surveys became the subject of the meta-review. Subsequently, the knowledge and skill items asked for in each survey were listed. The first author grouped those considered to fit into common categories, and the other authors reviewed their validity to finalize the content.

Classification of courses in the U.S. IR certificate program

Ten post-bachelor's level certificate programs were selected from “Graduate Certificate Programs” introduced on the website of the Association for Institutional Research (AIR). The final reference date on each program's website was June 15, 2025. Programs regarded as not IR-focused, those at the doctoral or master's level, those that were no longer accepting applications, and those for which the links were broken and information was only available several years ago were excluded. Consequently, we obtained the 10 programs mentioned above.

Information on these 10 programs is summarized in Table 1 by using an updated version of Fujiwara's (2015) classification framework, which had been applied to compare U.S. IR certificate programs. While Fujiwara (2015) classified them into four areas, based on the first author's classification and validity checks by other authors, this study classified them into six.

Analysis of qualitative data on IR programs collected at a workshop for IR practitioners

First, on November 9, 2024, we held a workshop titled, “Let’s think about the model core curriculum of the Japanese IR program.” A total of 38 IR personnel completed a worksheet asking them to (a) state what knowledge and skills they think should be cultivated in IR programs, (b) briefly describe the goals of the knowledge and skills mentioned above, and (c) briefly describe the learning content and ideas for learning methods that they think are necessary for the program to develop the knowledge and skills mentioned above. In asking students to consider (b) and (c), we made the prerequisite that “the primary target audience for the program should be novice IR professionals with less than one year of IR work experience.”

A qualitative analysis of the textual data was then conducted. First, the knowledge and skill items in (a) were classified by the authors, and 17 knowledge and skill categories were extracted. We then organized the descriptions in (b) and (c) by category and extracted representative descriptions for each category. Note that for these tasks, one of the first to third authors initially drafted the outline, after which the other authors reviewed its validity.

However, we would like to note a limitation of this sample. This workshop was held exclusively in person as one session within the Meeting on Japanese Institutional Research, a conference gathering Japanese IR researchers and practitioners. The 38 participants were those who had the opportunity to present or attend at this conference. Approximately 60% of participants were faculty, while 40% were staff members. About 40% had over five years of IR practice experience, and roughly 70% had over three years.

3. Results

A meta-review of the knowledge/skills

Table 1 shows the results of the meta-review of knowledge and skills items from previous surveys of IR professionals in Japan. The items were categorized as the Main Category.

Consequently, the items in the Main Category, “Generic Skills,” “Knowledge of University Management & Organization,” “Knowledge of Higher Education & Policy,” “Research Theory & Methods,” and “Knowledge of Higher Education & Policy,” were categorized under the Main Category. The eight main categories were “Generic Skills,” “Knowledge of University Management & Organization,” “Knowledge of Higher Education & Policy,” “Research Theory & Methods,” “Data Collection & Management,” “Basic Data Aggregation & Visualization,” “Basic & Applied Statistics,” “Basic & Applied ICT Knowledge,” “Use of Statistical Software,” and “Specialized IR Topics”, which were surveyed as necessary.

The responses to these questions were also noteworthy. Because the trends are almost the same in each survey, we report only the results of Iseri and Matsumoto’s (2023) survey, which is the most recent and has the largest sample size of IR personnel. Figure 2 shows only the items for which the percentage of “Necessary” responses was 50% or more in the knowledge and skill questions. From here, for example, “Teaching and research aspects of own institution” and “Organizational and managerial aspects of their institution,” which correspond to the “Knowledge of University Management & Organization” in Table 1, were ranked in the top 10. The survey results show that “Teaching and research aspects of own institution” and “Organizational and managerial aspects of their institution,” which correspond to the

“Knowledge of University Management & Organization” in Table 1, are the top-ranking categories and are recognized as highly necessary.

Table 1: Knowledge and skill items in a questionnaire survey of Japanese IR professionals
(Source: Author).

Main Category	Iseri & Matsumoto (2023)	Oishi (2021) (Created based on the "Seminar Topic" you would like to attend) *	Shimada and Ohno (2022) (Rubric for each element for IR personnel)
Generic Skills	● Presentation skills ● Documentation skills ● Capability to recommend improvements ● Interpersonal negotiation skills	● Data reporting ● Reporting techniques ● Process improvement ● Communication skills ● Project management	● Presentation skills ● Reporting ● Information dissemination
Knowledge of University Management & Organization	● Knowledge of teaching & research at one's institution ● Knowledge of organization & management at one's institution	● University management ● IR organization ● Decision-making	● Hypothesis translation & issue structuring ● Identifying university-management issues ● Client/stakeholder decision-making mechanisms ● University administration at one's institution
Knowledge of Higher Education & Policy	● Knowledge of higher education ● Knowledge of higher-education policy ● Knowledge of other higher-education institutions	● Higher education	● Terminology & definitions in higher education ● Policies & trends in higher education
Research Theory & Methods	● Knowledge & skills in survey design ● Knowledge & skills in qualitative research/qualitative surveys ● Data ethics	● Student surveys ● Research question(s)	● Survey design ● Analytical & methodological skills
Data Collection & Management	● Knowledge & skills in data-analytics infrastructure ● Knowledge & skills in databases ● Knowledge & skills in Extract/Transform/Load tools	● Data collection ● Data restructuring/wrangling ● Data warehouse ● ETL tools ● Database	● Source/data identification & collection ● ICT skills (for data collection) ● Storage & reuse
Basic Data Aggregation &	● Knowledge & skills in data aggregation & descriptive statistics	● Visualization ● Excel ● Tableau	● Aggregation/tabulation ● Visualization

Visualization	● Knowledge & skills in data visualization ● Knowledge & skills in spreadsheets (Excel, Google Sheets, etc.) ● Knowledge & skills in BI tools (Tableau, Power BI, etc.)		
Basic & Applied Statistics	● Knowledge & skills in inferential statistics (statistical testing, etc.) ● Knowledge & skills in advanced statistical methods (machine learning, causal inference, time-series analysis, etc.)	● Statistics	● Analysis ● Statistical skills
Basic & Applied ICT Knowledge	● ICT literacy	● Information technology ● Software development ● Digital transformation (DX) ● Data security ● Network security	● ICT skills
Use of Statistical Software	● Knowledge & skills in statistical software (SPSS, Stata, etc.) ● Knowledge & skills in programming (R, Python, etc.)	● R ● Python	
Specialized IR Topics	● Bibliometrics ● Academic advising ● Instructional design	● Educational data analysis ● Research data analysis ● Financial data analysis ● University evaluation ● Dropout prevention	

* Some items have been omitted because their levels of detail differ substantially.

Note: The table groups similar items from different sources in each main category.

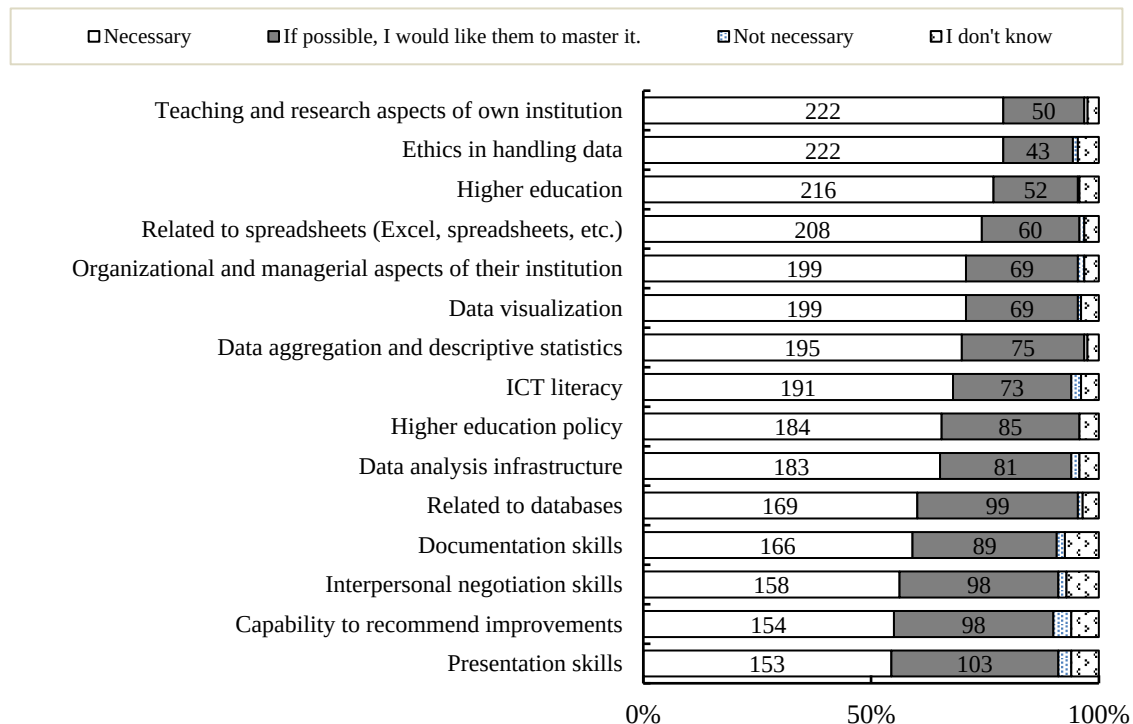


Figure 2: Knowledge and skill items considered highly necessary in the survey by Iseri & Matsumoto (2023) (Source: Author).

Classification of courses in the U.S. IR certificate program

Table 2 lists the IR course completion programs selected for analysis in this study. In addition to the names of the universities, program names, delivery modes, and credits required, Table 2 summarizes the list of courses in six categories created by the authors. Currently, the range is 12 to 18 credits, and many courses can be completed online.

Next, we examined the course content and, without naming institutions, grouped courses into six areas: (1) Higher education & university management—history, policy, external environment, governance, and organization; (2) General research methods—question design, study planning, and quantitative/qualitative methods; (3) Introduction to IR—origins, roles, and core theories; (4) Advanced IR—links to learning assessment, student surveys, institutional evaluation, and student support; (5) Data management & analysis—data management, statistics, analysis, and reporting for beginner-to-intermediate learners; and (6) IR practice—capstone activities such as internships applying acquired knowledge.

This clarifies four points. First, many universities require courses related to the “Introduction to IR.” Second, many universities offer basic and advanced courses in “Data management & analysis.” Third, “General research methods” include research and survey methods in the social sciences related to the specialized fields of the program’s departments. Fourth, “Institutional research practice” includes a variety of subjects such as internships, submission of analytical reports using real-world data, and credit for work experience.

Table 2: List of IR certificate programs selected for this study (Source: Author).

