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The 25th Annual SEAAIR Conference
Education forward

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SEAAIR 2025: Education forward
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Welcome Message
The President of Ramkhamhaeng University

On behalf of Ramkhamhaeng University, I am honored to extend a warm welcome to all participants of SEAAIR2025, the 25th Annual Conference of the Southeast Asian Association for Institutional Research. It is a momentous occasion as we gather here in the dynamic city of Bangkok to celebrate a quarter-century of dedication to advancing higher education through institutional research and scholarly collaboration.

Hosting this prestigious event is a great privilege for Ramkhamhaeng University. We are committed to providing a platform where academics, researchers, and practitioners from Southeast Asia and around the globe can come together to share insights, exchange ideas, and foster partnerships. The theme of this year's conference - Education Forward - reflects our collective aspiration to innovate, improve, and shape the future of higher education through evidence-based decision-making and collaborative research.

Ramkhamhaeng University has been supporting international academic and cultural exchanges for over half a century. We are committed to promote collaboration among higher education institutions, especially, in the field of research and Artificial Intelligence. We hope that your time here will be not only intellectually enriching but also personally memorable as you explore both the conference and the city.

As we celebrate this milestone, we also look forward to the ideas and collaborations that will emerge from this gathering, contributing to the continuous development and improvement of higher education systems across Southeast Asia and beyond. I encourage everyone to engage actively, connect meaningfully, and leave this conference with new perspectives and lasting partnerships.
Thank you for your participation, your dedication, and your commitment to advancing institutional research. We wish you a successful, insightful, and enjoyable conference.

Warm regards,

Assistant Professor Wutisak Lapcharoensap
Acting President of Ramkhamhaeng University
Host of SEAAIR2025 Annual Conference

SEAAIR
SOUTH EAST ASIAN ASSOCIATION FOR INSTITUTIONAL RESEARCH

Welcome Message
The Interim President of SEAAIR

Distinguished conference delegates, founding members, colleagues, partners, sponsors, early-career researchers, and friends, welcome to SEAAIR 2025, the 25th Anniversary Conference. This milestone celebrates a quarter-century of scholarship, partnership, and practical impact across academic and research systems across ASEAN and Asia. That legacy rests on the foresight of our founders, the dedication of volunteers and committees, the scholarship of our authors and presenters, and the steady support of institutional partners and sponsors to make this community possible. Over the coming days, engage broadly, think boldly, question assumptions, and collaborate across disciplines as we turn knowledge into action for a safer, more sustainable future.

We thank Ramkhamhaeng University and its Local Organizing Committee for graciously hosting us during this 25th Anniversary Celebration of the Past. To mark this significant event, SEAAIR has created the SEAAIR 2025 Commemorative e-Story presentation and Commemorative Handbook, focusing on our history and looking toward the future. A key summary of the papers shows: abstract submission and acceptance: 121 and 119; full paper acceptance and final full papers submissions: 84 and 68.

The 25th year is both a moment to honor that legacy and a catalyst for renewed ambition. Facing accelerating challenges in the academic and research world, we must move from incremental gains to real breakthroughs in system-level solutions. SEAAIR 2025 is designed to do exactly that: a program that combines rigorous research, high-level policy dialogue, and technical innovation with opportunity, for “Education Forward,” the 25th Conference theme. To emerging scholars, bring your ideas and seek mentorship. To established members, continue to guide and open doors. Together, let us honor a proud past and set a decisive course for the next twenty-five years.

Welcome to SEAAIR 2025. Thank you for your paper contribution, your partnership, and your commitment to translating knowledge into action. To everyone who has contributed past, present, and future, we extend our deepest thanks.

Thank you.

Assoc. Prof. Teay Shawyun, Ph.D.

Interim President

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CONFERENCE AT A GLANCE

Conference Day 1: September 15, 2025 (Monday) at Ramkhamhaeng University Auditorium

08:30	Pickup from Bangkok InterPlace Hotel
08:45 – 09:30	Registration
09:30 – 10:00	Welcome address and opening ceremony *Asst. Prof. Wutisak Lapcharoensap, Acting President of Ramkhamhaeng University* *Assoc. Prof. Dr. Teay Shawyun, President of SEAAIR* Gift Presentation Ceremony
10:00 – 10:30	SEAAIR 25th Anniversary Celebration *hosted by Ramkhamhaeng University* (10:30 – 11:00 Morning Break)
11:00 – 11:45	Keynote Address I *Asst. Prof. Wutisak Lapcharoensap, Acting President of Ramkhamhaeng University*
11:45 – 13:30	Lunch Break
13:30 – 16:30	Parallel Panel Sessions (14:30 – 15:00 Afternoon Break)
16.45 – 17.00	Back to the hotel
18:00	Pickup from Bangkok InterPlace hotel
18:15 – 21:00	Gala reception at Ramkhamhaeng University Auditorium

Conference Day 2: September 16, 2025 (Tuesday) at Ramkhamhaeng University Auditorium

08:30	Pickup from Bangkok Interplace Hotel
08:40 – 09:00	Registration
09:00 – 12:00	Parallel Panel Sessions (10:40 – 10:50 Morning Break)
12:00 – 13:30	Lunch Break
13:30 – 16:30	Parallel Panel Sessions (14:30 – 15:00 Afternoon Break)
16.45 – 17.00	Back to the hotel
18:00	Pickup from Bangkok Interplace hotel
18:15 – 21:00	Cultural Night at SC Park Hotel

Conference Day 3: September 17, 2025 (Wednesday) at Ramkhamhaeng University Auditorium

08:30	Pickup from Bangkok InterPlace Hotel
08:40 – 09:00	Registration
09:00 – 10:00	Keynote Address II *Prof. Dr. Nopphol Witvorapong,* *Dean, Faculty of Economics, Chulalongkorn University*
	(10:00 – 10:30 Morning Break)
10:30 – 11:00	Annual General Meeting (AGM)
11:00 – 11:30	Announcement of Best and Outstanding Paper Awards Presentation from VP of Ming Chuan University, Dr. Lynne Lee and Dr. Sophia Ho, SEAAIR2026 host Flag Handover Ceremony Closing Ceremony
11:30 – 13:00	Lunch
13:00 – 17:00	Visit the Grand Palace

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SEAAIR 2025

Parallel sessions

DAY1: AFTERNOON (SEP 15: 13.30-16.30)
PRESENTATION = 20 MINUTES, Q&A = 10 MINUTES

Time	Authors	Title	No.	Country	ROOM
13.30-14.00	Busara Niyomves, Sanya Kenpahoom, Narat Wattanapanit	The Future of Higher Education in Thailand: Integrating Digital Technologies and Internationalization Policies	P25266	Thailand	1
14.00-14.30 (BREAK 14.30-15.00)	Krisda Tanchaisak, Busara Niyomves and Manop Sornsiri	Key Factors Influencing the Business Competitiveness of Thai Higher Education	P25265	Thailand	1
15.00-15.30	Charito Ong and Sterling Ong	Digital Linguistics and Online Communication: Examining Language Use in Online Academic and Social Interactions	P25145	Philippines	1
15.30-16.00	Mylene Jainga	Employer Satisfaction on the Maritime Graduates' Performance Onboard International Seagoing Vessels	P25179	Philippines	1
13.30-14.00	Chiu Ya-Mei	Mapping the Knowledge Landscape of Generative AI in Higher Education: A Bibliometric Analysis of ChatGPT Research	P25242	Taiwan	2
14.00-14.30 (BREAK 14.30-15.00)	Shuntaro Iseri and Tetsuya Oishi	Designing a Model Curriculum for a Japanese IR Human Resource Development Program	P25188	Japan	2
15.00-15.30	Geldolin Inte	The Figurative Language in the English Translated Subanon Epic, the Song of Dumalinao	P25206	Philippines	2
15.30-16.00	Grace Pimentel and Mary Louise Pimentel	Exploring the Dynamics of Flipped Classroom: Analyzing Its Influence on SHS Students' Engagement and Motivation towards Vocabulary Learning	P25169	Philippines	2
16.00-16.30	Maria Celia Cabasal, Joy Garner and Felicito Dalaguete	The Extent of Competency and Achievements of Administrative Division in Asian Institute of Maritime Studies (AIMS): An Impact Study of Quality Assurance Management Towards the Highest Level of PACUCOA Accreditation	P25150	Philippines	2
13.30-14.00	Tuangthong Boonmachai, Kasama Kudu and Chitraporn Boonthanom	Development of Learning Achievement and Attitude toward Science Using CIPPA Model Teaching Technique in Junior High School	P25203	Thailand	3
14.00-14.30 (BREAK 14.30-15.00)	Nanpapat Amborisuth, Tuangthong Boonmachai and Junthanee Teravecharoenchai	The Study of Stakeholders' Needs for Curriculum Development in Science Education, in Bachelor's Degree, Faculty of Education, Ramkhamhaeng University	P25219	Thailand	3
15.00-15.30	Maria Loida Faye Borbon	Perceived Stress among Teachers: its relationship with positive thinking skills and adversity quotient	P25225	Philippines	3
15.30-16.00	Bongkoch Thongeiam, Donrudee Rattanaprasart and Ekwatchara Pornchinda	Factors Related to the Happiness Level of Early Childhood Education Students at Ramkhamhaeng University	P25202	Thailand	3
13.30-14.00	Jay Somasundaram	Education Forward, but Where and How? Exploring the Goal of Education and the Skills Needed	P25153	Australia	4
14.00-14.30 (BREAK 14.30-15.00)	Therese June Aranas	Voices in Silence: Academic Realities of Deaf Learners in Higher Education	P25191	Philippines	4
15.00-15.30	Jahnna Mae Litana	Unraveling Learning Barriers: Identifying the Difficulties Met by Senior High School Students in Blended Learning of Divine Word College of Legazpi	P25220	Philippines	4
15.30-16.00	Sol Dalonos	From Isolation to Connection: Exploring Social Experiences of Deaf College Students	P25189	Philippines	4
13.30-14.00	Rolando Alimen and Ronald Baynosa	Entrepreneurial Knowledge and Its Impact on Administrators in the Maritime Higher Education Institutions (MHEIs) in the Philippines	P25236	Philippines	5
14.00-14.30 (BREAK 14.30-15.00)	Alicia Mapa and Lemyr Joshua Mimay	The Role of Social Media in College Decision-Making Process: The Divine Word College of Legazpi Experience	P25187	Philippines	5
15.00-15.30	Yuningjing Zhang, Yingshui Zhang and Jang Wan Ko	Mapping Research Trends of Artificial Intelligence in Higher Education : A Topic Modeling Approach	P25184	South Korea	5
15.30-16.00	Minhee Kim	Case Study: Utilizing Self-Analysis & Diagnosis of Major Curriculum and University IR	P25264	South Korea	5