University		Florida State University (*1)	Indiana University (*2)	Kent State University	Pennsylvania State University	University of Iowa	University of Kentucky (*4)	Ball State University	Boston College	University of North Carolina Charlotte	UC San Diego Extension
Program / Course		Institutional Research	Certificate in Institutional Research	Institutional Research and Assessment - Graduate Certificate	Institutional Research Certificate	Certificate in Institutional Research and Effectiveness	Research Methods in Education Graduate Certificate	IR Graduate Certificate Program	Certificate in Institutional Research: Officer Analyst	Institutional Effectiveness Certificate	Institutional Effectiveness Program
Delivery mode		Online-centered (can be completed entirely online)	in person	Online-centered (can be completed entirely online)	Online-centered (can be completed entirely online)	in person or Hybrid	Unknown	Online-centered	Unknown	Online	Online
Credits required		12	18	18	15	15	15	15	12	18	18
Curriculum area	Higher education & university management		EDUC-C 565 Introduction to College and University Administration (*3) EDUC-C 664 Higher Education Org and Admin (*3)	HIED 66656 Higher education curriculum HIED 66651 Student affairs functions in higher education HIED 66662 Politics and power in organizations	Administration in Higher Education (HIED 842) Higher Education Students and Clientele (HIED 846)						
	General research methods	EDF 5449: Survey Research Methods (Spring) EDF 6417 Computer Assisted Qualitative Data Analysis (Summer) EDF 6476 Advanced Qualitative Research Seminar (Fall)				EPLS 6209 Survey Research and Design	EPE 619: Survey Research	EDPS 646 - Tests and Measurements SOPS 610 - Social Psychology SOPS 640 - Social Psychology of Attitudes SOC 683 - Qualitative Research Methods EDST 650 - Introduction to Qualitative Research EDST 660 - Ethnographic Research in Education SOC 681 - Quantitative and Survey Research Methods EDPS 640 - Methodology of Educational and Psychological Research EDPS 643 - Research Design PSYS 680 - Research Methods in Psychology CPSY 653 - Research Methods in Counseling and Social Psychology SOC 682 - Social Statistics	MESA6820 Foundations in Research Methodology(*5) MESA6210 Instrument Design and Development(*5) MESA6830 Interpretation and Evaluation of Research		
	Introduction to institutional research	EDH 5055: Introduction to Institutional Research	EDUC-C 661 Foundations of Institutional Research		Foundations and Fundamentals of Institutional Research(HIED 801)	EPLS 5260: Introduction of Institutional Research & Effectiveness		EDP S602 Institutional Research		Institutional Research Introduction to Careers in Assessment	Introduction to Institutional Effectiveness EDUC-42340
	Advanced institutional research	EDF 5461: Introduction to Program Evaluation (Summer and Fall) EDH 5078 Outcomes Assessment in Higher Education I (Spring) EDH 5079 Outcomes Assessment in Higher Education II (Fall)		HIED 66749 Assessment and accreditation in higher education	Planning and Resource Management Studies(HIED 810) Assessing Student Outcomes and Evaluating Academic Programs(HIED 840) Analyzing Faculty Workload, Performance, and Compensation(HIED 850) Conducting Enrollment Management Studies (HIED 860)	EPLS 6266 Program Evaluation	EPE/EDP 620: Introduction to Evaluation	EDST 671 - Evaluation of Educational Programs		Student Learning Outcomes Accreditation Strategic Planning Building Relationships	Institutional Effectiveness Management and Operations EDUC-42341 Institutional Effectiveness Leadership EDUC-42342
	Data management & analysis	EDF 6455: Data Use in Education EDF 5414 Introduction to Large Data sets (Spring) EDF 5401 General Linear Modeling (Fall) EDF 6471 Quasi-Experimental Data Analysis (Spring)	EDUC-Y 502 Intermediate Statistics Applied to Education	HIED 66665 Technology, systems and data in higher education administration RMS 65510 Statistics i for educational services RMS 68710 Introduction to measurement RMS 68806 Higher education data and institutional research	Designing Institutional Research Studies(HIED 830)	EPLS:6370 Quantitative Methods for Policy Analysis PSQF:6243 Intermediate Statistical Methods	EPE/EDP 557: Gathering, Using and Analyzing Educational Data I	EDPS 641 - Introduction to Statistical Methods EDPS 642 - Analysis of Variance EDPS 742 - Multivariate Statistics and Data Mining EDPS 741 - Applied Regression Analysis EDPS 730 - Introduction to Nonparametric Statistics	MESA6410 Introductory Statistics (*6) MESA6420 Intermediate Statistics (*6)		
	Institutional research practice		EDUC-C 678 Capstone in Institutional Research	HIED 66492 Internship in higher education administration		EPLS: 6352 Action Research in Educational Settings	EPE 663: Field Studies in Educational Settings	EDPS692 Internship in Institutional Research SOC 588 Internship 3: Field Experience SOPS 695 Internship in Applied Social Psychology PSYS 686 Applied Practicum EDH 699 Practicum in Higher Education EDAC 699 Internship in Adult and Community Education	MESA6310 Evaluation Practice and Methods		

*1 Courses intended exclusively for Ed.D. students are excluded.

*2 With the program adviser's approval, you may substitute either two additional graduate-level higher-education courses or other related graduate-level courses not shown in the table.

*3 Choose and complete one of the two options.

*4 You must take one additional course selected from the 30 + Educational Policy Studies and Evaluation electives that are not listed in the table.

*5 Choose and complete one of the two options.

*6 Choose and complete one of the two options.

Note: Bold and italics indicate required courses.

Analysis of qualitative data on IR programs collected at a workshop

The participants' responses to (a) "What knowledge and skills do you think should be developed in an IR personnel training program?" were categorized into 17 groups, and the number of occurrences in each group is summarized in Figure 3. Figure 3 shows the number of times each of the 17 categories was mentioned by participants. The items circled by "University Management/Institutional Management," "Data Management," and "Statistics/Data Science" were found in the responses of more than 70% of the total number of participants (38). In addition to the three items above, the following items were also found: "Reporting Techniques," "Data Visualization/Analysis," "Communication," "Higher Education Studies/Education Policy," "Introductory IR Knowledge," and "Data Management/Data Science." "Introductory IR Knowledge" also appears relatively frequently. Even if the frequency was not relatively high, items such as "IR Ethics" and "Research Methods/Survey Methods" were described by several participants.

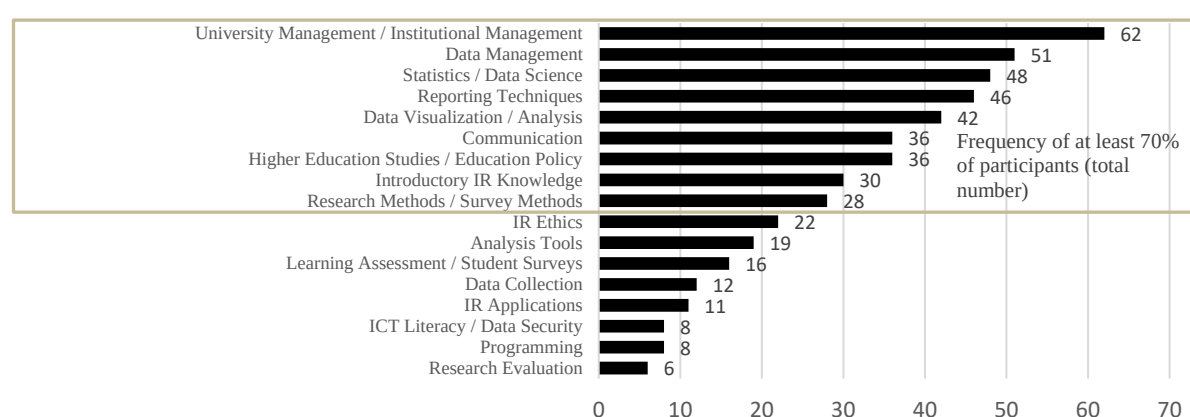


Figure 3: Classification and frequency of knowledge and skills (Source: Author).

Due to space constraints, we present only the text here. IR practitioner's feedback on how beginners should learn converged on two points. First, pair lecture-style classes for foundational knowledge with practice-based classes that build applied skills; for example, "Introductory IR Knowledge," "IR Ethics," and "Higher Education/Education Policy" are typically delivered as basic lectures. Second, for practice, use projects and case studies with institutional or dummy data, peer presentations, and exercises such as discussing past incidents and countermeasures or drafting a questionnaire for a fictional student survey.

4. Discussion

Model Curriculum Structure - Learning Areas Map - Design

Drawing on the three evidence sources, relevant theory, and Japanese IR practice, we propose a model curriculum (Figure 4). First, we describe three elements under the Essential for IR learning areas at the top. "Introduction to IR/IE" was determined to be essential for all IR practitioners to learn first, based on findings from U.S. IR programs (hereafter M2) and Japanese qualitative research (hereafter M3). Next, "Data Ethics & Research Ethics" was deemed essential because many respondents in the questionnaire survey (hereafter M1) considered it necessary, and 22 mentions were also found in M3. This recognition of the importance of "Ethics" was not evident in the M2 results, and similar terminology is not explicitly mentioned in Terenzini (1993)'s three intelligences. This suggests it may be a feature

specific to the Japanese IR context. This trend likely stems from the growing number of IR-related research groups and faculty members seeking to present their findings within them. Indeed, in the survey conducted by Iseri & Matsumoto (2023) introduced in M1, approximately 90% of respondents agreed that “publishing research findings also benefits IR work,” while around 80% agreed that “standard guidelines for handling data in IR research should be established.” Third, “Research Methods & Survey Methods” was made mandatory because it was common to multiple subjects in M1 and M2, and demand remained high in M3. The skill to design research or analysis, including methodology, according to purpose is crucial for IR.

Next, the middle tier “Optional” allows learners to flexibly choose what to study. It comprises three areas: “Fundamentals of Higher Education,” “Data Utilization Skills” (including “Data Management,” “Data Analysis,” and “Data Handling”), and “IR Applications,” consolidating their elements. The inclusion of “Fundamentals of Higher Education” and “Data Analysis”—areas showing high demand through multiple methods—within “Optional” reflects consideration for Japanese IR personnel practices. Many universities appoint IR staff through existing faculty or staff reassignments rather than new hires. Consequently, even among new IR personnel, the strengths in knowledge and skills they possess vary significantly. Therefore, it was deemed necessary to allow learners to select and study what they personally perceive as lacking. This approach also incorporates the concept of “Self-concept” from Andragogy.