DAY2: MORNING (SEP 16: 9.00-12.00)
PRESENTATION = 20 MINUTES, Q&A = 10 MINUTES

Time	Authors	Title	No.	Country	ROOM
9.00-9.30	Yit Yan Koh	Navigating the Spectrum: Understanding ASD Challenges in Higher Education in Malaysia	P25137	Singapore	1
9.30-10.00	Caroline Grace Montas, Amelia Luces and Jose Glen V. Sanone, Jr	Senior High School Learners Engagement and Interaction during Synchronous and Asynchronous Classes for SY 2024-2025	P25196	Philippines	1
10.00-10.30 (BREAK 10.30-11.00)	Nueva D. Salaan and Isabelita C. Bodbod	Effectiveness of Job Enabling English Proficiency (JEEP) Start Program on the Employability of Agriculture Graduates	P25139	Philippines	1
11.00-11.30	Adlin Mae Dimasuay, Mateo Borbon, Jr., Jeffrie Atendido	Faculty Performance via Student Sentiment: NLP Techniques	P25166	Philippines	1
11.30-12.00	Charito Ong, Josan Fermano and Sterling Ong	Strengthening Professional Communication through Grammar and Technical Writing Training: An Impact Assessment among DSWD Employees	P25147	Philippines	1
9.00-9.30	Mateo Borbon and Marigirl Padilla	Bridging the Digital Divide through Cost-Effective Computer Adaptive Testing: A Systematic Review and Implementation Framework	P25167	Philippines	2
9.30-10.00	Nelida Orquinaza	Enhancing Engagement and Collaboration in Conference-Style Classes	P25238	Philippines	2
10.00-10.30 (BREAK 10.30-11.00)	Ellisther Niña O. Salabas and Dennis V. Madrigal	Organizational Diagnosis and Employee Commitment in a Philippine Maritime College	P25255	Philippines	2
11.00-11.30	Charito Ong and Mary Louise Pimentel	Language, Culture, and Mind: Investigating the Role of Sociocultural Awareness in Developing Empathy and Interpersonal Sensitivity in Language Learners	P25170	Philippines	2
11.30-12.00	Dennis Madrigal, Anik Yuesti and Glenford Vincent Ricardel	College Student Satisfaction with School Services through the Lens of the 7Ps Marketing Mix in a Southern Negros Occidental Catholic Higher Education Institution	P25257	Philippines	2
9.00-9.30	Charito Ong	The Intersection of Ethnography and Communication: Developing Effective Language Skills in Multicultural Settings	P25143	Philippines	3
9.30-10.00	Charito Ong, John Derek Flores and Sterling Ong	Developing Competence in Communication and Documentation: An Impact Assessment of Feature Writing and Photography Training for Educators	P25148	Philippines	3
10.00-10.30 (BREAK 10.30-11.00)	Pichayut Phacharadhamaroj	Pleng Sor local Lanna songs and Social Value Transmission: A Sociological Study for Educational Development Based on Parsons' Theory	P25221	Thailand	3
11.00-11.30	Chitraporn Boonthanom, Tanatchaporn Namwat, Wanatphong Benjaphong	The Development of Indicators of Teaching Professional Engagement among Senior Students in the Faculty of Education	P25158	Thailand	3
11.30-12.00	Manutsawee Asawawisetsakul, Piyatida Supa and Chitraporn Boonthanom	Promoting Secondary School Students' Critical Thinking and Reasoning Skills using Inquiry-Based Learning Activities	P25198	Thailand	3
9.00-9.30	Dhuff Mattheus Ortiz, Lamberto Mindanao and Felicito Dalaguete	Performance of Academic Programs in Asian Institute of Maritime Studies: Evaluating the Impact of Quality Management Practices on Attaining High Level of PACUCOA Accreditation	P25149	Philippines	4
9.30-10.00	Yen-Ru Lai and Hsiao-Chi Chiu	Does Off-Campus Internship Experience Benefit Career of College Graduates? An Analysis Based on Alumni Career Development Survey	P25172	Taiwan	4
10.00-10.30 (BREAK 10.30-11.00)	Sophia Shi-Huei Ho and Ying-Yan Lu	Transforming Teaching Practices in Taiwanese Higher Education: Comparative Insights from International Academic Profession Surveys	P25177	Taiwan	4
11.00-11.30	Denise O. Orong, Ma. Florecilla C. Cinches, and Aurora Cindy A. Balabat	Assessing AI Literacy and AI Affective Constructs among Students: Patterns and Associations	P25246	Philippines	4
11.30-12.00	Maria Angeles Hinosolango and Keth Jerica Lim	Bridging the Gap: Navigating English Language Challenges among Deaf ASL Users in Higher Education	P25205	Philippines	4
9.00-9.30	Ma. Cecilia Alimen and Rolando Alimen	An Error Analysis of Students' Written Texts: Case of Three Universities	P25239	Philippines	5
9.30-10.00	Ma. Cecilia Alimen	Our Trash, Our Art: Bottle Up Creativity for a Greener Community Engagement	P25230	Philippines	5
10.00-10.30 (BREAK 10.30-11.00)	Mylene Jainga	MSAP E-Review Material for Plane and Spherical Trigonometry for Maritime Education	P25178	Philippines	5
11.00-11.30	Maristela Sy	Short Stories as Potent Instructional Materials in Teaching Literature	P25211	Philippines	5

DAY2: AFTERNOON (SEP 15: 13.30-16.30)
PRESENTATION = 20 MINUTES, Q&A = 10 MINUTES

Time	Authors	Title	No.	Country	ROOM
13.30-14.00	Marisa Petalla and John Lloyd Belbar	Reading and Writing Attitude and Competence Among Senior High School Students: A Correlational Analysis	P25235	Philippines	1
14.00-14.30 (BREAK 14.30-15.00)	Lorena Taglucop and Mico Ray Taglucop	Katahuran: Navigating Politeness, Urgency, and Emotional Regulation in Online Academic Discourse	P25164	Philippines	1
15.00-15.30	Charito Ong and John Derek Flores	Unveiling Linguism: Examining Language-Based Discrimination in Multicultural Education	P25144	Philippines	1
15.30-16.00	Josan Fermano and Lelia Nacaytuna	Empowering Innovation: Integrating Design Thinking to Enhance Problem-Solving Skills Among Second-Year College Students	P25215	Philippines	1
16.00-16.30	Denise Orong and Bryan Ansing	Driving Educational Transformation: Student Experiences and Graduate Outcomes in A Quality-Centered Learning Ecosystem	P25168	Philippines	1
13.30-14.00	Dominic Polancos, EdgarRomero and Amelda Libres	Work Engagement and Digital Citizenship as Predictors of Institutional Performance: The Mediating Role of Organizational Climate and Leadership Practices	P25163	Philippines	2
14.00-14.30 (BREAK 14.30-15.00)	Ryza C. Demafiles, Justine Kaye R. Dago, Clyde Rinelle S. Nequin, Allyn Joy A. Robles and Ma. Cecilia D. Alimen	Student Engagement in English Class and Reward Strategies among Junior High School Students	P25227	Philippines	2
15.00-15.30	Nueva Salaan	Impact of the Job Enabling English Proficiency (JEEP) Program on Students' Academic Performance and Employability Skills	P25146	Philippines	2
15.30-16.00	Mary Grace Sabadisto	The Internationalization Challenge in Interior Design: Practices and Prospects	P25232	Philippines	2
13.30-14.00	Thi Gam Phan and Ngoc Anh Le	Teacher As a Mediator of Hidden Curriculum in Classroom Practice: A Case of Gender Content in Vietnam – EFL Classrooms	P25174	Vietnam	3
14.00-14.30 (BREAK 14.30-15.00)	Mary Louise Pimentel and Josephine Visande	Assessing the Link Between Aptitude Test and Academic Achievement	P25162	Philippines	3
15.00-15.30	Felsa A. Labis, Ma. Fe D. Opianikgarnerna and Gloria M. Cunanan	Growth Mindset and the Psychology of AI Readiness Among Postgraduate Students	P25247	Philippines	3
15.30-16.00	Josephine Visande, Maristela Sy and Ramir Philip Jones Sonsona	Assessing the Phonetic Components of the Language Proficiency Program	P25209	Philippines	3
16.00-16.30	Josephine Visande and Ela Danielle Piol	Challenges & Initiatives of College Admission: Road to Hybrid Student Services	P25208	Philippines	3
13.30-14.00	Joy Lorren Tornalejo-Celis and Ma. Cecilia Alimen	Zipgrade as an Assessment Tool: Usage among Senior High School Students of the University of San Agustin	P25251	Philippines	4
14.00-14.30 (BREAK 14.30-15.00)	Lorena Taglucop, Josan Fermano and Arian Edullantes	Politeness in Multilingual Online Discourse: Discovering Po in English and Bislish Academic Interactions	P25190	Philippines	4
15.00-15.30	Dave Mark Sumagaysay, Joseph Karl Tatlonghari and Kimberly Salvaleon	Awareness and Social Entrepreneurial Tendencies Among Senior High School Students	P25185	Philippines	4
15.30-16.00	Lo Yu-Hsin and Hwang Feng-Nan presented by Tseng-Yi Chen	An Investigation of Undergraduate Students' Learning Performance in Information Literacy Courses	P25176	Taiwan	4
13.30-14.00	Jungmi Lee and Giljae Lee	A Study on the Effectiveness of South Korea's LINC Project for Promoting Industry-University Cooperation	P25263	South Korea	5
14.00-14.30 (BREAK 14.30-15.00)	Marites S. Salasbar, Tita B. Buenaobra and Irlo L. Dumo	A Model of Teaching Excellence: Metrobank Awardees' Experience	P25267	Philippines	5
15.00-15.30	XiWen Xu, Ting Liu, Jang Wan Ko and Bingyang Ren	Analyzing Characteristics of Higher Education Digitalization Policy in China	P25175	South Korea	5
15.30-16.00	Mateo Jr. Borbon, Jeffrie Atendido and Adlin Mae Dimasuay	Harnessing Sentiment Analysis for Predictive Modeling of Faculty Evaluations Using Random Forest and XGBoost	P25173	Philippines	5
16.00-16.30	Lemyr Joshua Mimay and TeresitaNacion	The Influence of Marketing Mix Strategies on the Students' Choice to Enroll and Remain in DWCL	P25210	Philippines	5

Disclaimer :

This Proceedings contains only papers that were officially registered and presented during the conference.

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SEAAIR 2025

FULL PAPER

Impact of the Job Enabling English Proficiency (Jeep) Program on Students' Academic Performance and Employability Skills

Nueva D, Salaan [1]

University of Science and Technology of Southern Philippines (nueva.salaan@ustp.edu.ph)

ABSTRACT

This study evaluates the impact of the Job Enabling English Proficiency (JEEP) Program on the academic performance and employability skills of graduating students at the University of Science and Technology of Southern Philippines (USTP) Claveria Campus, guided by Paul Zwaenepoel's (1985) Systems Theory in Education, which emphasizes that positive feedback within an educational system fosters continuous improvement. Job Enabling English Proficiency (JEEP) is an intensive two-year English language training program of United States Agency for International Development-USAID's Growth with Equity in Mindanao (GEM). This program features learning design specifically for interactive study via computers and is envisioned to improve the English proficiency among students enrolled in selected universities in Mindanao. Utilizing a descriptive- correlational research design, data were gathered through surveys and institutional records from a sample of graduating students to determine whether participation in the JEEP Program significantly enhances English proficiency, academic achievement, and employability skills. The findings reveal demographic differences, with younger students outperforming older peers in English proficiency and academic outcomes, and gender-based differences in communication and analytical skills. Furthermore, students specializing in Business Process Outsourcing (BPO) demonstrated the highest levels of proficiency and employability skills, reflecting the alignment of the program with industry demands. Regression analysis confirmed a statistically significant positive relationship between JEEP participation and improvements in academic and employability outcomes, indicating the program's effectiveness in preparing students for the workforce. The study concludes that the JEEP Program is a valuable educational intervention that contributes to skill development and employability, recommending its continued implementation and integration into the broader curriculum, alongside targeted strategies to address specific demographic skill gaps. Future research should explore the long-term impacts of the program and strategies for expanding its reach and effectiveness to maximize student readiness for diverse career pathways.

keywords: English Proficiency, Employability Skills, JEEP Program, Educational Intervention, Student Performance

INTRODUCTION

In an era marked by rapid globalization and heightened competition in the labor market, English language proficiency has emerged as a vital skill that significantly influences employability and career advancement. Recognizing the growing demand for English competence as a gateway to global opportunities, the University of Science and Technology of Southern Philippines (USTP) Claveria Campus embraced the Job Enabling English Proficiency (JEEP) Program, a targeted intervention designed not only to enhance linguistic abilities but also to bridge the persistent gap between academic learning and industry expectations. Introduced by the United States Agency for International Development-USAID's Growth with Equity in Mindanao (GEM)his program features learning design specifically for interactive study via computers and is envisioned to improve the English proficiency among students enrolled in selected universities in Mindanao.

Drawing on Paul Zwaenepoel's (1985) Systems Theory in Education, the investigation emphasizes the importance of feedback loops and adaptive processes in fostering continuous improvement of language programs. Unlike traditional approaches that treat language acquisition as a static skill, this research posits that integrating real-time feedback mechanisms and demographic insights can lead to more personalized, effective, and sustainable pathways to employability. This study aims to evaluate how the JEEP Program affects students' English skills, academic performance, and employability, while also considering factors like age, gender, and course. By doing so, it hopes to show how language programs that include feedback and real-world applications can help students become more prepared for jobs and improve their chances for economic success.

Literature review

The interplay between language proficiency and employability skills has garnered significant scholarly attention, emphasizing that language competence—particularly in English—serves as a critical facilitator for effective communication and career development in a globalized economy (Macedo et al., 2018; Lee & Choi, 2020). While prior research has primarily examined curriculum content, pedagogical strategies, and assessment outcomes in isolation, these approaches often lack a holistic perspective that captures the complex, systemic interactions within educational organizations.

To address this gap, the application of Systems Theory (Bertalanffy, 1968) offers a robust theoretical lens. Systems Theory conceptualizes organizations as interconnected, adaptive systems characterized by feedback loops that enable ongoing learning and self-regulation (Zwaenepoel, 1985). Within this framework, educational programs such as the JEEP initiative—can be viewed as a system where inputs (resources, curriculum), processes (teaching methods, learner engagement), outputs (language skills, employability competencies), and feedback mechanisms (assessment results, employer feedback) interact continuously. This perspective emphasizes that effective language education should not only focus on individual components but also on how these components influence and adapt to each other through feedback, leading to sustainable improvements aligned with labor market needs.

Building on the theoretical foundation of Systems Theory, the conceptual framework operationalizes these ideas into specific constructs for analysis. It posits that the effectiveness of the JEEP program depends on the quality and integration of inputs, the efficiency of processes, the relevance of outputs, and the responsiveness of feedback mechanisms highlighted in this study. Feedback serves as a critical element that informs iterative improvements, fostering organizational learning and adaptation. By examining the interactions among these components, this framework aims to identify systemic strengths and weaknesses, providing insights into how language programs can be optimized for better employability outcomes.

Despite the theoretical robustness of this systemic approach, existing literature reveals a significant gap in empirical application, most evaluations focus on isolated program elements rather than the

organization as a holistic, feedback-responsive system. Addressing this gap through an integrated Systems Theory framework offers a comprehensive understanding of how organizational dynamics influence program success. This approach not only advances theoretical understanding but also provides practical pathways for enhancing language education initiatives like JEEP, ensuring they remain adaptive, relevant, and effective in fostering employability skills.

MATERIALS AND METHODS

Research design

This study employed a mixed-method research design, combining both quantitative (numeric data) and qualitative (descriptive data) approaches to thoroughly evaluate the impact of the JEEP program on students' academic performance and employability skills. The quantitative component involved analyzing survey responses, test scores, and performance records, while the qualitative aspect included interviews and focus group discussions with students, teachers and employers.

Sampling Procedure

This study employed the proportionate sampling method. A simple random technique was used in selecting the actual respondents of the study. The sample size taken from each course was proportionate with its population. Using the formula of Cochran (1997), a total of 127 respondents were sampled from 173 JEEP graduates/ finishers.

Research Instrument

The study employed various research instruments to assess the employability skills of JEEP graduate-respondents, including survey questionnaires, a validated 70-item multiple- choice employability skills test, a curriculum vitae (CV) writing activity, and a mock job interview. The graduate questionnaire gathered respondent profiles, self-assessed employability skills, and evaluations of JEEP activities. A 5-point Likert scale (with 5 as the highest and 1 as the lowest) was used by both JEEP teachers and employer-respondents to rate the graduates' employability skills. Teachers also responded to open-ended questions on how JEEP contributed to students' skill development. Additional qualitative data were gathered through focused group discussions and job mock interviews to further assess job application skill. The tools underwent content validation and pilot testing, with the skills test showing good reliability (KR-21 coefficient of 0.85).

Statistical analysis

Descriptive statistics, including frequencies, means, and standard deviations, were used to present the results of the study. To determine significant differences in employability skill levels based on course, age, gender, and JEEP pathway, **T-tests** and **F-tests** were applied. Additionally, simple linear regression was conducted using Microsoft Excel's Data Analysis tool to assess the significant effect or contribution of the JEEP Program on the respondents' employability skills.

RESULTS AND DISCUSSIONS

Table 1.1 presents the distribution of statistics (mean, test statistics) on respondents' English Proficiency based on ratings in JEEP Program, employability skills and academic performance when grouped according to age. Results show that there is a significant difference at 0.1 level in the respondents' English Proficiency in terms of JEEP ratings (F=3.67*) when grouped according to age. The youngest group, constituting the 19-21 age bracket, is shown with the highest means of 3.62; 22-25 age bracket, 3.35; and 26-35 years old of 3.23. The findings show that different age groups have different strengths. Younger students perform best in basic skills like communication and academic work. Students aged 22-25 excel in analytical thinking, computer skills, and

interpersonal skills. Older students (26 and above) tend to have stronger critical thinking, creativity, and professional skills like CV writing.

Table 1 Distribution of Statistics (mean, test statistics) on Students' English Proficiency, Employability Skills and Academic Performance when grouped according to Age

Indicators	19-21 yrs old n= 66		22-25 yrs old n=46		26 & Above n=15		Test Stat (F)
	X	Desc	X	Desc	X	Desc	F Stat
1.English Proficiency	3.62	G	3.35	G	3.23	G	3.67*
2. Employability Skills	3.54	G	3.51	G	3.51	G	0.09 ns
2.1 Communication Skills	3.45	G	3.20	G	2.99	G	5.60**
2.2 Creative and Critical Thinking	3.17	G	2.80	G	3.46	G	2.38+
2.3 Analytical Thinking Skills	3.92	VG	4.04	VG	4.00	VG	0.16 ns
2.4 Interpersonal Skills	4.21	VG	4.41	VG	4.06	VG	0.87 ns
2.5 Management Skills	4.39	VG	4.23	VG	4.23	VG	0.39 ns
2.6 Negotiation Skills	2.50	F	2.47	F	2.70	F	0.37 ns
2.7 Computer Skills	4.31	VG	4.40	VG	3.96	VG	2.73ns
2.8 Job Application Skills	3.54	G	3.58	G	3.42	G	0.64 ns
2.8.1 Knowledge on CV writing	3.38	G	3.30	G	3.53	G	0.22 ns
2.8.2 Preparing for interview	3.47	G	3.98	VG	3.33	G	3.23*
2.8.3 CV Writing	3.47	G	3.32	G	3.31	G	1.01 ns
2.8.4 Mock Interview	3.84	VG	3.73	VG	3.53	G	2.15ns
3. Academic Performance	3.58	G	3.36	G	3.33	G	3.26*

Legend: *sig. at 0.05 level. ** high sig. at 0.01 level, VG = Very Good, G= Good, F= Fair, ns=not significant (+ sig. at 0.1 level)

The findings indicate that age and experience play a significant role in shaping the employability skills of JEEP graduate-respondents. This supports the research objective of examining how demographic variables, particularly age, influence employability outcomes. Analysis revealed that different age groups exhibit distinct strengths in specific skill areas: younger respondents demonstrated greater proficiency in foundational and technical skills; mid-aged respondents showed stronger analytical and interpersonal abilities; and older respondents excelled in critical thinking and professional skills. These patterns suggest that as individuals age and gain more experience, their employability skills evolve and diversify. Therefore, age-specific interventions and continuous professional development opportunities are recommended to address the unique needs of each group and enhance overall employability. This underscores the importance of sustained skill-building efforts and adaptive educational strategies that align with the varying developmental stages of learners (Harvey, 2001; Hakuta et al., 2000; Kossoudji, 1988; Roshid & Chowdhury, 2013; Stacey, 2007; Wijewardene et al., 2014; Zwaenepoel, 1985).

Table 1.2 Distribution of Statistics (mean, test statistics) on Students' English Proficiency, Employability Skills and Academic Performance when grouped according to Course Enrolled In

Indicator	Education (52)		Engineering and IT (41)		Other Courses (34)		Test Stat (F)
	X	Desc	X	Desc	X	Desc	F Stat
1. English proficiency	3.53	G	3.51	G	3.32	G	0.98ns
2. Employability Skills	3.71	VG	3.59	G	3.54	G	2.52*
2.1 English Communication Skills	3.41	G	3.51	G	3.38	G	0.75ns
2.2 Creative, Critical Thinking	3.37	G	2.91	G	2.85	G	3.44*
2.3 Analytical Thinking Skills	3.97	VG	4.12	VG	3.74	VG	0.90 ns
2.4 Interpersonal Skills	4.26	VG	4.45	VG	4.03	VG	1.27 ns
2.5 Management Skills	4.53	VG	4.50	VG	3.78	VG	6.27**
2.6 Negotiation Skills	2.42	F	2.93	G	2.07	F	2.85*
2.7 Computer Skills	4.61	VG	4.78	VG	4.64	VG	1.03ns
2.8 Job Application Skills	3.60	G	3.72	VG	3.52	G	1.22ns
2.8.1 Knowledge on CV writing	3.59	G	3.64	G	3.57	G	0.16ns
2.8.2 Preparing for interview	3.70	VG	3.72	VG	3.35	G	0.89ns
2.8.3 CV Writing	3.38	G	3.53	G	3.47	G	0.53ns

Legend: + sig. at 0.1 level *sig. at 0.05 level, ** highly sig. at 0.01 level, VG = Very Good, G= Good, F= Fair, ns=not significant

Results showed that there was no significant difference in English proficiency among the three groups, with all receiving a "Good" rating. Similarly, there were no significant differences in several skill areas, including English communication, analytical thinking, interpersonal, computer, job application, and CV writing skills. This suggests that students from different courses performed similarly in these areas. However, significant differences were found in overall employability skills ($F = 2.52$, $p < 0.05$), with Education students rating themselves slightly higher than those in Engineering/IT and Other Courses. Creative and critical thinking skills also varied significantly ($F = 3.44$, $p < 0.05$), with Education students scoring higher than the other groups. The most significant difference was in management skills ($F = 6.27$, $p < 0.01$), where Education and Engineering/IT students rated themselves much higher than students from Other Courses. Additionally, negotiation skills showed a moderate but significant difference ($F = 2.85$, $p < 0.05$). This finding supports the study's goal of identifying how course pathways influence employability and suggests the need for course-specific interventions to further strengthen students' job readiness.

Table 1.3 presents the distribution of statistics (mean, test statistics) on respondents' English proficiency, employability skills and academic performance when grouped according to gender.