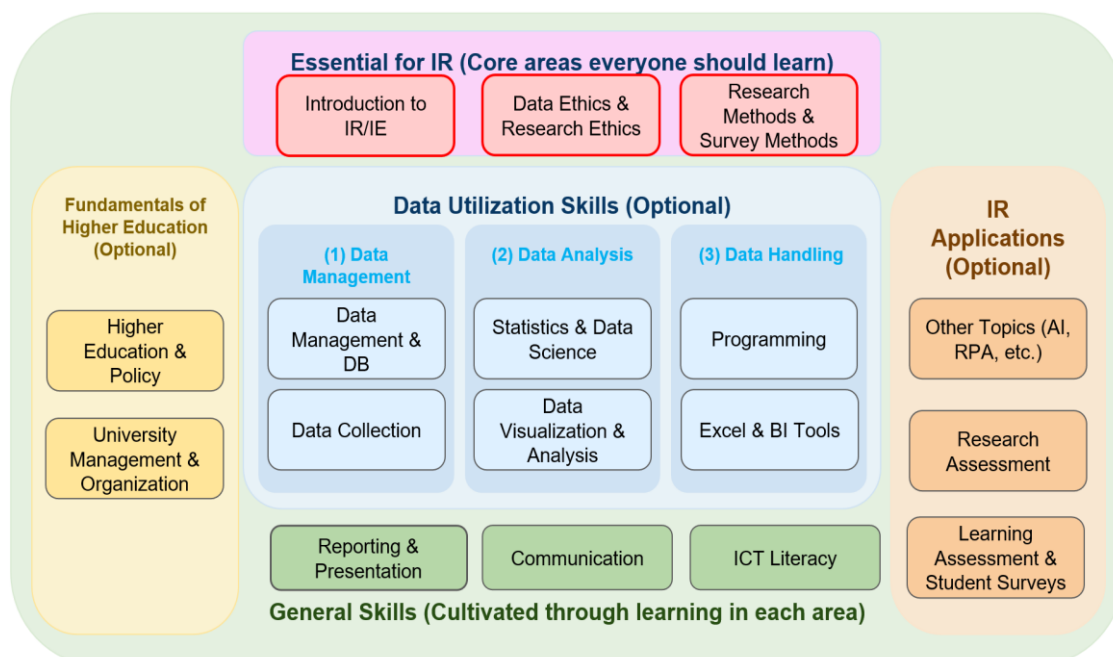


Figure 4: Model Curriculum Structure - Learning Areas Map (Source: Author).

Finally, the “General Skills” section at the bottom is positioned as skills to be developed across all learning areas, not specific to any one area. These skills showed high demand in M1 and M3, and we considered intentionally developing them through practical subjects like M2’s “Institutional research practice.” However, it was ultimately determined that these should be developed through the learning process in each area, utilizing the learning method innovations introduced in M3. Naturally, this requires educators to design learning experiences that emphasize dialogue and real-world problem-solving, grounded in the characteristics of the “Adult learner experience” and “Orientation to learning” from adult learning theory.

The Relationship Between IR Skill Sets, Activity Theory, and Model Curriculum

Figure 5 examines the elements of the aforementioned model curriculum in relation to Terenzini's (1993) three intelligences and Howard-McLaughlin's (1998) "ISC." First, regarding the former, we considered how each element of the model curriculum fits within each of the three tiers. The result was that nearly all elements were positioned within Tier 1. This is influenced by the broad scope of the basic knowledge and skills listed in Tier 1, but it also suggests that this model curriculum can cover, to a significant extent, the learning elements necessary for becoming an independent IR officer. Furthermore, while Tier 1 presented numerous elements in parallel, this model curriculum represents a new approach by offering flexibility based on learning pathways and learner experience.

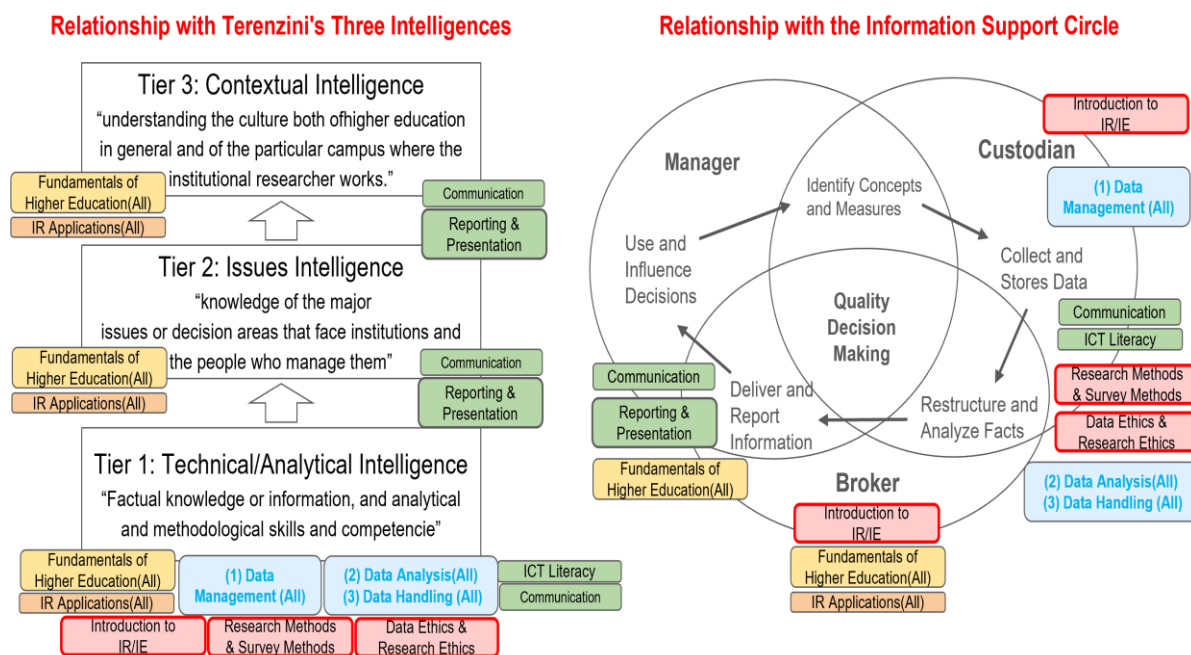


Figure 5: Relationship with IR Personnel and Activity Theory (Source: Author).

Next, we also map curriculum elements to Howard-McLaughlin's "ISC", focusing on the "Broker" and "Custodian" roles. This suggests that many elements matter most through collaboration. For example, the activities between "Collect and Stores Data" and "Restructure and Analyze Facts" for both "Custodian" and "Broker" involve learning related to the five elements: 'Communication' to "(3) Data Handling". Overall, it can be said that the importance of the learning areas and elements in the model curriculum becomes apparent when interacting with other roles within the institution during IR activities.

Summary and Issues

This study develops a model curriculum for Japanese IR by synthesizing (a) meta-review of national surveys, (b) analysis of U.S. IR programs, and (c) practitioner workshops.

However, future research must address the following two points of evaluation. First, an assessment by other IR researchers and practitioners of the validity and comprehensiveness of this model curriculum's areas and elements, as well as its suitability for real-world operations. Second, evaluating how easily actual educational programs can be developed based on this

model curriculum. For both points, we plan to hold new workshops targeting IR researchers and practitioners. These workshops will involve thought experiments on program development under varying conditions—such as single-course units (2–3 credits) or full-program units (10+ credits)—to facilitate their evaluation.

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References

- Association for Institutional Research (AIR). Graduate Certificate Programs. (accessed Jun. 15, 2025). <https://www.airweb.org/resources/graduate-education-in-institutional-research>
- McLaughlin, G. W., Howard, R. D., Balkan, L. A., & Blythe, E. W. (1998). *People, Processes, and Managing Data*. Association for Institutional Research.
- Iseri, S., Oishi, T., Kondo, N., & Takamatsu, K. (2023). Training Opportunities and Required Skills for Institutional Research Programs in Japan, *The 23rd Annual SEAAIR Conference Proceedings*, 85-95.
- Iseri, S., & Matsumoto, K. (2023). Classification and structure of the skills required in IR operations: Evidence from a survey of IR staff [in Japanese]. *Proceedings of the 10th Meeting on Japanese Institutional Research*, 152–153.
- Iseri, S., Oishi, T., Kondo, N., Takamatsu, K & Matsumoto, S. (2025, March-17th). Skill Set and Human Resource Development for IR in Japan [Conference presentation], Higher Education Planning in Asia Forum 2025, Tokyo, Japan.
- Fujiwara, K. (2015). A study of IR certificate programs in the United States. *University Evaluation and Institutional Research* [in Japanese], 1, 19 – 30.
- Malcolm S. Knowles, Holton III, E. F., & Swanson, R. A. (2012). *The Adult Learner: The definitive classic in adult education and human resource development*. Routledge.
- MEXT. Status of Reform of Educational Content at Universities [in Japanese]. (accessed Jun. 15, 2025). https://www.mext.go.jp/a_menu/koutou/daigaku/04052801/005.htm
- Oishi, T. (2021). A questionnaire survey for the development of a brand-new curriculum for the training of IR personnel [in Japanese]. 10th Meeting on Japanese Institutional Research, 38–43. https://doi.org/10.50956/mjir.10.0_38_9
- Shimada, T., & Ohno, K. (2022). Overview of the survey on the knowledge and skills of IR (evaluation) personnel [in Japanese]. *University Evaluation and Institutional Research*, 14, 5–13. https://doi.org/10.60422/jirue.14.0_5
- Terenzini, P. T. (1993). On the nature of institutional research and the knowledge and skills it requires. *Research in Higher Education*, 34(1), 1–10.

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Organizational Diagnosis and Employee Commitment in a Philippine Maritime College

ABSTRACT

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Organizational diagnosis is an in-depth method for understanding an organization's various levels, revealing both visible and hidden aspects to identify its foundation, functionality, strengths, weaknesses, opportunities, and threats for positive change and improved performance. Similarly, organizational commitment reflects employees' dedication to achieving organizational goals, leading to increased productivity, morale, and the capacity to attain objectives. High employee commitment is also crucial for the sustainability and competitive advantage of educational institutions. This study assessed the perceived levels of organizational diagnosis and organizational commitment of employees at a Maritime College and Training Center in Western Visayas, Philippines, during the 2023-2024 academic year. The participants included 109 internal stakeholders, comprising both teaching and non-teaching personnel. Organizational diagnosis was measured using Preziosi's (1982) Organizational Diagnosis Questionnaire, which assessed purpose, structure, leadership, relationship, reward systems, helpful mechanisms, and attitude to change. Employee organizational commitment was measured using Meyer and Allen's (2004) Organizational Commitment Questionnaire, focusing on affective, continuance, and normative domains. The findings revealed 'Optimum Organizational Functioning' across all organizational diagnosis variables and 'Very High Organizational Commitment' across all commitment domains within the institution. While a significant negative correlation was found between perceived organizational diagnosis and employee commitment, the study concluded that the college's optimal functioning significantly contributed to higher employee commitment.

Keywords: Organizational diagnosis, employee commitment, Maritime college, descriptive-correlational, Philippines

1. Introduction

Organizational diagnosis is an insightful method for comprehensively understanding an organization at all levels, from its readily apparent aspects to its less visible, underlying elements (Furgoch, 2016). For a Maritime School, this diagnosis serves to evaluate its fundamental structure and operational effectiveness, providing a sound rationale for this evaluative process. It enables the identification of an organization's strengths, weaknesses, opportunities, and threats (SWOT), thereby facilitating the development of well-informed solutions and the implementation of positive change (Muriithi, 2020). Ultimately, this leads to improvements in organizational performance, productivity, and overall effectiveness. Govender and Parumasor (2016) affirm that organizational diagnosis is a crucial first step towards achieving organizational effectiveness. Izzati and Mulyana (2023) further emphasize its significant role in enhancing school management and enabling institutions to compete effectively with other educational providers.