Indicators	Male n= 41		Female n=86		Test Stat (t)
	X	Desc	X	Desc	T Stat
1.English Proficiency	3.33	G	3.55	G	1.72*
2. Employability Skills	3.53	G	3.54	G	0.05ns

Indicators	Male n= 41		Female n=86		Test Stat (t)
	X	Desc	X	Desc	T Stat
2.1Communication Skills	3.28	G	3.55	G	2.08**
2.2 Creative and Critical thinking	2.73	G	3.32	G	3.67**
2.3 Analytical Thinking Skills	4.07	VG	3.23	G	3.32**
2.4 Interpersonal Skills	4.34	VG	3.92	VG	2.17**
2.5 Management Skills	4.32	VG	4.08	VG	1.73*
2.6 Negotiation Skills	2.58	F	2.49	F	0.49ns
2.7 Computer Skills	4.32	VG	4.23	VG	0.72ns
2.8 Job Application Skills	3.56	G	3.52	G	0.26 ns
2.8.1 Knowledge on CV writing	3.58	G	3.30	G	1.34+
2.8.2 Interview Preparedness	3.63	G	3.73	VG	0.43ns
2.8.3 CV Writing	3.32	G	3.39	G	0.6ns
2.8.4 Mock Interview	3.59	G	3.76	VG	1.46+
3. Overall Academic Performance	3.29	G	3.51	G	2.06*

Legend: + sig. at 0.1 level, *sig. at 0.05 level, ** highly sig. at 0.01 level, VG = Very Good, G= Good
F= Fair, ns=not significant

Although both male and female groups were generally rated as "Good" overall, the data reveal significant differences between genders in English proficiency, employability skills, and academic performance. Specifically, females scored significantly higher in communication skills ($T = 2.08$, $p < 0.01$), creative and critical thinking ($T = 3.67$, $p < 0.01$), analytical thinking ($T = 3.32$, $p < 0.01$), and interpersonal skills ($T = 2.17$, $p < 0.01$). These findings indicate that gender plays a significant role in the development of academic and skills-related competencies. Females tend to outperform males in English language skills, creative and critical thinking, communication, and overall academic achievement. In contrast, males demonstrated relatively stronger abilities in analytical, interpersonal, and management skills. This pattern aligns with previous studies that have shown females often excel in English communication (Kachru, 1990; Celce-Murcia & Olshtain, 2000). The results underscore that both gender and educational pathways are important factors influencing skill development, and that recognizing these differences can help guide in the enhancement of interventions to better prepare students for the workforce.

Table 1.4 Distribution of Statistics (mean, test statistics) on English Proficiency, Employability Skills and Academic Performance when grouped according to JEEP Pathways

Indicators	BPO BPO		T & T		EFIE EFIE		Test Stat
	X	Desc	X	Desc	X	Desc	F-value
1. English Proficiency	3.60	G	3.05	G	3.43	G	3.47*
2. Employability Skills	3.65	G	3.27	G	3.38	G	6.57**
2.1 Communication Skills	3.44	G	2.92	G	3.25	G	4.09**

Indicators	BPO BPO		T & T		EFIE EFIE		Test Stat
	X	Desc	X	Desc	X	Desc	F-value
2.2 Creative and Critical Thinking	3.16	G	3.10	G	2.98	G	0.33ns
2.3 Analytical Thinking Skills	4.10	VG	3.90	VG	3.85	VG	0.81ns
2.4 Interpersonal Skills	4.47	VG	4.3	VG	4.07	VG	2.43+
2.5 Management Skills	4.49	VG	4.13	VG	4.18	VG	1.57ns
2.6 Negotiation Skills	2.49	F	2.3	F	2.58	F	0.38ns
2.7 Computer Skills	4.33	VG	4.58	VG	4.22	VG	1.48ns
2.8 Job Application Skills	3.77	VG	3.12	G	3.38	G	5.67*
2.8.1 Knowledge on CV writing	3.72	VG	3.2	G	3.22	G	0.31ns
2.8.3 On- the- Spot CV Writing	3.48	G	2.90	G	3.17	G	4.29*
2.8.4 Mock Interview	3.91	VG	3.59	G	3.66	VG	3.29*
3. Academic Performance	3.52	G	3.42	G	3.37	G	0.60ns

Legend: + sig. at 0.1 level; *sig. at 0.05 level; ** high sig. at 0.01 level; VG = Very Good; G= Good ; F= Fair, ns=not significant

The results show that students from the BPO, T & T, and EFIE courses generally demonstrated "Good" to "Very Good" levels in English proficiency, employability skills, and academic performance. Significant differences were observed, with BPO students outperforming others in English proficiency ($F = 3.47$, $p < 0.05$), overall employability skills ($F = 6.57$, $p < 0.01$), communication skills ($F = 4.09$, $p < 0.01$), and job application skills, including on-the-spot CV writing ($F = 4.29$, $p < 0.05$) and mock interviews ($F = 3.29$, $p < 0.05$). These findings indicate that while students share strengths across many skills, BPO students have an advantage in communication and job application competencies, underscoring the need for course-specific interventions to enhance employability.

Table 1.5 indicates that respondents who rated JEEP as very effective achieved the highest scores in English proficiency, employability skills—including communication, analytical thinking, interpersonal, management, and computer skills—as well as in mock interviews and academic performance. Furthermore, students' perceptions of JEEP's effectiveness significantly influenced their development of various skills, including communication, analytical thinking, interpersonal skills, and performance in mock interviews, as well as English proficiency, management, computer skills, and academic achievement.

The rejection of the null hypothesis confirms that students' evaluations have a meaningful impact on their skills development, highlighting the program's crucial role in enhancing their readiness for employment (Perez & Santos, 2021). These findings support the research objective of evaluating JEEP's effectiveness by showing that the program reliably enhances students' skills and employability. Students' positive perceptions significantly contributed to their development in communication, analytical thinking, and interview skills, confirming that JEEP plays a crucial role in preparing students for employment.

Table 1.5 shows the distribution of students rating on JEEP effectiveness.

Indicators	4.7-5.0 Very Effective		3.7-4.71 Effective		2.7-3.69 Moderately Effective		Test Stat
	X	Desc	X	Desc	X	Desc	F-value
1. English Proficiency	3.61	G	3.54	G	3.03	G	3.91*
2. Employability Skills	3.95	VG	3.52	G	3.31	G	5.94**
2.1Communication Skills	4.7	VG	4.09	VG	3.17	G	3.06**
2.2 Creative and Critical Thinking	3.10	G	3.09	G	2.94	G	0.12ns
2.3 Analytical Thinking Skills	4.90	E	3.83	VG	4.64	VG	7.59**
2.4 Interpersonal Skills	3.90	VG	3.50	G	3.40	G	4.11**
2.5 Management Skills	4.80	E	4.22	VG	4.64	VG	2.24*
2.6 Negotiation Skills	2.37	F	2.62	F	2.21	F	1.00ns
2.7 Computer Skills	4.28	VG	4.35	VG	3.91	VG	3.00*
2.8Job Application Skills	3.83	VG	3.35	G	3.26	G	4.96*
2.8.1 Knowledge on CV Writing	3.90	VG	3.30	G	3.50	G	1.33ns
2.8.2 Preparing for interview	4.20	VG	3.56	G	3.78	VG	1.48ns
2.8.3 CV Writing	3.28	G	3.26	G	2.85	G	1.52ns
2.8.4 Mock Interview	3.94	VG	3.26	G	2.89	G	3.94*
3. Academic Performance	3.86	VG	3.56	G	3.49	G	4.51*

Legend: + sig. at 0.1 level; *sig. at 0.05 level, ** high sig. at 0.01 level.
VG = Very Good, G= Good, F= Fair, ns=not significant

Problem No.2 To what extent is the contribution of the English proficiency on the respondents' employability skills and academic performance?

English proficiency has a substantial effect on employability skills. The regression coefficient of 0.36 indicates that for every one-unit increase in English proficiency, employability skills increase by 0.36 units. This relationship is statistically significant ($F = 29.96$, $p < 0.01$), and English proficiency explains 19% of the variance in employability skills (Adjusted $R^2 = 0.19$). This means nearly one-fifth of the differences in employability skills among respondents can be attributed to differences in their English proficiency.

English proficiency also strongly impacts academic performance. The coefficient of 0.44 suggests that a one-unit increase in English proficiency leads to a 0.44-unit increase in academic scores, starting from a baseline score of 1.93 when proficiency is zero. The model's high F-value (60.87) and highly significant p-value (< 0.00001) confirm the robustness of this relationship. English proficiency accounts for 33% of the variation in academic performance (Adjusted $R^2 = 0.33$), indicating it is a key predictor, although other factors also influence academic success. These findings highlight the critical role of English proficiency in enhancing both employability and academic outcomes. Language development programs like JEEP are thus essential in fostering skills that improve career readiness and academic achievement.

Problem No. 3 What is the result of the focus group discussion and interview with participants?

Analysis on the result of the focus-group discussion and interviews
The analysis of the data revealed several key themes concerning participants' perceptions and experiences with the JEEP program:

Perceived Relevance and Engagement of the Program
Participants widely regarded the program as highly relevant to their personal and professional development. Students expressed that the activities were practical and applicable to real-world situations. For instance, an engineering student mentioned, *"The CV writing and interview practice helped me understand what employers look for."* Teachers also noted increased student motivation, stating, *"Students are more engaged because they see the connection between the skills they learn and their future careers."*

Improvement in Communication Skills
A prominent theme was the enhancement of communication skills. Many students reported increased confidence in speaking and clarity in expressing ideas. An agriculture student shared, *"I used to be shy, but now I feel more comfortable speaking in front of others."* Teachers observed observable changes, noting that students participated more actively in discussions and demonstrated better pronunciation and vocabulary use.

Development of Critical Thinking and Creative Skills
Participants highlighted that activities such as problem-solving exercises and scenario- based tasks fostered critical and creative thinking. An education student stated, *"The program encouraged me to think critically about my strengths and how to present them during interviews."* Teachers echoed this, emphasizing that such tasks helped students analyze situations and develop strategic responses.

Enhancement of Interpersonal and Leadership Skills
Group-based activities facilitated teamwork and leadership development. Students described experiences of collaborating with peers, with an Engineering student, explaining, *"Working in teams helped me learn how to communicate and lead effectively."* Teachers observed improved interpersonal skills, noting students' respectful communication and ability to work cooperatively.

Increase in Digital Literacy
Exposure to ICT tools and courseware was another positive outcome. Participants reported gaining confidence in using digital platforms relevant to job applications and online communication. A Food Technology student commented, *"Learning how to use the online tools made me more comfortable with digital communication."*

FINDINGS

The findings indicate that most respondents were aged 19 to 21 years and female. Most participants were enrolled in Education courses through the EFIE and BPO pathways. The respondents generally perceived the JEEP program as effective in enhancing various employability skills, particularly communication, critical thinking, and leadership. Self- assessment data revealed that most students rated their English proficiency as good to very good, with strengths in spelling and language accuracy; however, verb tense usage was identified as an area requiring further development. Overall, the respondents demonstrated strong competencies in creative and analytical thinking, interpersonal skills, and computer literacy, with an average academic performance rating of 85%. Younger students and those enrolled in the BPO pathway exhibited higher levels of skills and academic achievement. Additionally, female respondents outperformed males in communication and academic performance, whereas males showed higher proficiency in analytical and management skills. Statistical analysis indicated a positive correlation between

English proficiency and
Both employability and academic performance, suggesting that language skills significantly contribute to overall student development.

CONCLUSION

The results of this study demonstrate that the Job Enabling English Proficiency (JEEP) program, through its integration of computer-assisted language learning, classroom-based interventions, and multimedia resources, substantially enhances students' English proficiency and employability skills. Feedback from students, educators, and employers indicate that the program effectively fosters critical competencies such as communication, critical thinking, interpersonal, and technical skills essential for the modern labor market. Guided by Systems Theory, the program's emphasis on feedback mechanisms and continuous improvement ensures sustained skill development and adaptability to learners' needs.

RECOMMENDATIONS

Based on the findings that English proficiency significantly contributes to both employability skills and academic performance, the following recommendations are proposed: The JEEP Program should be further strengthened by enhancing its content with more practical activities, such as verb tense application, CV writing, interview simulations, and negotiation exercises, to better equip students with relevant language and job readiness skills. Students are encouraged to actively engage in all JEEP activities, develop attentive listening skills, and apply their language learning in real-life situations to improve communication, critical thinking, and interpersonal skills. The JEEP coordinator should continue providing in-service training for teachers, regularly monitor program implementation, and gather feedback from stakeholders to support continuous improvement. Upgrading learning facilities, improving internet connectivity, and strengthening partnerships with employers is highly encouraged to further support graduates' employability. It is also recommended to develop evaluation tools to assess the effectiveness of both JEEP Start and JEEP Accelerate, and to conduct a tracer study on JEEP graduates to determine their employment outcomes. Lastly, similar research may be conducted by other institutions to validate and expand these findings.