In considering employee organizational commitment, it is equally important to determine the extent to which people are dedicated to achieving organizational goals and objectives. Van der Werf (2023) states that highly committed employees are determined, productive, and proactive in their support, which can boost workplace productivity, morale, and an organization's capacity to achieve its goals. Malagsic et al. (2021) also confirmed that employees with high levels of commitment demonstrate high levels of work performance. Furthermore, Knott (2018) found a positive link between employee organizational commitment and the sustainability of higher education, while Demirtas (2018) affirmed that employee commitment is a major factor in ensuring organizational continuity. Bashir and Gani (2020) reported that universities depend on committed teachers to create and sustain competitive advantage and achieve superior performance.

In the Philippines, organizational diagnosis is crucial for identifying weaknesses in educational institutions (Lugones, 2020; Amorin, 2024), particularly in maritime education. The CHED-MARINA Memorandum Circular No. 03 Series of 2022 mandates that maritime schools assess their organizational capabilities and employee commitment. This emphasis on diagnosis addresses governance issues, including low cadet success rates and policy-performance mismatches (Rosario et al., 2020), and supports the need for curriculum modernization, enhanced training, and industry partnerships (Suparman et al., 2024). Organizational diagnosis can also improve sustainability and competitiveness (Simarmata & Almaududi, 2019), while regulatory bodies like CHED are key to quality improvement (Adeyemo, 2019), highlighting the importance of effective management in the Philippine maritime sector.

In the local context, the Maritime Education and Training School provides education for maritime careers under the governance of agencies like MARINA, CHED, and TESDA. Current emphasis on STCW compliance makes organizational diagnosis crucial for the Maritime College and Training Center to evaluate its capabilities in providing necessary student education and training. Moreover, this compliance compels the college to update its resources to meet the requirements set by the Philippine Maritime Education and Training and Certification Systems (Garcia, 2022), along with those of MARINA, CHED, the European Maritime Safety Agency (EMSA), and the International Organization for Standardization (ISO). In this context, organizational diagnosis is essential for the Maritime College and Training Center to meet these legal and statutory requirements by systematically evaluating its strengths and weaknesses, ensuring alignment with regulatory standards. Simultaneously, employee commitment is equally vital, as committed employees are more likely to support and

engage in the changes and initiatives necessary for compliance, driving the institution towards meeting its obligations and fostering a culture of accountability.

While both organizational diagnosis is acknowledged as pivotal for enhancing organizational effectiveness (Furgoch, 2016; Govender & Parumasor, 2016; Izzati & Mulyana, 2023) and employee commitment is robustly linked to positive organizational outcomes (Van der Werf, 2023; Malagsic et al., 2021; Knott, 2018; Demirtas, 2018; Bashir & Gani, 2020), a significant theoretical and empirical gap persists in connecting these two critical variables. Specifically, prior literature focuses broadly on the use of diagnosis for improvement (Adebayo et al., 2021; Khan et al., 2023; Rajak, 2023) but fails to rigorously investigate the causal pathway—the process by which organizational diagnosis might either proactively foster or, conversely, negatively impact employee commitment, thereby failing to provide a theoretical basis for using diagnosis to craft preventive measures. This deficit is acutely pronounced in the Philippine maritime sector, where the regulatory requirement for diagnosis is established (Lugones, 2020; Amorin, 2024; CHED-MARINA Memorandum Circular No. 03 Series of 2022) and training challenges are known (Paraggua et al., 2022), yet there remains an empirical void concerning the direct correlation between organizational diagnosis and employee commitment within a specific maritime college and training center.

Thus, this study assessed the perceived level of organizational diagnosis—encompassing its purpose, structure, leadership, relationships, reward systems, helpful mechanisms, and stakeholders' attitudes to change—and the degree of organizational commitment (affective, normative, and continuance) among employees of a Maritime College and Training Center in Western Visayas during the Academic Year 2023-2024. The primary objective was to determine if a significant relationship exists between perceived organizational diagnosis and the organizational commitment of employees, with the findings intended to serve as baseline data for a proposed strategic plan aimed at the college's continuous improvement.

2. Literature Review

The foundational role of organizational diagnosis.

Organizational diagnosis is the bedrock of effective organizational management, providing a systematic method for analyzing the intricate patterns of thoughts, emotions, and behaviors within a workforce (Catalan, 2021; Rajak, 2023). This diagnostic process, often rooted in Weisbord's Six-Box Model (1976), meticulously assesses key areas such as structural characteristics, relationships, attitudes toward change, and the crucial element of leadership (Adebayo et al., 2021; Catalan, 2021; Preziosi). By applying this structured analysis, organizations can pinpoint discrepancies between current and desired performance, gain insight into individual employee experiences, and address the underutilization of human resources (Catalan, 2021). This systematic scrutiny is indispensable for developing targeted interventions that maximize overall performance and ensure the effectiveness of organizational systems (Catalan, 2021).

Leadership's indispensable link to diagnosis and trust.

The successful execution of an organizational diagnosis is fundamentally intertwined with effective leadership styles. The diagnostic process is inherently an act of leadership, requiring styles that are inclusive, communicative, and developmental to successfully conduct a thorough

analysis and leverage its sensitive findings to positively influence human capital and organizational adaptability (Govender & Parumasur, 2016; Khan et al., 2023). When leaders champion this analytical tool, they signal a profound investment in understanding their workforce, particularly by focusing on the "leadership" and "relationship" components of the Weisbord model (1976). This focus on relational well-being and clear guidance fosters an environment where employees feel both valued and heard, a necessary precursor for building a robust culture of trust and emotional attachment.

Organizational diagnosis as a precursor to affective commitment.

The resulting culture of trust serves as a direct pathway to the core outcome variable: affective commitment. Affective commitment is defined as an employee's emotional desire to remain with an organization because they genuinely believe in its goals and values (Meyer & Allen, 2004). This form of commitment, characterized as being based on "love" or trust (Meyer & Allen, 2004; Pathan, 2016), is superior to commitment based on mere obligation or cost and is strongly associated with a broad spectrum of positive organizational outcomes, including greater productivity, morale, job satisfaction, and longer employee tenures (Buil et al., 2019; Eliyana et al., 2019; Malagsic et al., 2021; Pramesti et al., 2020; van der Werf, 2023; Knott, 2018; Phuong et al., 2023; Sriphong et al., 2022; Nahak & Ellitan, 2022). The conceptual framework thus posits a direct empirical relationship: effective leadership styles positively influence affective commitment, with this relationship being contextualized by the leader's consistent and purposeful utilization of organizational diagnosis. The model's viability can be empirically tested using established instruments like the Organizational Commitment Questionnaire (OCQ) for affective commitment (Meyer & Allen, 1991; Azinga et al., 2023; Malagsic et al., 2021; Stepanek & Paul, 2023) and the Weisbord's Six-Box Model for the diagnostic framework (Olufunke et al., 2021).

Application in maritime school environments.

This proposed framework holds particular relevance in high-stakes operational settings, exemplified by Philippine maritime schools. These institutions currently face critical human resource issues, including policy misalignments, low educational standards, and high turnover of qualified personnel (Maritime Industry Authority, 2021; Maru, 2023). Given the strict government monitoring necessary to meet demanding national and international standards (Presidential Communications Office, Office of the President of the Philippines, 2023), a leadership's capacity to conduct a reliable organizational diagnosis is vital for achieving compliance and stability. Local studies have already confirmed the applicability of commitment constructs among Filipino employees (Tugade & Arcina, 2023; Importante & Roberto, 2020; Menes & Haguisan, 2020), establishing a clear path for empirical research to test how effective leadership styles, when informed by the organizational diagnosis framework, can directly enhance affective commitment and improve organizational stability and performance in this critical sector.

Overall, the literature acknowledges the vital role of organizational diagnosis in improving effectiveness (Furgoch, 2016; Govender & Parumasur, 2016; Izzati & Mulyana, 2023) and links employee commitment to positive outcomes (Van der Werf, 2023; Malagsic et al., 2021; Knott, 2018; Bashir & Gani, 2020), yet a significant theoretical gap exists in connecting these two variables: there is insufficient data and little conceptual work detailing the specific causal pathway by which diagnosis proactively fosters, or negatively impacts, employee commitment, hindering the ability to use diagnosis to craft effective preventive measures (Adebayo et al.,

2021; Khan et al., 2023; Rajak, 2023). This omission is particularly problematic given the conceptual framework that links effective, diagnosis-informed leadership to affective commitment via the mechanism of trust (Meyer & Allen, 2004). Compounding this theoretical gap is an empirical and contextual gap within the Philippine maritime sector, where, despite the regulatory mandate for diagnosis (Lugones, 2020; Amorin, 2024; CHED-MARINA Memorandum Circular No. 03 Series of 2022) and known challenges (Paraggua et al., 2022), no localized studies have specifically correlated organizational diagnosis with employee commitment in a maritime college setting.

3. Theoretical Framework

Organizational diagnosis (OD) is hypothesized to have a significant, direct relationship with employee organizational commitment. Within specialized settings like a maritime college, OD functions as a systematic mechanism to gauge the depth of employee investment by assessing their prevailing thoughts, emotions, and behaviors. This understanding provides leaders with actionable data regarding employee morale, motivation, and role attachment within the institution. The central argument is that effective organizational diagnosis, by yielding deep insights into these commitment levels, directly informs the targeted interventions necessary to cultivate a high-commitment culture, thereby improving both individual performance and overall institutional outcomes, such as enhanced productivity and goal attainment.

The theoretical foundation for this relationship is rooted in Katz & Kahn's (1978) Open System Theory (OST), which views the college as a dynamic, goal-oriented entity that continuously processes inputs from and interacts with its external environment. Within this perspective, organizational diagnosis is redefined as the **vital internal feedback mechanism**—the self-monitoring loop essential for system self-correction and survival. OD allows leaders to monitor the internal "throughput" processes, specifically focusing on the socio-psychological state of the employee subsystem. It moves beyond simple performance metrics to understand the motivational mechanisms that govern role performance, thereby providing the crucial context needed to successfully manage and sustain the system's human energy and structural integrity.

This study hypothesizes that organizational diagnosis maps its findings directly to the three critical mechanisms that bind employees to their roles within the open system. First, OD assesses Compliance (Instrumental Attachment) by examining the clarity of roles, the adequacy of supervision, and the reward systems associated with required tasks, ensuring the necessity of role performance is understood. Second, it assesses Identification (System Belonging) by diagnosing the psychological health and culture of the organization—gauging employees' emotional connection, sense of belonging, and willingness to exert effort beyond minimum role requirements for the sake of the collective. Finally, OD reveals the degree of Internalization (Value Alignment), confirming whether employees have genuinely adopted the organization's overarching goals and values as their own. By providing differentiated feedback



across these three facets of commitment, organizational diagnosis enables leaders to implement precise changes—addressing structural issues for Compliance, cultural issues for Identification, and leadership communication for Internalization—which collectively enhance overall organizational commitment and system effectiveness.

4. Methodology

This study employed a quantitative research design, specifically a descriptive-correlational approach. The descriptive component was used to ascertain the levels of organizational diagnosis and employee commitment within the study population. Subsequently, the correlational aspect investigated the relationship between these two variables using statistical measures.

The research utilized stratified random sampling to select 109 internal stakeholders—specifically the permanent teaching and non-teaching personnel of a Maritime College and Training Center in Western Visayas, Philippines, during the 2023-2024 academic year. The sampling procedure involved stratification based on personnel type (teaching vs. non-teaching) to ensure proportional representation of these distinct groups, followed by a simple random selection within each stratum to pick the required number of individuals. The sample size of 109 was robustly determined using the Raosoft online calculator, which required input parameters including a population size of 146, a confidence level of 95%, and a margin of error of 5%, ensuring the results are statistically representative of the entire permanent staff population.

Table 1: Distribution of Respondents

Department	N	n	%
College	125	93	85.62
Training Centers	21	16	14.38
Total	146	109	100.00

This study utilized two primary instruments to collect data. Perceived organizational diagnosis was measured using Preziosi's (1982) 35-item questionnaire, which assesses seven key variables: purpose, structure, leadership, relationships, reward systems, helpful mechanisms, and attitude toward change. Each variable was evaluated by five specific items. Respondents rated their organization on a 7-point scale (1-7), with 4 as a neutral midpoint. Data was self-scored by summing responses per variable and dividing by five, as prescribed by Preziosi (1982). Scores above 4 indicated organizational functioning issues (with 7 being most severe), while scores below 4 suggested no significant problems (with 1 being optimal).

Organizational commitment was measured using Allen and Meyer's (2004) questionnaire, based on the three-component model (TCM): affective, continuance, and normative commitment. This instrument included statements where employees indicated their agreement on a 7-point scale (1=strongly disagree to 7=strongly agree). Reverse-keyed items were included to ensure careful responses and were recoded for scoring. Averages were calculated separately for each of the three commitment scales, yielding scores from 1 to 7, where higher scores indicated stronger commitment (Meyer & Allen, 2004). Total organizational commitment scores were categorized as low (below 3), moderate (between 3 and below 4), or

high (4 or greater), based on classifications by Cheng (2002) and Gaban (1982), as cited by Muda & Fook (2020).

The reliability of the data collected from the main sample was confirmed using measures of internal consistency. Specifically, a pilot test conducted with 30 preliminary respondents indicated strong reliability for both the organizational diagnosis and organizational commitment scales, yielding an overall Cronbach's alpha (α) of 0.824. Since this value exceeds the generally accepted threshold of 0.70 for social science research, the study concludes that the items within both instruments measure their respective constructs consistently and reliably when administered to the main sample.

The data collection procedure commenced after obtaining written permission from the College President's Office. The researcher then coordinated with unit heads and their subordinates for an orientation. A group of enumerators from the research office, briefed on survey procedures, assisted in administering the questionnaires. During administration, the purpose and intent of the study were explained to respondents. All generated data was immediately recorded for computation, tabulation, and analysis. For data analysis, both descriptive and correlational methods were employed. Mean, standard deviation, frequency count, and percentage distribution were used to analyze the levels of organizational diagnosis and commitment among the maritime college's internal stakeholders. After a normality test, Spearman's rho was determined as the appropriate statistical tool for correlational analysis. Throughout the study, the researcher adhered to the Philippine Health Research Ethics Board (PHREB) ethical guidelines, ensuring principles of respect for persons, beneficence, and justice were upheld to maintain the ethical soundness of the research.

5. Results and Discussion

Perceived Degree of Organizational Diagnosis of a Maritime College and Training Center

The overall finding of 'optimal organizational functioning' ($M=2.04$, $SD=0.64$) for the Maritime College and Training Center, while superficially positive, warrants a more critical interpretation, especially considering the constraints of the study's generalizability. The consistently low mean scores across all dimensions (ranging from 1.88 to 2.26) may simply reflect a satisfaction bias common in self-report organizational surveys, rather than an objective measure of excellence. The relatively high standard deviation ($SD=0.64$) overall, with some sub-dimensions as high as ($SD=0.90$) for reward systems and ($SD=0.80$) for leadership) indicates significant variability in perception among employees. This variation suggests that a substantial minority of the workforce likely perceives the organization as merely adequate or even sub-optimal, directly contradicting the aggregated 'optimal' conclusion. A critical analysis demands the institution focus not just on reinforcing existing strengths—like the highly-rated reward systems ($M=2.26$)—but aggressively addressing the lack of perceptual consensus in crucial areas like leadership and the foundational organizational purpose ($M=1.88$, the lowest score). Ignoring this variability risks overlooking pockets of systemic weakness, employee disengagement, or leadership inconsistencies that could ultimately threaten overall performance, aligning with Catalan's (2021) concern about resistance to change despite diagnostic attempts. (Izzati & Mulyana, 2023; Khan et al., 2023; Rajak, 2023).

On the other hand, the primary finding of 'optimal functioning' is severely limited in its generalizability, as the data only reflects a single Maritime College and Training Center. In the

Philippine maritime education sector, which faces intense regulatory scrutiny from international bodies like the European Maritime Safety Agency (EMSA), such an isolated positive diagnosis must be viewed with caution. Regulatory pressures demand systemic, verifiable compliance across the entire sector, not just one successful outlier. The diagnosis, therefore, cannot serve as an endorsement of the quality of Philippine maritime education as a whole. Instead, it places pressure on the sector's regulatory bodies, such as the Commission on Higher Education (CHED) and the Maritime Industry Authority (MARINA), to mandate sector-wide diagnostic assessments and establish uniform benchmarks that address the identified variability (e.g., in leadership and purpose) to ensure all institutions meet international standards. Furthermore, the lowest-rated dimension, purpose ($M=1.88$), takes on a heightened significance in the context of seafaring, where the institution's mission—producing competent, safety-conscious mariners—must be unequivocally clear to all stakeholders to ensure cohesion and collective performance (de Oliveira, 2023; India, 2020).

In addition, the practical implications for the individual college involve data-driven strategic resource allocation to move from 'optimal' perception to verifiable excellence. The highest mean for reward systems should be leveraged as a motivational benchmark (Mohsin et al., 2022) while dedicating immediate, focused effort to clarifying and embedding the organizational purpose. This means integrating the college's mission into all policies, curricula, and communications to foster a deeper sense of meaning and alignment among faculty and staff (Ganesh, 2023). On a policy level, the findings underscore the need for CHED and MARINA to standardize organizational diagnostic tools and mandate their periodic use across all maritime training institutions. This policy intervention would address the limitation of generalizability by generating sector-wide data, enabling regulators to pinpoint and intervene in institutions demonstrating significant sub-optimal functioning or high perceptual variability. Ultimately, a successful and compliant maritime education sector requires a regulatory environment that not only ensures technical compliance but also enforces high, consistent standards for leadership effectiveness (Hale, 2023; Ibrahim & Daniel, 2019) and organizational cohesion as revealed by these diagnostic dimensions.

Table 2: Perceived Degree of Organizational Diagnosis of a Maritime College and Training Center

Variable	M	SD	Interpretation
Purpose	1.88	0.65	Optimum Organizational Functioning
Structure	2.04	0.71	Optimum Organizational Functioning
Leadership	1.94	0.80	Optimum Organizational Functioning
Relationship	1.95	0.75	Optimum Organizational Functioning
Reward System	2.26	0.90	Optimum Organizational Functioning
Helpful Mechanism	2.03	0.74	Optimum Organizational Functioning
Attitude to Change	2.16	0.64	Optimum Organizational Functioning
Organizational Diagnosis	2.04	0.64	Optimum Organizational Functioning

Note: M=mean, SD=Standard Deviation

Organizational Commitment at the Maritime College

The finding that employees at the Maritime College and Training Center exhibit a very high level of overall organizational commitment (Overall Mean: 4.57, SD=0.84) is initially compelling, suggesting a highly stable and motivated workforce. This strong aggregate bond promises significant benefits, including enhanced job satisfaction, increased productivity, and strong goal alignment, which are vital for the institution's effectiveness and its capacity to

achieve strategic objectives (Van der Werf, 2023; Buil et al., 2019; Eliyana et al., 2019; Malagsic et al., 2021). The literature consistently supports this positive interpretation, linking high commitment to institutional sustainability, performance, and employee well-being (Knott, 2018; Phuong et al., 2023; Sriphong et al., 2022). However, a critical analysis necessitates moving beyond the high overall mean to examine the underlying composition of this commitment, as its different dimensions—*affective*, *continuance*, and *normative*—carry distinct behavioral implications that challenge this purely optimistic view.

Moreover, a deeper analysis of the commitment profiles reveals a potentially critical dynamic: *Normative Commitment* ($M=4.75$, $SD=0.84$), reflecting a sense of obligation or moral duty to stay, scored the highest among the three dimensions (Firdias, 2020; Khalimah, 2021; Aryani & Sugiyanto, 2020). While high commitment is generally desirable, the dominance of normative commitment over *affective* commitment ($M=4.38$, $SD=1.07$)—the desirable bond based on emotional attachment and desire to stay—is a cause for critical concern. *Normative* commitment, characterized by a feeling of "should stay" (Meyer & Allen, 2004), can stem from factors less aligned with internal motivation, such as cultural values emphasizing loyalty, guilt over potential departure, or external pressures (van der Werf, 2023; Stepanek & Paul, 2023). Unlike *affective* commitment, which fosters true organizational ambassadorship, proactivity, and organizational citizenship behavior (Kampkötter et al., 2021; Azinga et al., 2023), a reliance on obligation may secure attendance but potentially masks underlying job dissatisfaction, reduce spontaneous initiative, and constrain critical thinking. This profile suggests that employees are staying because they feel they have to, rather than because they want to, presenting a latent risk to long-term innovation and organizational health.

Furthermore, the high prevalence of normative commitment must be interpreted specifically within the demanding Philippine maritime education sector. This sector is intensely regulated by both domestic agencies and international conventions (e.g., STCW), requiring constant compliance, stringent quality assurance, and often heavy workloads for faculty and staff. The strong sense of moral obligation (*normative* commitment) may be amplified by the scarcity of comparable employment alternatives in this highly specialized niche, particularly in provinces, blurring the line with *Continuance Commitment* ($M=4.59$, $SD=0.95$), which is based on cost-benefit analysis and perceived lack of options (Mulianti, 2019). Crucially, the pressure to conform and comply with rigorous regulatory standards, which is central to the sector's operational mandate, may be inadvertently fostering commitment based on duty rather than desire. Employees may feel obligated to endure high-stress environments and demanding regulatory requirements for the perceived good of the institution or the industry, or out of fear of professional repercussions, rather than being motivated by true passion and alignment. This reliance on obligation poses a risk of burnout and could lead to surface-level compliance instead of genuine, proactive engagement necessary for continuous quality improvement and innovation.