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Performance of Academic Programs in Asian Institute of Maritime Studies: Evaluating the Impact of Quality Management Practices on Attaining High Level of PACUCOA Accreditation

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ABSTRACT

This study investigates the impact of quality management practices on the accreditation performance of the Asian Institute of Maritime Studies (AIMS), specifically in relation to achieving higher levels of accreditation from the Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA). Utilizing a predictive correlational and descriptive quantitative research design, the study analyzed performance data across five academic schools within AIMS using parameters such as operational compliance, faculty profile, research productivity, course development, and training participation. Results indicate that the School of Maritime Business (SMB), School of Heritage Education (SHE), and School of Graduate Studies (SGS) are best positioned for Level III–IV accreditation based on consistently high performance in both internal and external quality indicators. Regression and correlation analyses identified significant relationships between operational systems and course development ($r = .54$, $p < .01$), as well as planning and training implementation ($R^2 = .38$, $p < .001$). The findings underscore the importance of integrated Total Quality Management (TQM) systems in enhancing institutional performance and accreditation readiness.

Keywords: Quality Management Practices, Accreditation, Total Quality Management, Academic Performance Evaluation

INTRODUCTION

Accreditation plays an essential role in the academic industry. It attests to the fact that a university achieves high quality standards and serves as a mechanism for quality assurance and institutional legitimacy (Kumar et al., 2020; Romanowski, 2021). Without certification, degrees from that institution may not be valued, and accreditation remains a powerful mechanism for ensuring that higher education institutions meet prescribed standards and adapt to changing global requirements (Kumar et al., 2020). Furthermore, accreditation acts as a catalyst, encouraging colleges to continuously develop and remain relevant in today's rapidly evolving educational landscape (A. Zamil & A. Areiqat, 2020; Shahzaf Iqbal et al., 2023). It is an essential resource for students seeking reputable schools and guarantees that education continues to advance in a constantly shifting environment.

The role of accreditation in educational improvement is particularly emphasized in developing countries, where its implementation is viewed as a key strategy for maintaining global standards (Cabacang, 2021; Papanthymou & Darra, 2017). In the Philippines, accreditation is a voluntary but vital process that involves assessments by independent bodies using specific criteria and methodologies (Miranda & Reyes-Chua, 2021; Mariano & Valenzuela, 2021). Frameworks such as Outcomes-Based Education (OBE) and the Malcolm Baldrige Framework are integral to these quality assurance practices (Hapinat, 2023). However, challenges such as inadequate funding for research and non-uniform standards among accrediting agencies persist and demand recalibration to ensure consistency in quality assurance (Hapinat, 2023; Mariano & Valenzuela, 2021).

The Asian Institute of Maritime Studies (AIMS) has demonstrated a strong and continuous commitment to quality education. Since obtaining its first ISO 9001 certification in 2001, this milestone marked the beginning of AIMS's journey toward embedding Total Quality Management (TQM) principles in its academic and operational processes. TQM, as applied in higher education institutions (HEIs), encompasses practices such as continuous improvement, customer focus, strategic planning, and top management commitment (Rodriguez et al., 2018; Yaakub & Samsudin, 2019; Ren, 2024). AIMS's pursuit of excellence has further been validated by accreditations from the Philippine Council for NGO Certification (PCNC) and the Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA). These accomplishments reflect its dedication to academic excellence, stakeholder satisfaction, and quality assurance (Azizah & Witri, 2021; Shaqrah, 2020).

The positive impact of these quality initiatives is evident in the institution’s educational outcomes, particularly in the performance of its graduates in professional licensure examinations. Many AIMS graduates have excelled in the Customs Brokers Licensure Examinations and other maritime licensure exams. This consistent success indicates the effectiveness of TQM practices such as benchmarking, process management, and a focus on continuous development (Ren, 2024; Lagrosen, 2017). These outcomes align with research suggesting that embedding quality culture within institutions improves educational performance and graduate readiness (Manatos et al., 2017; Cabacang, 2021).

AIMS has undergone a rigorous accreditation process by PACUCOA, successfully meeting many of the critical parameters for accreditation. Despite these gains, the institution is currently at Level II and recognizes that progressing to Level IV remains a significant challenge. Barriers such as resource limitations, resistance to change, and curriculum development are commonly cited in the literature as hindrances to full TQM implementation (Qasserras, 2021; Aziz et al., 2021; Khurniawan et al., 2020). While AIMS is committed to continuous improvement and working actively to elevate its status, uncertainties remain about whether the institution can attain the highest level of accreditation, particularly in light of challenges faced by similar institutions in developing nations (Pillay & Bozas, 2016). Ultimately, the link between quality management practices and accreditation is well established (Azizah & Witri, 2021; Fakhrurrozi & Hamdani, 2022). By enhancing internal processes, leadership, and stakeholder engagement, institutions like AIMS can strive toward higher accreditation levels and remain competitive in an increasingly globalized academic environment.

Statement of the Problem

Several studies have highlighted the significant impact of quality management practices on achieving higher levels of accreditation among educational institutions worldwide. This research aims to evaluate the extent to which the quality management practices at AIMS align with the standards required for higher-level accreditation. Specifically, it seeks to determine whether the existing practices are already sufficient to support such accreditation or if there are areas needing improvement. The findings of this study are intended to assist the institution in identifying its strengths and addressing potential weaknesses, thereby ensuring better preparedness before pursuing a more advanced level of accreditation.

Framework of the Study

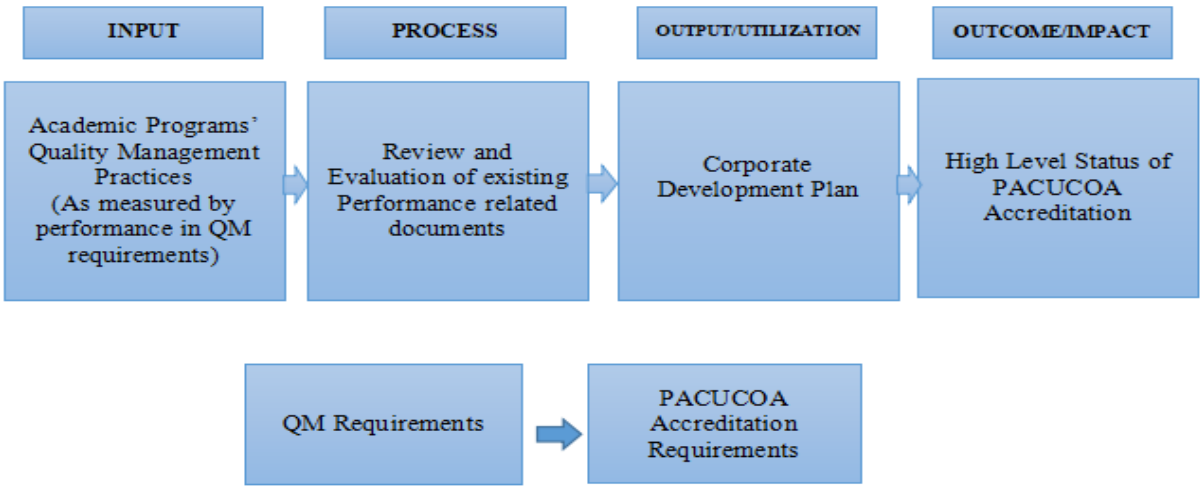

Figure 1: IPOO and IV-DV Model

This research adopts both the IPOO (Input-Process-Output-Outcome) model and the Independent Variable–Dependent Variable (IV-DV) model, focusing on the academic performance of each program within the institution. Through these models, performance data is systematically collected and analyzed, with particular attention given to identifying gaps in each parameter. These identified gaps help uncover both strengths and weaknesses, which, in turn, inform the formulation of an enhanced Corporate Development Plan for Academic Year 2024–2025. This development plan serves as a comprehensive master plan aimed at achieving higher-level accreditation for all programs through PACUCOA. To effectively measure quality management practices, the study highlights several institution-specific requirements as key indicators.

Furthermore, the study measures the impact of each quality management practice on accreditation requirements prescribed by PACUCOA. In this context, the quality management practice parameters serve as the independent variables (IVs), while the key accreditation requirements serve as the dependent variables (DVs) of the study. The IPOO model allows for a systematic evaluation of how inputs such as faculty, curriculum, and resources are transformed through institutional processes into measurable outputs and long-term outcomes, such as improved program quality and progress toward PACUCOA accreditation. This framework helps identify performance gaps and strengths, which inform the formulation of a data-driven Corporate Development Plan for Academic Year 2024–2025. Meanwhile, the IV-DV model enables the study to examine the impact of specific quality management practices (independent variables) on the fulfillment of key accreditation requirements (dependent variables), providing a quantitative basis for determining which practices most significantly influence accreditation outcomes. Together, these models support a results-oriented, evidence-based approach to institutional development and accreditation readiness.

METHODOLOGY

Research Design. Predictive correlational design is used in research studies that involves predicting dependent variables from a set of independent variables as well as establish the relationship between different variables (McBurney & White, 2009). Descriptive quantitative research design involves systematically collecting and summarizing numerical data to provide a comprehensive overview of a phenomenon, population, or group. It relies on structured data collection methods like surveys and statistical analyses to address research questions objectively. This approach is ideal for generating quantifiable insights, ensuring population representation, and facilitating generalization. This research design was used since several regression models was utilized in this research. This research also attempts to determine the extent of predictability of certain independent factors.

Population, Samples and Sampling techniques. The population under study for this research encompasses all academic programs offered by the institution, notably the School of Merchant Marine (SMM), School of Maritime Business (SMB), School of Heritage Education, School of Engineering and Architecture (SEA), School of Graduate Studies (SGS). These academic programs represent diverse disciplines and provide a comprehensive overview of the institution's educational offerings. To ensure thoroughness and comprehensiveness in the research, documents and reports from each of these academic programs were meticulously studied and reviewed.

Research Instrument. The research instrument utilized in this study is a compilation of key performance parameters specific to each academic office within the institution. These parameters were carefully identified based on their significance in assessing adherence to educational standards within each respective office. By compiling these key performance parameters, the research instrument serves as a comprehensive guide in the systematic examination and evaluation of pertinent documents and reports. The research instrument focuses on the completion of the operational requirements, accreditation requirements, performance evaluation results of every department, attainment of plans, programs, and activities, engagement in partnership, compliance to basic faculty requirements, research requirements, training requirements, productivity in terms of course development, course evaluation, and compliance in extension department. The said instrument were compiled by the quality officers of each school thru compilation of data on the said parameters for the past 3 years.

Data Gathering Procedure. The data collection process in this research followed a systematic approach to gather information from all academic departments. Initially, the researchers identified the key parameters essential for evaluating each department. Subsequently, they visited each department and requested relevant documents and reports crucial for the study. Engaging with faculty, staff, and administrators, they ensured comprehensive retrieval of pertinent materials.

Various documents were collected, including curriculum guides, academic policies, student performance reports, and faculty evaluations. Each document underwent careful review to ascertain its relevance to the research objectives. Following the collection phase, rigorous verification procedures were employed to ensure the accuracy and coherence of the gathered information.

Upon completion of data collection and verification, the researchers conducted a detailed analysis to identify patterns and insights within the gathered data. This analysis provided a comprehensive understanding of the functioning of each academic department.

Finally, the researchers synthesized their findings into a comprehensive report. This report was shared with institutional stakeholders, including academic departments and administration, to inform decision-making processes aimed at enhancing institutional effectiveness. Through this methodical approach, the researchers successfully gathered pertinent information crucial for the research study.