To make the observed high organizational commitment sustainable and shift its focus from obligated stability to proactive excellence, the Maritime College must strategically enhance *Affective Commitment* over the dominant *normative* and *continuance* dimensions. This requires implementing practical measures that boost intrinsic motivation and emotional attachment: first, by enhancing intrinsic rewards through systematic, non-monetary recognition for proactive behavior and innovation, and by granting greater autonomy to experienced faculty, thereby signaling trust; second, by investing in strategic professional development (PD) that employees view as a genuine career investment rather than just regulatory compliance, such as offering international exposure or specialization tracks to foster growth and mitigate feelings

of being constrained by the local market (Serna & Martinez, 2023); and third, by promoting work-life balance and well-being through reviewing administrative loads and offering flexible scheduling and formal well-being services, which directly addresses the work-related stress often linked to Continuance Commitment (Chigeda et al., 2022).

In addition, to mitigate the study's generalizability limitations while addressing the likely sector-wide trend of dominant normative commitment influenced by Philippine culture and regulatory stringency, policy implications must pivot toward fostering affective commitment. Policymakers, particularly the Commission on Higher Education (CHED) and the Maritime Industry Authority (MARINA), should launch a sector-wide benchmarking study to confirm if the current high normative/continuance commitment profile is a systemic issue, thereby guiding targeted interventions. Furthermore, there is a critical need to reform the regulatory compliance culture, shifting the focus from a "fear of non-compliance" model to a "culture of quality excellence" by redirecting audits toward process improvement and rewarding proactive innovation and employee well-being, directly linking regulatory success to affective commitment. Finally, institutions must prioritize transparency and equity—especially concerning promotions, compensation, and grievance procedures—as greater transparency influences continuance commitment (Deng et al., 2024), ensuring employees stay out of genuine satisfaction rather than a mere cost-benefit analysis of leaving.

Table 3: Degree of Organizational Commitment of the Employees of a Maritime College and Training Center

Variable	M	SD	Interpretation
Affective	4.38	1.07	Very High Organizational Commitment
Continuance	4.59	0.95	Very High Organizational Commitment
Normative	4.75	0.84	Very High Organizational Commitment
Organizational Commitment	4.57	0.84	Very High Organizational Commitment

Note: M=mean, SD=Standard Deviation

Relationship Between Perceived Organizational Diagnosis and Employee Organizational Commitment

Spearman's rank correlation analysis revealed a statistically significant negative correlation between perceived organizational diagnosis and employee organizational commitment [$r_s(107) = -0.410$, $p = 0.000$] indicating a crucial, albeit complex, relationship within the Philippine Maritime College and Training Center. Given the inverse scoring of the organizational diagnosis instrument—where a higher score indicates poorer organizational functioning—the negative correlation actually signifies that improved organizational functioning leads to increased employee commitment, and vice-versa. This confirms the theoretical expectation that the internal organizational context profoundly influences employee dedication (Rajak, 2023). However, the strength of this relationship ($r_s = -0.410$) is a critical finding: it suggests that nearly a fifth of the variance in employee commitment ($R^2 = 16.8\%$) can be explained by perceived organizational health. This significant link, supported by Katz & Kahn's (1978) Open System Theory, which views the institution as a dynamic entity, underscores the imperative for leadership to not only acknowledge but actively manage the organization's internal health. Critically, the study highlights a potential disconnect between leadership's assumed organizational status and the actual experiences and perceptions of the employees, necessitating further qualitative investigation to understand the specific organizational gaps driving this dynamic. This aligns with the understanding that committed employees—who develop a strong

sense of belonging and exhibit increased productivity and proactive support—are essential for achieving institutional goals (van der Werf, 2023; Alzoraiki et al., 2023; Malagsic et al., 2021).

Moreover, the statistically significant connection between organizational health and commitment demands immediate practical and policy interventions within the Philippine maritime education sector, especially given the sector's high-stakes nature and strict regulatory environment. Practically, leaders at maritime institutions should focus on implementing targeted organizational development interventions based on the specific areas identified as deficient in the diagnosis (e.g., communication, leadership support, training). Such interventions are crucial for bolstering employee morale, productivity, and ultimately, the quality of maritime training delivered—a non-negotiable factor in meeting international standards. Policy-wise, regulatory bodies like the Commission on Higher Education (CHED) and the Maritime Industry Authority (MARINA) should consider incorporating employee commitment and organizational health metrics as part of the accreditation and monitoring process for maritime schools. This would shift the regulatory focus from purely physical and curricular compliance to a more holistic view that includes the human capital foundation. Mandating regular, high-quality organizational diagnosis and action planning would ensure institutions proactively address internal dysfunctions that could otherwise compromise the competence of future seafarers.

Furthermore, the strong findings, while compelling, must be viewed with a critical lens regarding the study's generalizability, particularly given the intense regulatory pressures unique to the Philippine maritime education sector. The non-experimental design and focus on a single institution limit the extent to which these results can be directly applied across the diverse landscape of Philippine maritime schools without further study. However, this very limitation presents an opportunity: the findings serve as a critical warning that institutional neglect of internal health can severely undermine commitment—a situation likely exacerbated in institutions grappling with the constant pressure of local and international compliance audits (e.g., IMO's STCW Convention). To address this, future research must be systematically expanded to include a diverse sample of institutions (public/private, large/small) across various regions to validate and refine these relationships. Furthermore, regulatory bodies must recognize that while they impose external pressures, they must also encourage an internal culture of continuous improvement. This could be achieved by offering regulatory incentives or support for schools that demonstrate a commitment to improving organizational functioning and employee welfare, thereby moving beyond a purely punitive compliance model to one that fosters sustainable excellence in maritime education.

Table 4: Relationship between Perceived Organizational Diagnosis and Organizational Commitment of Employees

Variable	r_s	df	p
Organizational Diagnosis and Organizational Commitment	-0.410*	107	0.000

Note: *relationship is significant when $p \leq 0.05$

Conclusion

The study of the Maritime College and Training Center reveals a compelling interplay between organizational diagnosis and employee commitment. The college demonstrates optimal organizational functioning across various dimensions, indicative of effective leadership and strategic implementation. This positive organizational state is mirrored by the employees' high

levels of commitment, characterized by a strong sense of belonging and dedication to the institution. Notably, the significant correlation between organizational diagnosis and employee commitment underscores the crucial insight that a well-functioning organization fosters a committed workforce, highlighting the importance of cultivating an environment where employees feel valued, connected, and driven to contribute to the institution's success.

Limitations of the Findings

While the study offers valuable insights into organizational diagnosis and employee commitment at the Maritime College and Training Center, it's important to acknowledge its limitations. The study relied solely on quantitative data from 109 internal stakeholders using the organizational diagnosis questionnaire by Preziosi (1982) and the organizational commitment questionnaire by Allen and Meyer (2004). This approach may not fully capture the nuances of individual experiences, especially given the negative correlation found between perceived organizational diagnosis and employee commitment, which suggests a need for further qualitative research. Furthermore, focusing on a single institution limits the generalizability of the findings to other contexts.

Practical Value of the Paper

The quantitative findings, particularly the concerning negative correlation between organizational diagnosis and employee commitment, hold significant practical applications for the Philippine maritime education sector (MES), especially given its stringent regulatory environment under agencies like CHED and MARINA. This unexpected result suggests that the process of diagnosis may be perceived by employees as punitive or focused purely on compliance, rather than improvement, which directly undercuts efforts to meet quality standards like the STCW Convention. Practically, maritime institutions must shift from a compliance-only mindset to one that implements a human-centered diagnostic strategy—ensuring transparency, involving employees in interpreting results, and focusing interventions (e.g., in communication or leadership training) on specific areas that negatively impact commitment. This targeted approach is crucial for addressing the limitation of generalizability; the negative correlation should be treated by regulators as a critical sector-wide alert, necessitating a subsequent, comparative, mixed-methods study across various maritime schools to confirm the scale of this issue and develop evidence-based best practices for enhancing organizational health and quality across the entire MES.

Directions for Future Research

To maximize clarity and integrate the call for future qualitative research, the current findings suggest a pivotal next step: employing qualitative methods—such as in-depth interviews and focus groups—to explore the unexpected negative correlation between organizational diagnosis and employee commitment. This deep dive is essential for uncovering why employees might feel less committed following a diagnosis; specifically, future research should ask: "What are employees' lived experiences and interpretations of the organizational diagnosis process?" and "What specific factors or perceptions contribute to a decrease in commitment after an organizational diagnosis?" Ultimately, answering these questions qualitatively will not only add valuable depth but also inform targeted, longitudinal studies and comparative analyses across diverse maritime or educational settings, thereby strengthening the generalizability of the overall conclusions and guiding the development of evidence-based best practices.

References

- Adebayo, O. P., Worlu, R. E., Moses, C. L., Ogunnaike, O. O. & Salau, O. P. (2021). An organizational diagnostic model for a sustainable organizational performance', *IOP Conference Series: Earth and Environmental Science*, 655(1), <https://doi.org/10.1088/1755-1315/655/1/012026>.
- Adeyemo, K. S. (2019). *Higher education policy in the Philippines and ASEAN integration: demands and challenges*. Brill. https://doi.org/10.1163/9789004411326_003
- Agba MS (2018). Interpersonal relationships and organizational performance: the Nigerian public sector in perspective. *Indian Journal of Commerce & Management Studies*, 9(3) p78-86
- Albers, B., Metz, A., Burke, K., Bührmann, L., Bartley, L., Driessen, P., & Varsi, C. (2022). The mechanisms of implementation support-findings from a systematic integrative review. *Research on Social Work Practice*, 32(3), 259-280. <https://doi.org/10.1177/10497315211042375>
- Aini, Z. (2018). Pengaruh komitmen Afeksi, Komitmen Kontinum dan Komitmen Normatif terhadap loyalitas pelanggan salon kecantikan Martha Tilaar di Kota Banda Aceh, *Jurnal Bisnis Administrasi*, 7(2), 47-51.
- Alrumaih, S. (2017). The impact of change management in enhancing the effectiveness of companies' performance. *European Journal of Business and Management*, 9(9) p82-85
- Alzoraiki, M., Ahmad, A., Ateeq, AA., Naji, GM., Almaamari, Q., & Beshr, B. (2023). Impact of Teachers' Commitment to the Relationship between Transformational Leadership and Sustainable Teaching Performance. *Sustainability*, 15(5), 4620. <https://doi.org/10.3390/su15054620>
- Amorin, R. (2024). Organizational Diagnosis in State Universities and Colleges (SUCs): Academic Deans' Perspectives through the Lens of Weisbord's Six-Box Model. *Journal of Humanities and Social Sciences Studies*, 6(9), 129–143. <https://doi.org/10.32996/jhss.2024.6.9.15>
- Aryani, R., Padma Nur, S., & Eviatiwi, K. (2020): Pengaruh Komitmen Afektif, komitmen keberlanjutan, komitmen normatif terhadap kinerja karyawan (Studi perusahaan BUMN X di Semarang). *Jurnal ilmiah manajemen Ubhara*, 2(2), 113-122.
- Azinga, S., Obeng, A., Ellis, F., & Owusu Ansah, M. (2023). Assessing the effects of transformational leadership on innovative behavior: the role of affective commitment and psychological capital. *Evidence-based HRM: a Global Forum for Empirical Scholarship*. 11. 10.1108/EBHRM-05-2022-0119.
- Bashir, B., & Gani, A. (2020). Correlates of Organisational Commitment Among University Teachers in India: An Empirical Investigation. *Asia-Pacific Journal of Management Research and Innovation*, 16(1), 7–20. <https://doi.org/10.1177/2319510X19872632>