***Statistical Techniques Used*.** Several statistical techniques were used in the study, and these are the following:

1. Descriptive statistics were employed to summarize and present the collected data. This involved calculating measures such as mean, standard deviation, and range to describe the central tendency, dispersion, and distribution of variables within each academic department. For example, descriptive statistics were utilized to summarize compliances per office and per academic year. This provided researchers and stakeholders with a clear overview of the characteristics and performance indicators within each school.
2. Multiple correlation analysis was employed to explore the relationships between multiple independent variables and a single dependent variable. In the context of the research, multiple correlation could be used to investigate the simultaneous influence of various factors. By examining these relationships, researchers could identify the most significant predictors of success within each academic department, thereby informing targeted interventions and resource allocation strategies.
3. Linear regression analysis was used to model the linear relationship between one compliance. In the research context, linear regression could be applied to predict outcomes such compliance rates. By employing linear regression, researchers identified which factors have the most significant impact on desired outcomes and develop predictive models to inform strategic planning and decision-making within the institution.

RESULTS

Table 1. Performance of Schools on every evaluation parameter

Parameter	School of Merchant Marine	School of Maritime Business	School of Engineering and Architecture	School of Heritage Education	School of Graduate Studies
Operational Requirements	81.42	85.9	80.79	84.17	81
Accreditation Requirements	86.5	100	90.83	87.33	84.33
Performance Evaluation	83.29	89.37	87.07	85.71	90.59
Attainment of Plans, programs and activities	72.75	62.12	80.73	81	81
Partnership Engagement	84.25	88.75	90	85.5	90
Faculty Compliance	83.42	90	86	90	95
Research Requirements	83	84.83	82.47	86.33	81
Training	86.25	89.17	90	90	90
Development of Courses	91.25	93.75	90	95	90
Course Evaluation	95	94.17	94	95	90
Extension	90.67	90.08	82.8	90	81

Across the majority of parameters, the School of Maritime Business (SMB) consistently demonstrates superior performance, including a perfect score in Accreditation (100.00), and high ratings in Faculty Compliance (90.00), Course Evaluation (94.17), and Development of Courses (93.75). These findings suggest that SMB is well-positioned for Level 3–4 accreditation, reflecting robust compliance with both internal and external standards. The School of Heritage Education (SHE) and School of Graduate Studies (SGS) follow closely, with SGS excelling in Performance Management (90.59) and Faculty Compliance (95.00), indicating a strong emphasis on faculty quality and performance systems. SGS

also shows consistent scores in Training, Development of Courses, and Partnerships, all at 90.00, highlighting its strong academic support mechanisms and stakeholder collaboration.

Meanwhile, the School of Engineering and Architecture (SEA) shows strengths in Partnerships (90.00), Training (90.00), and Course Evaluation (94.00). However, it presents moderate scores in Operational (80.79) and Extension (82.80), suggesting areas for growth. The School of Merchant marine (SMM) scores comparatively lower in Attainment of Plans and Programs (72.75) and Operational Compliance (81.42), yet achieves top scores in Course Evaluation (95.00) and Development of Courses (91.25). These results suggest that while SMM has solid academic foundations, it could benefit from strategic improvements in execution and planning to reach higher accreditation levels. In conclusion, the comparative scores across schools highlight the readiness of SMB, SHE, and SGS for higher accreditation levels (Level 3 or 4). SEA is viable for Level 2–3, while SMM may aim for Level 2 with focused improvements.

Table 2. Correlation Matrix of All Parameters

1	2	3	4	5	6	7	8	9	10	11
1										
0.30*	1									
0.07	0.12	1								
-0.04	-0.15	-0.25	1							
0.12	0.28	.30*	0.16	1						
0.24	0.09	0.14	0.11	0.24	1					
0.32*	0.26	0.04	0.19	0.12	0.33*	1				
0.32*	-0.15	-0.21	.62**	0.24	0.09	0.21	1			
0.54**	0.24	0.11	0.10	-0.00	0.25	.52**	0.28	1		
0.05	0.06	-0.05	-0.13	0.31	-0.01	0.16	-0.19	0.02	1	
0.31*	0.11	-0.04	-0.18	0.39	-0.04	.46**	-0.07	.62**	0.15	1

Legend: 1= Operational Requirements, 2= Accreditation Requirements, 3= Performance Evaluation, 4 = Attainment of Plans, Programs, & Activities, 5 = Partnership, 6=Faculty Compliance, 7=Research, 8=Training, 9 =Development of Courses, 10 = Course Evaluation, 11= Extension

Table 2 presents the correlation matrix showing the relationships among 11 institutional parameters. These include Operational, Accreditation, Performance Evaluation, Attainment of Plans and Programs, Partnership, Faculty Compliance, Research, Training, Development of Courses, Course Evaluation, and Extension. The strength and direction of relationships are interpreted using standard thresholds, with p-values indicating statistical significance ($p < .05$ for * and $p < .01$ for **).

Operational Requirements showed significant positive correlations with Accreditation ($r = .30$, $p < .05$), Research ($r = .32$, $p < .05$), Training ($r = .32$, $p < .05$), Development of Courses ($r = .54$, $p < .01$), and Extension ($r = .31$, $p < .05$). These findings suggest that stronger operational systems are related to higher levels of external compliance, course quality, faculty development, and outreach. Accreditation was moderately associated with Partnership ($r = .28$) and Research ($r = .26$), although not all values reached statistical significance. These results imply that institutions with higher accreditation standards tend to have better external engagement and scholarly productivity.

Performance Evaluation showed a significant positive correlation only with Partnership ($r = .30$, $p < .05$), indicating that faculty and staff evaluation processes may support collaborative efforts. However, its weak or negative associations with most other variables suggest limited direct influence. A strong positive relationship was found between Attainment of Plans and Programs and Training ($r = .62$, $p < .01$). This confirms that successful implementation of plans leads to better training performance. However, Attainment of Plans had negative correlations with several variables, including Accreditation ($r = –.15$), Performance Evaluation ($r = –.25$), and Extension ($r = –.18$), indicating potential misalignment between planning and certain quality indicators. Faculty Compliance was significantly

associated with Research ($r = .33$, $p < .05$), suggesting that faculty qualifications are positively linked to research outputs. Other relationships were modest but not statistically significant. Research showed strong correlations with Development of Courses ($r = .52$, $p < .01$) and Extension ($r = .46$, $p < .01$). These results imply that departments active in research are more likely to excel in curriculum innovation and community engagement. Training was also positively related to Development of Courses ($r = .28$) and Attainment of Plans ($r = .62$, $p < .01$), reinforcing the idea that strategic execution influences capability-building efforts. Development of Courses had significant correlations with Operational ($r = .54$, $p < .01$), Research ($r = .52$, $p < .01$), and Extension ($r = .62$, $p < .01$), showing it is a central factor connected to both institutional processes and external outcomes. ,Finally, Extension was significantly related to Operational Requirements ($r = .31$, $p < .05$), Research ($r = .46$, $p < .01$), and Development of Courses ($r = .62$, $p < .01$), suggesting that outreach efforts are often grounded in strong research and curriculum development foundations. In summary, the results show that Operational Requirements, Research, and Development of Courses are central to various institutional outcomes. Strong linkages across these parameters emphasize their role in driving overall academic quality and performance.

Table 3 Summary Regression Statistics

Predictor Variable	Outcome Variable	R	R^2	Adjusted R^2	F	p-value	Effect (slope)	Variance Explained (%)
Operational Requirements	Accreditation Compliance	0.3	0.09	0.07	4.27	0.04	0.5	9%
Operational Requirements	Research Compliance	0.32	0.1	0.08	4.92	0.03	0.18	10%
Operational Requirements	Training	0.32	0.1	0.08	4.89	0.03	0.09	10%
Operational Requirements	Development of Courses	0.54	0.29	0.28	17.84	0.00	0.24	29%
Performance Evaluation	Partnerships	0.3	0.09	0.07	4.37	0.04	0.27	9%
Attainment of Plans, Programs, and Activities	Training	0.62	0.38	0.37	26.82	0.00	0.05	38%
Faculty Profile Compliance	Research Compliance	0.33	0.11	0.09	5.4	0.02	0.24	11%
Development of Courses	Research Compliance	0.52	0.28	0.26	16.31	0.00	0.66	28%

Operational Requirements was found to be a significant predictor of several outcomes. It explained 9% of the variance in Accreditation Compliance ($R^2 = .09$, $F = 4.27$, $p = .04$), with a small effect size (slope = 0.5). A similar relationship was observed with Research Compliance and Training, explaining 10% of the variance in each outcome ($p = .03$ for both). Though the effects were small (slope = 0.18 and 0.09, respectively), the results suggest that stronger adherence to operational requirements may support higher levels of research and training compliance.

A stronger effect was found between Operational Requirements and Development of Courses. The model explained 29% of the variance ($R^2 = .29$, $F = 17.84$, $p < .001$), with a moderate effect size (slope = 0.24). This indicates that operational systems have a more direct impact on course development efforts compared to other outcomes. Individual Performance Evaluation also had a modest predictive relationship with Partnerships, explaining 9% of the variance ($R^2 = .09$, $F = 4.37$, $p = .04$). This suggests that individual faculty evaluations may influence how departments engage in external collaborations. A stronger predictive relationship was observed between the Attainment of Plans, Programs, and Activities and Training, explaining 38% of the variance ($R^2 = .38$, $F = 26.82$, $p < .001$). Although the slope was small (0.05), the high variance explained shows that strategic planning significantly influences training implementation. Regarding Faculty Profile Compliance, it explained

11% of the variance in Research Compliance ($R^2 = .11$, $F = 5.4$, $p = .02$), with a modest effect size (slope = 0.24). This shows that better faculty credentials and compliance profiles may contribute to higher research outputs. Finally, Development of Courses was also found to significantly predict Research Compliance, explaining 28% of the variance ($R^2 = .28$, $F = 16.31$, $p < .001$). The effect size was strong (slope = 0.66), indicating that course development is a strong factor in supporting research activities. play important roles in various compliance areas. Stronger operational systems and faculty development efforts appear to support course development, research, and training outcomes. These relationships offer practical insights for institutional leaders seeking to enhance academic performance and accreditation readiness.

CONCLUSION

The findings of this study affirm that the implementation of quality management practices significantly influences the attainment of higher-level accreditation at the Asian Institute of Maritime Studies (AIMS). The analysis reveals that parameters such as operational requirements, research productivity, development of courses, and training programs are key predictors of compliance with accreditation standards, particularly those established by PACUCOA. Notably, schools such as the School of Maritime Business (SMB), School of Heritage Education (SHE), and School of Graduate Studies (SGS) demonstrated strong performance across multiple indicators, positioning them well for Level III or IV accreditation.

Statistical analyses, including regression and correlation techniques, confirmed that internal processes such as strategic planning, operational adherence, faculty compliance, and course development are highly interrelated and directly contribute to academic and institutional excellence. The correlation between operational excellence and course development ($r = .54$, $p < .01$), as well as the influence of planning on training implementation ($R^2 = .38$), underscores the interconnected nature of institutional quality components.

However, the results also suggest areas for development, particularly in the School of Merchant Marine (SMM) and the School of Engineering and Architecture (SEA), where scores in planning and operational compliance were relatively lower. The variability in compliance levels across academic units indicates the need for a more unified and targeted approach to Total Quality Management (TQM) to ensure institutional consistency and strategic alignment across all departments.

RECOMMENDATION

Based on the study findings, the following recommendations were made:

1. Implement a comprehensive monitoring system to ensure that all required documents, are consistently updated, reducing oversight in compliance tracking.
2. Focus on targeted training and resource allocation to improve module compliance,
3. Facilitate collaboration among departments to leverage strengths.
4. Sustain increased efforts in sustaining course module engagement and research initiatives to boost compliance impacts in these areas. This will enhance program recognition and faculty productivity.
5. Sustain increased support by management to research and extension activities.

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The Extent of Competency and Achievements of Administrative Division in Asian Institute of Maritime Studies (AIMS): An Impact Study of Quality Assurance Management Towards the Highest Level of PACUCOA Accreditation

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ABSTRACT

The study titled "The Extent of Competency and Achievements of the Administrative Division in Asian Institute of Maritime Studies (AIMS): An Impact Study of Quality Assurance Management Towards the Highest Level of PACUCOA Accreditation" aims to assess the institutional effectiveness and administrative performance using a structured evaluation framework. Employing the Independent, Main Phenomenon, Outcome, Utilization (IMPOU) Model, the research spans three academic years (2021-2024) and uses a descriptive-correlational design to gauge quality assurance efforts across several dimensions, including governance, management, research, extension services, student support, and external partnerships. Data were gathered via surveys, interviews, and departmental performance reviews, analyzed through statistical methods like mean, median, standard deviation, and correlation matrices.

Further analysis indicates a significant correlation between administrative engagement in research and extension activities and improved organizational performance, with notable achievements. In student services, high involvement was found in marketing, guidance programs, and alumni affairs, which significantly influenced overall departmental effectiveness. Temporal analysis across three years revealed progressive improvements in performance metrics, with overall compliance scores increasing from M = 82.5 in 2021 to M = 90.2 in 2024, indicating successful implementation of data-driven strategies and continuous improvement efforts.

The study underscores the importance of leveraging data analytics to inform evidence-based decision-making and enhance institutional performance. By systematically utilizing performance data, the Administrative Division at AIMS can optimize resource allocation, streamline processes, and bolster stakeholder satisfaction, aligning with the standards required for PACUCOA Level 4 accreditation. The findings suggest a need for ongoing capacity-building initiatives, enhanced data collection mechanisms, and a commitment to transparency and stakeholder engagement to drive sustained growth and excellence. The proposed recommendations include strengthening data literacy, fostering interdisciplinary collaboration, and prioritizing strategic interventions in underperforming areas. These measures are expected to bolster the institution's Quality Management System (QMS), enabling it to meet and exceed accreditation benchmarks and maintain a culture of continuous improvement.

Keywords: Competency, Quality Assurance Management, Administrative Division

INTRODUCTION

Background of the Study. In today's swiftly evolving landscape, organizations spanning various sectors, from corporate enterprises to educational institutions, find themselves coping with escalating competitive pressures. The relentless time welcomes an era marked by corporate strategic endeavors, industry-wide expansions, and a perceptive stakeholder base demanding excellent products and services. Amid these heightened expectations and transformative academe dynamics, the Asian Institute of Maritime Studies (AIMS), one of the leading Maritime Higher Education Institutions, stands at a critical phase. With stakeholders demanding solutions to greater complexity and ease of processes, AIMS recognizes the imperative of embarking on an ongoing journey of innovation and expansion. Rooted in robust research and continuous quality improvement, this journey aims to uphold and enhance the quality of education and programs offered by the institution through competencies in governance and management, uptake of student services, established partnerships and collaborations, and impactful corporate social responsibility engagements through extension programs and services to communities through AIMS Quality Assurance perspectives.

In the year 1999, AIMS has invested in 1st Quality Assurance by getting ISO 9001 Certification through the American Bureau of Shipping. Since then, Quality Assurance Mechanism Frameworks has been nurtured. Prior to this accreditation, AIMS suffered a great loss happened when M/V AIMS Training Ship and the Modern Bridge facilities succumbed to fire and accidents. These major losses led to opportunity to uptake to a standardized process, program, and services. Using the Plan-Do-Check-Act (PDCA) cycle employed the international standard in each process, program and services with the risked-based thinking approach according to ISO9001:2015E, 2015 (Bravi et al, 2019).

Following CHED Memorandum Order No. 17 series of 2010, The Commission on Higher Education (CHED) is tasked to be in charge of the development of the research capabilities of HEIs in the Philippines under Section 8 of Republic Act (RA) No. 7722. Additionally, CHED is mandated to promote cooperation and knowledge exchange between and among institutions of higher learning (HEIs), research agencies, organizations, and individual scientists and researchers who are seen to be crucial factors in advancing and growing research competence as well as improving research productivity. This requirement no longer exempts the Maritime Higher Education Institutions (MHEIs) in the Philippines. As one of the world's top producers of seafarers, MHEIs should be committed to ongoing research in order to provide insightful and significant findings that aim to safeguard Filipino seafarers' interests as well as to uphold the nation's standing in the maritime industry (Cajala, 2023).
Although, the Asian Institute of Maritime Studies (AIMS) has achieved a significant milestone by successfully navigating a rigorous accreditation process led by the Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA). AIMS has demonstrated its commitment to maintaining high standards in education and academic excellence, it currently holds level 3 accreditation. Recognizing the considerable challenges in achieving higher accreditation levels, such as PACUCOA Level IV, AIMS remains dedicated to a journey of continuous improvement, emphasizing its commitment to quality education and rigorous standards.

However, the pursuit of advanced accreditation levels presents uncertainties. Achieving this goal demands substantial resources, unwavering dedication, and alignment with stringent criteria. To address this concern effectively, AIMS can strategically plan its path, allocate necessary resources, prioritize faculty and staff development, rely on data-driven decision-making, seek external guidance, engage stakeholders, maintain transparent communication, and foster a culture of continuous improvement.
This study is designed to evaluate the competencies and achievements of the Administrative Division at AIMS. By analyzing data from various departments and considering the influence of leadership over a three-year period, the study aims to provide insights that will contribute to the Administrative Division's continuous growth and alignment with AIMS' overarching mission and vision.
Statement of the Problem. This study aims to assess the extent of competencies and achievements of the Administrative Division of the Asian Institute of Maritime Studies (AIMS) over a three-year period (2021-2024). Specifically, it seeks to answer the following questions:

1. What are the levels of competencies of the Administrative Division of AIMS in terms of: 1.1 Governance and Management; 1.2 Research and Development; 1.3 Extension Programs and Outreach Services; 1.4 Student Services and Alumni Development; 1.5 Partnerships and Collaborations?
2. How does the administrative performance and engagement influence the institution's progress toward achieving the highest level of PACUCOA accreditation?
3. What is the relationship between the extent of administrative competencies, quality assurance practices, and the improvements in institutional performance achieved over the three-year period?

Significance of Study. This study may guide AIMS management to assess the competencies and achievements of the Administrative Division at AIMS. By analyzing data from various departments and considering the influence of leadership over a three-year period, the study aims to provide insights that will contribute to the Administrative Division's continuous growth and alignment with AIMS' overarching mission and vision.

Scope and Limitations of the Study. This study is limited to administrative personnel of AIMS. The checklist will be sent through to Administrative Division Directors and Heads. The duration of this study covers three (3) years info data base collection based on analysis of data gathered from the Academic Year 2020-2021 to AY 2023-2024.

Conceptual Framework. The researchers adopt the Independent, Main Phenomenon, Outcome, Utilization (IMPOU) Model. This model provides the general structure and guide for the assessment of the Administrative Division competencies and achievements. The Main Phenomenon includes the data analysis and interviews that needs to develop using the using the checklist provided to the respondents, collating and presenting data, interpretation based on the result, looking at the significant relationships, and lastly the analysis and interpretation. In the Outcome Phase, it focuses the findings to enhance key institutional activities. Improvements are targeted in areas like internal quality assurance (IQA), research and extension services, student support, and external collaborations. This outcome-driven approach allows institutions to measure tangible progress and align their initiatives with strategic goals. In the Utilization Phase, final phase emphasizes the application of insights gained from the analysis. It guides policy formulation and decision-making processes, facilitating data-driven strategies aimed at fostering continuous development. The model aims to help institutions achieve higher accreditation levels, such as the PACUCOA Level 4, by promoting a culture of evidence-based practices and quality enhancement.

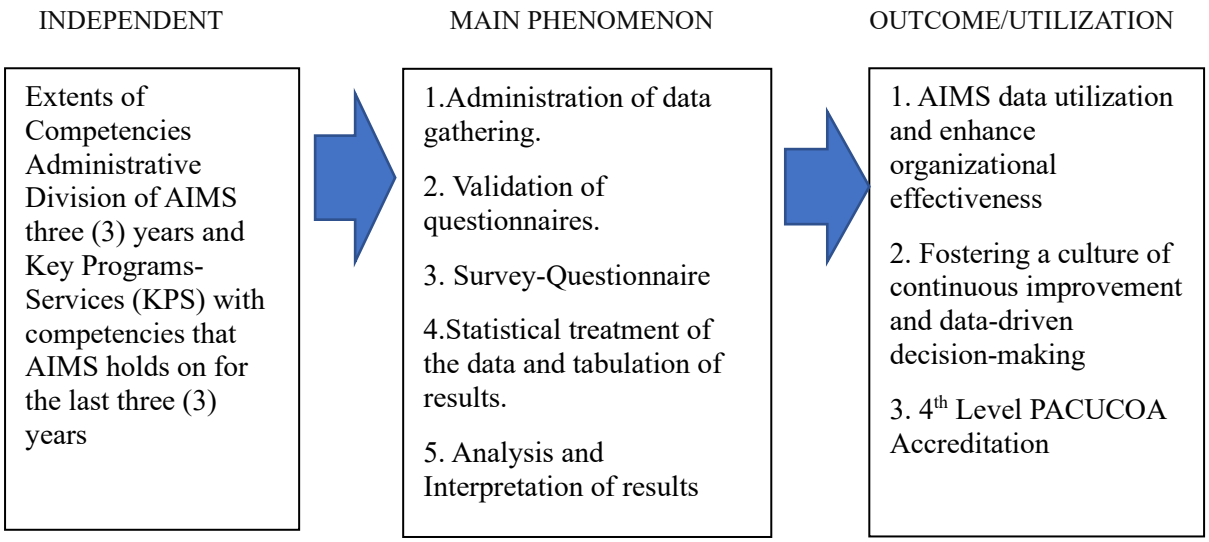


Figure 3: Research Paradigm

METHODOLOGY

Research Design. Descriptive correlational design is used in research studies that aim to provide static pictures of situations as well as establish the relationship between different variables (McBurney & White, 2009). Descriptive correlational quantitative research design involves systematically collecting and summarizing numerical data to provide a comprehensive overview of a phenomenon, population, or group. This design involves the measurement and analysis of the relationships between multiple variables collected in a cross-sectional survey, without any attempt to manipulate the characteristics of the participants or control the values of the variables (Creswell, 2014). It relies on structured data collection methods like surveys and statistical analyses to address research questions objectively. The questionnaires were divided into four sections: Engagement and Participation in Research, Extension, and Training Development; Competencies, Quality Assurance Practices, and Institutional Performance; Internal Quality Assurance; and Engagements in Student Services and Development.

Sources of Data. The source of the empirical quantitative data came from a cross-sectional survey of Administrative Division employees of AIMS who required to complete a questionnaire. Secondary sources of data will include books, theses, online journals, and the internet. Information about the Quality Assurance Management policies and practices.

Population and Setting of the Study. The study was conducted at the Asian Institute of Maritime Studies (AIMS) in Pasay City, Metro Manila, Philippines. The study was conducted during the school year 2022-2023 and tapped administrative employees of AIMS as survey respondents. Purposive sampling has been used as selection of 39 administrative personnel from Job level 2 to Job Level was initiated especially knowledgeable about the indicators relative to the questionnaires.

The Research Instrument. The researchers developed a self-made questionnaire that encompass competency of Administrative Division in terms of Governance and Management, Research and Development, Extension Programs and Outreach Services, Student Services and Alumni Development, Partnership and Collaborations, Market Segment Analysis: Customer Satisfaction Index, Achievements, and Stakeholders Interests and Customer Satisfaction. Moreover, researchers adapt the questionnaires in the checklist that pertains to the Quality Assurance Management System of AIMS. Approval of the executive has been sought. The questionnaire, after validation from the CRID office, was sent to prospective respondents through pen and paper survey and collected afterwards.