Beato, E. (2023). Why Is Leadership Important? <https://entrepreneurship.babson.edu/why-is-leadership-important/>

Beiten, S. (2019). The Benefits of Organisational Purpose. <https://www.linkedin.com/pulse/benefits-organisational-purpose-stefan-beiten>

Beliak, A. (2023). Comparative analysis of the concept of «organizational and economic mechanism» in the modern scientific space. *International Science Journal of Management, Economics & Finance*, 2(2), 38–47. <https://doi.org/10.46299/j.isjmef.20230202.05>

Bonifacio, R. (2023). Organization Structure: Everything You Need to Know. <https://www.shiftbase.com/glossary/organization-structure>

Brower, T. (2021). The Power of Purpose and Why It Matters Now. <https://www.forbes.com/sites/tracybrower/2021/08/22/the-power-of-purpose-and-why-it-matters-now/?sh=681e9fb2163a>

Buil, I., Martínez, E., & Matute, J. (2019). Transformational leadership and employee performance: The role of identification, engagement and proactive personality. *International Journal of Hospitality Management*, 77, 64–75. <https://doi.org/10.1016/j.ijhm.2018.06.014>

Busro, M. (2018). Teori-Teori Manajemen Sumber Daya Manusia. Jakarta: Prenadamedia Group

Catalan, L. R. (2021). What is organizational diagnosis. <https://www.linkedin.com/pulse/what-organizational-diagnosis-dba>

Chigeda, F., Ndofirepi, T. M., & Steyn, R. (2022). Continuance in organizational commitment: The role of emotional intelligence, work-life balance support, and work-related stress. *Global Business and Organizational Excellence*, 42(1), 22–38. <https://doi.org/10.1002/joe.22172>

Cordero, L., & Ferreira, J. J. (2019). Absorptive capacity and organizational mechanisms. *Rev. Int. Bus. Strategy*, 29, 61-82. <https://doi.org/10.1108/RIBS-10-2018-0089>

Crisan, E. L., Chis, D. M., Bodea, E. E., & Buchmann, R. (2023). Mechanisms for robotic process automation implementation in organizations: a systematic literature review. *Journal of Advances in Management Research*, 20(5), 920-946. <https://doi.org/10.1108/jamr-04-2023-0100>

Davis, J.P. (2022). The Employee Reward System: Types, Importance & Implementing Them. <https://www.makingbusinessmatter.co.uk/employee-reward-system/>

Del Rosario, C., Dalaklis, D., Kitada, M., & Bolmsten, J. (2020). Improving governance of maritime higher education institutions to ensure success of filipino cadets. <https://doi.org/10.21125/inted.2020.0946>

Dhamdhere, P. (2024). Why are Employee Rewards and Recognition Important, and How do they Positively Affect an Organization. <https://blog.empuls.io/importance-of-employee-rewards-and-recognition/>

- de Oliveira, A. (2023). Purpose-Driven Business: How Purpose Drives Success. <https://blog.proactioninternational.com/en/purpose-driven-business-how-purpose-drives-success>
- Del Carmen Martínez Serna, M., & Eduardo Vega Martínez, J. (2023). Dimensions of Organizational Commitment and Its Impact on Organizational Learning and Innovation in Agribusiness. *IntechOpen*. <https://doi.org/10.5772/intechopen.113324>
- Del Rosario, C., Dalaklis, D., Kitada, M., & Bolmsten, J. (2020). World maritime university (SWEDEN). https://commons.wmu.se/cgi/viewcontent.cgi?article=1484&context=lib_articles
- Deng, T., Tang, C., & Lai, Y. (2024). Understanding configurations of continuance commitment for platform workers using fuzzy-set QCA. *Management Decision*, 62(1), 352-369. <https://doi.org/10.1108/MD-06-2022-0830>
- Demirtas, Z. (2018). The relationships between organizational values, job satisfaction, organizational silence, and affective commitment. *European Journal of Education Studies*. <http://dx.doi.org/10.5281/zenodo.1321680>
- Doyle, A. (2022). Important Leadership Skills for Workplace Success. <https://www.thebalancemoney.com/top-leadership-skills-2063782>
- Eliyana, A., Ma'arif, S., & Muzakki, M. (2019). Job satisfaction and organizational commitment affect the transformational leadership towards employee performance. *European Research on Management and Business Economics*, 25(3), 144–150. <https://doi.org/10.1016/j.iiedeen.2019.05.001>
- Estimo, E. (2020). Ship to Academe, Seafaring to Teaching: Seafarer Teachers in Maritime Higher Education Institutions in the Philippines. *Higher Education Research*, 5(2), 44–51. Doi: 10.11648/j.her.20200502.12
- Fahmi, I. (2017). Manajemen Sumber Daya Manusia, Teori dan Aplikasi. Bandung: Alfabeta
- Falola, H.O., Oludayo, O.A., Igbinoba, E.E., Salau, O.P., & Borishade, T.T. (2018). Measuring work engagement strategies and employees' behavioural outcomes in Nigerian universities. *Journal of Business and Retail Management Research*, 13(2), 98-08
- Firdias, A. R. (2020). Pengukuran kinerja karyawan dari komitmen normatif dan motivasi kerja (Studi pada bagian PT. Kerta Rajasa Raya). *Jurnal Jurnal Ilmu Manajemen (JIM)* Volume 8 Nomor 1 – Jurusan Manajemen Fakultas Ekonomi Universitas Negeri Surabaya, P.464-471.
- Francis, F., Oaya, Z., & Mambula, C. (2020). Reward System as a Strategy to Enhance Employees Performance in an Organization. *Archives of Business Research*, 8. 156-164. 10.14738/abr.86.8403.

- Furgoch, K. (2016). Organizational Diagnosis: What You need to Know and Why Organizations Need Our Help. <https://www.cphrmb.ca/news/289780/Organizational-Diagnosis-What-You-Need-to-Know-and-Why-Organizations-Need-Our-Help.htm>
- Ganesh, K. (2023). Why is the purpose at work important in the modern workplace? <https://www.culturemonkey.io/employee-engagement/purpose-at-work/>
- Garcia, K. H. (2021). The maritime review: some observations on Philippine maritime education. <https://maritimereview.ph/some-observations-on-philippine-maritime-education/>
- Geue, P. E., (2017). Positive practices in the workplace: Impact on team climate, work engagement, and task performance. *Emerging Leadership Journeys*, 10, 70–99.
- Govender, P., & Brijball Parumasur, S. (2016). Organizational diagnosis, the stepping stone to organizational effectiveness. *Corporate Board: Role, duties, and composition*. 12. 10.22495/cbv12i2c1art1.
- Hale, J. (2023). The Most Important Leadership Skill For 2023. <https://www.forbes.com/sites/forbescoachescouncil/2023/02/17/the-most-important-leadership-skill-for-2023/?sh=303819b6403f>
- Henisz, W. (2023). The Value of Corporate Purpose. <https://hbr.org/2023/11/the-value-of-corporate-purpose>
- Houston, E. (2019). The Importance of Positive Relationships in the Workplace. <https://positivepsychology.com/positive-relationships-workplace/>
- Hypolite, K. (2023). Affective commitment, mentoring, and anticipated turnover among millennials. *Dissertations*. 2124. <https://aquila.usm.edu/dissertations/2124>
- Ibrahim, A.U. & Daniel, C.O. (2019). Impact of leadership on organizational performance. *International Journal of Business Management and Social Research*, 4(2) p367-74
- Importante, S. C. B., & Roberto, J. T. (2020). Workplace Values and Organizational Commitment of Basic Education Teachers in Catholic Schools. *Philippine Social Science Journal*, 3(2), 47–48. <https://doi.org/10.52006/main.v3i2.224>
- India, EY (2020). Why business must harness the power of purpose. https://www.ey.com/en_in/purpose/why-business-must-harness-the-power-of-purpose
- Islamy, F.J. (2016). Pengaruh komitmen Afektif, Komitmen berkelanjutan dan Komitmen Normatif Terhadap turnover intention pada dosen tetap STIE INABA Bandung (Studi Kasus pada Dosen Tetap Sekolah Tinggi Ilmu Ekonomi Indonesia Membangun Tahun 2016), *Jurnal Indonesia membangun*, 15(2), 164-181.
- Izzati, U. & Mulyana, O. (2023). The Implementation of Organization Diagnosis in Vocational High School. https://doi.org/10.2991/978-2-38476-008-4_82
- Joly, H. (2021). Creating a Meaningful Corporate Purpose. <https://hbr.org/2021/10/creating-a-meaningful-corporate-purpose>

Kalitanyi, V. (2022). Role of normative commitment in fostering university employees' commitment. *International Journal of Research in Business and Social Science* (2147- 4478). 11. 35-45. 10.20525/ijrbs.v11i10.2190.

Kampkötter, P., Petters, L. M., & Sliwka, D. (2021). Employee identification and wages on the economics of “affective commitment.” *Journal of Economic Behavior & Organization*, 188, 608-626. <https://doi.org/10.1016/j.jebo.2021.05.036>

Kasogela, O. (2019). The Impacts of Continuance Commitment to Job Performance. *Advanced Journal of Social Science*. 5. 93–100. 10.21467/ajss.5.1.93-100.

Khalimah, Nur, dkk (2021). Pengaruh stress kerja, karakteristik individu dan komitmen normatif terhadap kinerja karyawan di PT. *Eins Trend Factory 2, KOMITMEN: Jurnal ilmiah manajemen*, Vol 2, No.1, Maret 2021, P.38-48

Khan, S., Hassan, M.U.U., Parveen, I., Mutalib, R.A., & Khan, M.A. (2023). An Organizational Diagnosis for Change Readiness: A Case of the Department of Special Education Government of Punjab. <https://doi.org/10.20944/preprints202305.0926.v1>

Knott, J. L. (2018). Measurement of organizational commitment in adjunct instructors teaching within a mid-south community college system based on hiring orientation characteristics. *Electronic Theses and Dissertations*. 1915. <https://digitalcommons.memphis.edu/etd/1915>

Kurducki, K.M. (2023). Research confirms the importance of healthy workplace relationships. <https://www.atlassian.com/blog/teamwork/importance-of-healthy-workplace-relationships>

Kumari, N. (2018). Organizational Diagnosis: A Case of Infosys, India. *Journal of Asian Finance, Economics and Business* Vol 5 No1 (2018) 53–62. <https://doi.org/10.13106/jafeb.2018.vol5.no1.53>

Kuswanty, Meisy, dkk (2019). Pengaruh Komitmen Afektif, Komitmen Berkelanjutan dan Komitmen Normatif Terhadap Kinerja Karyawan Pabrik Crumb Rubber Factory di PT. Pinago Utama Sugiwaras. *Jurnal Bisnis, Manajemen dan Ekonomi* e-ISSN 2745-7281 Vol. 2 No.4, Oktober 2021, P.149-165

Lipton, M., Savitt, W., & Cain, K. (May 27, 2020). On the purpose of the corporation. <https://corpgov.law.harvard.edu/2020/05/27/on-the-purpose-of-the-corporation/>

Magallanes, V. M., & Dioso, D. P. D. (2020). Leadership Style Practices of Principals and Organizational Commitment Profile of Employees of Diocesan Catholic Schools. *Philippine Social Science Journal*, 3(2), 39-40. <https://doi.org/10.52006/main.v3i2.156>

Mahesh (2023). What is an Organizational Structure? Definition, Objectives, Components, Types, and Importance. https://bokastutor.com/organizational_structure/

Malagsic, M., Petalla, M., & Doromal, A. (2021). Self-efficacy and Work Commitment of the Private Senior High School Teachers in Time of Pandemic. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*. 60. 345-359. <https://rb.gy/s3isn>

Mamilo, D. (2016). Increasing organizational effectiveness through organizational diagnosis comparison between public institutions in Kosovo and Albania. *International Journal of Engineering Sciences & Research Technology*.

Maritime Industry Authority (MARINA) (2020). 2022 Philippine response: the Philippine strategic corrective actions in raising the country's maritime standards in compliance with STCW Convention. <https://marina.gov.ph/wp-content/uploads/2022/06/2022-PHILIPPINE-RESPONSE.pdf>

Maritime Industry Authority (2021). Maritime industry authority development plan 2019-2028. <https://marina.gov.ph/wp-content/uploads/2022/06/10-YEAR-MIDP-2021.pdf>

Maru, Davinci (13 April 2023). CHED: PH maritime schools in need of experienced teachers. <https://news.abs-cbn.com/news/04/13/23/ched-maritime-schools-in-need-of-experienced-teachers>

McCullough, K. (2022). Why Change in the Workplace is Good! A Guide for Companies. <https://www.karenmccullough.com/change-in-the-workplace-a-guide-for-companies/Change-in-an-organization-leads-opportunities-and-improves-staff-morale>.

McFarlin, K. (2019). Importance of Relationships in the Workplace. <https://smallbusiness.chron.com/importance-relationships-workplace-10380.html>

Menes, C. C., & Haguisan III, I. A. (2020). Ethical Climate, Job Satisfaction, and Organizational Commitment of Hotel Employees. *Philippine Social Science Journal*, 3(3), 96-106. <https://doi.org/10.52006/main.v3i3.131>

Mereka Academy (2023). How to build a good relationship with your colleagues. <https://www.linkedin.com/pulse/how-build-good-relationship-your-colleagues-mereka>

Methode K., Osunsan O.K., Irau, F., Wandiba, A., Abiria, P., & Innocent, B. (2019). Effect of organizational change on employee performance among selected commercial banks in Bujumbura, Burundi East African *Scholars Journal of Economics, Business and Management* 2(4) p225-34

Meyer, J.P. & Allen, N.J. (2004). TCM employee commitment survey: academic users guide 2004. Department of Psychology the University of Western Ontario. <https://employeecommitment.com/TCM-Employee-Commitment-Survey-Academic-Package-2004.pdf>

Milano, S. (2021). Why Create a Workplace Reward System? <https://smallbusiness.chron.com/create-workplace-reward-system-11014.html>

Mohsin, L.S.M., Mahdi, M.H.M., & Abdulameer, O.A. (2022). Organizational Diagnosis And Its Role In Supporting The Strategic Orientation Of Companies. *Webology* (ISSN: 1735-188X) Volume 19, Number 2, 2022

Muda, Agatha Lamentan & Chan Yuen Fook (2020). Psychological Empowerment and Organisational Commitment among Academic Staff of Public Universities in Malaysia. <https://doi.org/10.24191/ajue.v16i2.10292>.

Mulianti, A. R. (2019). Pengaruh Komitmen Organisasi dan Spritualitas di tempat kerja terhadap kinerja karyawan Perum Bulog Divisi Regional Kalimantan Selatan, *Jurnal Inovatif*, Vol 1, No 1, P. 59-82.

Muriithi, SM. (2020). The future of business diagnostic model: the core to successful business sustainability in the 21st century. *European Journal of Research and Reflection in Management Sciences*. www.idpublications.org

Nahak, M., & Ellitan, L. (2022). Organizational Commitment and Organizational Sustainability. <https://www.researchgate.net/publication/360861695>

NawoseIng'ollan, D. & Roussel, J. (2017). Influence of leadership styles on employees' performance: a study of Turkana County Kenya *International Journal of Business and Social Science* 8(7), 82-98.

Ogink, R. H., Goossen, M. C., Romme, A. G. L., & Akkermans, H. (2023). Mechanisms in open innovation: A review and synthesis of the literature. *Technovation*, 119, 102621. <https://doi.org/10.1016/j.technovation.2022.102621>

Olufunke, P. A., Worlu, R. E., Moses, C. L., Ogunnaike, O. O., & Salau, O. P. (2021, February). An Organisational Diagnostic model for a Sustainable Organizational Performance. In *IOP Conference Series. Earth and Environmental Science* (Vol. 655, No. 1). IOP Publishing. <https://doi.org/10.1088/1755-1315/655/1/012026>

Pan, T. & Lin, Y. (2022). Organizational Commitment Impact on Job Well-Being of SMEs Employees in Taiwan in Post-COVID-19 Era. *Education Quarterly Reviews*, 5(1), Available at SSRN: <https://ssrn.com/abstract=4058950>

Pathan, Raziya Dwi, dkk (2016). Analisis Pengaruh Komitmen Afektif, Komitmen Berkelanjutan dan Komitmen Normatif Terhadap Kinerja karyawan Pada PT. Radio Nebula Nada di Kota Palu, *Jurnal Ilmu manajemen Universitas*

Phuong, N. T. M., Bach, T. Q., Linh, T. T., Ly, P. T. C., Dat, V. N., An, N. T. K., & Hung, T. Q. (2023). Impact of Organizational Commitment Factors on Business Performance of Enterprises in the Context of Digital Transformation: A Case Study of Private Enterprises in Vinh City, Nghe An Province, Vietnam. *Modern Economy*, 14, 76-88. <https://doi.org/10.4236/me.2023.142007>

Pramesti, N. K., Dewi, D., & Astiti, P. (2020). Program Studi Sarjana Psikologi, Fakultas Psikologi. *Jurnal Psikologi Udayana*, 7(2), 5607. <https://doi.org/10.24843/JPU.2020.v07.i02.p0>

Pratiwi, Y. (2019). Analisis Pengaruh Komitmen Afektif, Komitmen Berkelanjutan Dan Komitmen Normatif Terhadap Kinerja Karyawan Pada Pt Perkebunan Nusantara Iv Medan. Umkm, Perk.

Preziosi, R. (1982). Organizational diagnosis questionnaire, the 1982 annual handbook for group facilitators, New Jersey, N: J University Associates. [https://irp.cdn-website.com/74979fe5/files/uploaded/ORGANIZATIONAL DIAGNOSIS QUESTIONNAIRE.pdf](https://irp.cdn-website.com/74979fe5/files/uploaded/ORGANIZATIONAL_DIAGNOSIS_QUESTIONNAIRE.pdf)

Rajak, H. (25 July 2023). Organizational Diagnosis: Issues and Concepts - An Overview. <https://hmhub.in/organisational-diagnosis-issues-and-concepts-an-overview/>

Raosoft, Inc. (2004). Sample Size Calculator. <http://www.raosoft.com/samplesize.html>

Russell, B. (2023). Building Relationships: The Key to Success in Every Sphere of Life. [https://www.linkedin.com/pulse/building-relationships-key-success-every-sphere-life-benjamin-russell-Building-relationships-provides-social-emotional sustenance and practical assistance](https://www.linkedin.com/pulse/building-relationships-key-success-every-sphere-life-benjamin-russell-Building-relationships-provides-social-emotional-sustenance-and-practical-assistance).

Seppala, E. & McNichols, N. (2022). The Power of Healthy Relationships at Work. <https://hbr.org/2022/06/the-power-of-healthy-relationships-at-work>

Simarmata, J., & Almaududi, S. (2019). Implementasi Diagnosis Organisasi pada Perguruan Tinggi Swasta (PTS) di Kota Jambi. *J-MAS (Jurnal Manajemen dan Sains)*, 4(2), 375-385. <https://doi.org/10.33087/jmas.v4i2.122>

Sriphong, C., Ahmad, M., Kachonkittiya, N., & Suksawang, P. (2022). The Organizational Commitment and Its Relationship With Internal Marketing, Organizational Culture, And Job Satisfaction. <https://journalppw.com/index.php/jpsp/article/view/7424>

Suparman, J., Fahcruddin, I., Malau, A. G., Kurniawan, W. D., Sayakfika, M., & Geboy, G. (2024). Bridging The Gap Between Maritime Education and Industry Needs: Enhancing Human Resource Development. *Epaper Bisnis Int. J. Entrep. Manag*, 1, 33-49. <https://doi.org/10.61132/epaperbisnis.v1i4.113>

Syarif, R. M. Y., & dan, D. (2018). Komitmen Organisasi. Definisi, Dipengaruhi, Mempengaruhi. Makasar: Mas Media Pustaka

Stepanek, S., & Paul, M. (2023). Organizational Commitment. *Umbrella Summaries*. 88. <https://digitalcommons.unl.edu/qicwdumbrella/88>

Tugade, G. Y. G., & Arcinas, M. M. (2023). Employees Work Engagement: Correlations with Employee Personal Characteristics, Organizational Commitment and Workplace Happiness. *International Journal of Multidisciplinary: Applied Business and Education Research*. 4(1), 136 – 155. doi: 10.11594/ijmaber.04.01.14

Van der Werf, R. (2 October 2023). Three key types of organizational commitment. <https://www.effectory.com/knowledge/3-key-types-of-organisational-committment/>

Vidler, C. (2023). The Importance of Workplace Reward Systems. <https://www.linkedin.com/pulse/importance-workplace-reward-systems-cameryn-vidler-rmcnf>

Vorina, A., Simonič, M., & Vlasova, M. (2017). An Analysis of the Relationship Between Job Satisfaction and Employee Engagement. *Economic Themes*, 55(2), 243-262. <https://doi.org/10.1515/ethemes-2017-0014>

Wainwright, B. (2023). What is employee commitment? <https://www.effectory.com/knowledge/what-is-employee-commitment/>

Weisbord, MR (1976). Organizational diagnosis: six places to look for trouble with or without a theory Group & Organization Studies.

Yi, M., Jiang, D., Wang, J., Zhang, Z., Jia, Y., Zhao, B., Guo, L., & Chen, O. (2022). Relationships among thriving at work, organizational commitment and job satisfaction among Chinese front-line primary public health workers during COVID-19 pandemic: a structural equation model analysis. *BMJ Open*, 12(6): e059032. <https://doi.org/10.1136/bmjopen-2021-059032>.

Zaffar, J., Naeem, M., & Jamal, W. (2018). Organizational diagnosis using Weisbord model: a comparative study of the health sector in Peshawar Global Management. *Journal for Academic & Corporate Studies*.