Validation of the Instrument. The instrument was subjected to content validity and approval by the Dean of CRID office at the Asian Institute of Maritime Studies with adherence to institutional "Research Ethics Policies."

Evaluation and Scoring. For the questionnaire, researchers provided two sets of questionnaires to employees, one from Job Level 4 (Head) and Job Level 5 (Director/Dean) and the other Job Level 3 (Associates) and Job Level 2 (Secretary). The respondents have been given instructions to indicate their rate/grade with the statements regarding Governance and Management, Research and Development, Extension Programs and Outreach Services, Student Services and Alumni Development, Partnership and Collaborations, Achievements, and Stakeholders Interests and Customer Satisfaction.

RESULTS AND ANALYSIS

AIMS data is periodically collected to meet Quality Management System (QMS) requirements, and a deeper exploration is imperative. Specifically, the data analytics of AIMS @ 30 are systematically organized and analyzed, focusing on the last three years. This analysis employs descriptive-correlational methods to unveil the levels of achievements and competency in governance and management, engagements and participation, the extent of networks and partnerships, and collaborations.

The analyses conducted cover a range of variables across three academic years, 2021-2022, 2022-2023 and 2023-2024, using statistical tools to understand patterns and connections. Descriptive statistics like mean, median, and standard deviation help to grasp the characteristics of each variable. Correlation

matrices reveal relationships between variables, showing how they are connected. Focusing on a specific variable, this analysis delved into its trends over three academic years. This included looking at average ratings, data consistency, and distribution features.

Table 1 Administrative Department Compliance to Internal Quality Assurance

	N	Missing	Mean	Median	SD	Minimum	Maximum
A. 1.1 ORE compliance level and or rating as per office/department Checklist of standard	39	0	88.7	90	4.83	80	95
A.1.2 Compliance level and or rating as per IACS findings or audit including no. of	39	0	85.0	85	3.98	81	95
A.1.3 Average of staff summary rating including engagement and involvement as per	39	0	89.0	90	3.43	81	94
A.1.4 Proud activity Accomplishment level or rating of defined Plans, Project and	39	0	86.2	85	4.11	81	95
A.1.5 Extent of Engagement Partnership Le. no. of MOU/MOA and outsourced levels	39	0	89.4	90	4.84	81	95

Rating Scale: 96-100 (Highly demonstrated-Excellent IQA Rating and Certification-Level IV), 91-95 (Highly demonstrated-Very good IQA Rating and IACS-CQI Compliance-Level III), 86-90 (Fully demonstrated and sustained compliance with regulatory requirements -Below Level III, 81-85(Adequately demonstrated-Good QA Rating and IQA sustained compliance - Permit/Recognition)

Table 1 shows Internal Quality Assurance (IQA) important information about the office's or department's performance. Despite variation among the 39 respondents, the ORE compliance data shows a generally positive trend with an average Mean (88.7), indicating high adherence to the checklist. Comparably, the average mean rating of compliance with IQA findings is consistently 85.0, with a considerable degree of variation between items.

The administrative personnel are engaged and satisfied, as seen by the Mean (89.0) average engagement level of the staff. While the data indicates places for improvement in project management procedures due to some variability, the productivity and accomplishment levels are fully demonstrated, with an average Mean of 86.2. Furthermore, the average Mean (89.4) for the extent of participation partnerships shows cooperative efforts, while respondents' levels of engagement vary.

Table 1 Correlations Among Administrative Competencies, Quality Assurance Practices, and Institutional Performance

		A_OVERALL	A.1.1 ORE	A.1.2 Compliance level and or rating as per IACS findings or audit results including no. of NC's and OFI's	A.1.3 Average of staff summary rating including engagement and involvement as per PMS templates	A.1.4 Productivity-Accomplishment level or rating of defined Plans, Projects and Activities including innovation-change management	A.1.5 Extent of Engagement Partnership- i.e. no. of MOU/MOA and outsourced levels Pother engagement and sustainable programs/projects/activities
A_OVERALL	Pearson's r	—					
	df	—					
	p-value	—					
A.1.1 ORE compliance level and or rating as per office/department checklist of standard requirements	Pearson's r	0.676	—				
	df	37	—				
	p-value	< .001	—				
A.1.2 Compliance level and or rating as per IACS findings or audit results including no. of NC's and OFI's	Pearson's r	0.579	0.282	—			
	df	37	37	—			
	p-value	< .001	0.082	—			
A.1.3 Average of staff summary rating including engagement and involvement as per PMS templates	Pearson's r	0.590	0.303	0.373	—		
	df	37	37	37	—		
	p-value	< .001	0.061	0.019	—		
A.1.4 Productivity-Accomplishment level or							

The correlation analysis reveals positive correlation (r=0.676) between A_OVERALL and ORE compliance levels suggests that as ORE compliance improves, the overall performance metric tends to elevate. Similarly, the significant positive correlation (r=0.579) between A_OVERALL and compliance levels based on IQA findings indicates that superior compliance with IQA audit results aligns with enhanced overall performance.

Examining staff-related metrics, the positive correlation (r=0.590) between A_OVERALL and staff summary ratings highlights that higher staff ratings, inclusive of engagement and involvement, coincide with superior overall performance. In the productivity-accomplishment levels, a moderate positive correlation (r=0.303) indicates that heightened productivity and accomplishment levels are associated with improved overall performance. According to the study Fekadu (2016), an employee's perceived productivity can be affected by their level of satisfaction with their job advancement, job accomplishment, work itself, job responsibility, job recognition, and job engagement.

Table 2 Administrative Engagement and Participation in Research, Extension and Training Development

	N	Missing	Mean	Median	SD	Minimum	Maximum
B.1 Compliance and participation level in Research and Development	39	0	87.3	87	5.08	81	95
B.2 Participation-engagement in extension and or outreach program	39	0	86.8	85	5.40	81	95
B.3 Engagement-participation in competency-skills and development training	39	0	86.7	85	4.03	81	95
B.4 Periodic evaluation-assessment of services and other customer feedbacks	39	0	89.9	90	4.71	81	95
B.5 Extent of engagements-participation in Academics related undertaking/activities	39	0	89.3	90	5.90	81	95

Rating Scale: 96-100 (Highly demonstrated-Excellent IQA Rating and Certification-Level IV), 91-95 (Highly demonstrated-Very good IQA Rating and IACS-CQI Compliance-Level III), 86-90 (Fully demonstrated and sustained compliance with regulatory requirements -Below Level III, 81-85(Adequately demonstrated-Good QA Rating and IQA sustained compliance - Permit/Recognition)

Table 2 provides data on the active involvement and compliance levels of the office or department across diverse domains of Research and Development, Extension Services, and Training and Development. In terms of Research and Development (R&D) participation (B.1), the data indicates a commendable average Mean of 87.3, showcasing a robust engagement in R&D activities. However, the standard deviation of 5.08 points to variability, suggesting differences in compliance and participation among the 39 administrative offices. Similarly, participation and engagement in extension and outreach programs (B.2) are strong, with an average Mean of 86.8.

Furthermore, the data reveals active involvement in competency-skills and development training (B.3), with an average Mean of 86.7. The standard deviation of 4.03 indicates moderate variability in engagement levels. In the realm of service evaluation and customer feedback (B.4), the average Mean of 89.9 underscores a commitment to periodic assessment. However, the standard deviation of 4.71 suggests varying degrees of adherence to service evaluation protocols. Lastly, the office or department showcases sustained engagement in academics-related activities (B.5), with an average Mean of 89.3. The substantial standard deviation of 5.90 indicates a broad range of engagement levels, emphasizing the diversity in academic undertakings. This coincides with the study Agasisti et al (2012), that the efficiency rankings vary considerably when taking into account various research-related outputs, highlighting disparities in academic departments' approaches to research.

Table 2 Correlations Between Overall Performance Metrics and Subcategories in Administrative Departments

		B overall	B.1 Compliance and participation level in Research and Development	B.2 Participation-engagement in extension and or outreach program	B.3 Engagement-participation in competency-skills and development training	B.4 Periodic evaluation-assessment of services and other customer feedbacks	B.5 Extent of engagements-participation in Academics related undertakings/activities
B overall	Pearson's r	—					
	df	—					
	p-value	—					
B.1 Compliance and participation level in Research and Development	Pearson's r	0.672	—				
	df	37	—				
	p-value	< .001	—				
B.2 Participation-engagement in extension and or outreach program	Pearson's r	0.563	0.447	—			
	df	37	37	—			
	p-value	< .001	0.004	—			
B.3 Engagement-participation in competency-skills and development training	Pearson's r	0.514	0.127	0.040	—		
	df	37	37	37	—		
	p-value	< .001	0.440	0.809	—		
B.4 Periodic evaluation-assessment of services and other customer feedbacks	Pearson's r	0.746	0.372	0.117	0.381	—	

The dataset employs Pearson's correlation coefficients (r-values) to delve into the relationships between the overall performance metric (B overall) and specific subcategories (B.1 to B.5), offering insights into various facets of organizational activities. A strong positive correlation (r=0.672) between B_Overall and compliance/participation in research and development indicates that organizations emphasizing adherence to standards and active involvement in research tend to demonstrate superior overall performance.

The significant positive correlation (r=0.563) between B overall and participation in extension and outreach programs underscores the importance of community engagement and outreach initiatives in shaping overall organizational excellence. Moreover, the positive correlation (r=0.514) between B_Overall and engagement in competency-skills and development training highlights that organizations prioritizing continuous employee development tend to exhibit better overall performance. The robust positive correlation (r=0.746) between B overall and periodic evaluation of services and customer feedback emphasizes the significance of actively assessing services and heeding customer input in driving overall organizational excellence.

Table 3 provides a comprehensive overview of the school-level engagements and administration within the administrative division. In terms of school-level marketing engagements and admission administration (B.2.1), the mean of 87.2 suggests a robust involvement, while the standard deviation of 4.98 indicates variability in strategies among the 39 offices. Guidance diagnostic programs (B.2.2) demonstrate strong engagement, with an average Mean of 85.5 and a low standard deviation of 3.48, signifying a more consistent approach to processes and career guidance. Student affairs programs (B.2.3) exhibit active participation, with an average Mean of 86.9; however, the standard deviation of 3.97 suggests some diversity in involvement across the cases.

Alumni services and projects (B.2.4) showcase a notable commitment, with an average of 86.7, but a

standard deviation of 4.40 indicates variability in engagement levels. The focus on students' well-being, health standards, and medical safety in dormitories (B.2.5) is evident, reflected in the mean of 85.3. The low standard deviation of 2.40 suggests a more uniform approach to ensuring health and safety standards.

	N	Missing	Mean	Median	SD	Minimum	Maximum
B.2.1 School level marketing engagements and admission administration	95	39	0	87.2	85	4.98	81
B.2.2 Guidance Diagnostic Programs: processes, dissemination with guidance on Career	95	39	0	85.5	85	3.48	81
B.2.3 Student Affairs programs of development and inter-intra School-Agency Development Intervention and Counseling program participation	95	39	0	86.9	85	3.97	81
B.2.4 Alumni service and projects	95	39	0	86.7	85	4.40	81
B.2.5 Students well-being: Health standards and Medical Safety and Security Dormitory Food Services	95	39	0	85.3	85	2.40	81

Rating Scale: 96-100 (Highly demonstrated-Excellent IQA Rating and Certification-Level IV), 91-95 (Highly demonstrated-Very good IQA Rating and IACS-CQI Compliance-Level III), 86-90 (Fully demonstrated and sustained compliance with regulatory requirements -Below Level III, 81-85(Adequately demonstrated-Good QA Rating and IQA sustained compliance - Permit/Recognition

Table 6 Correlations among B2_OVERALL and Subcategories

		B2 overall	B.2.1 School level marketing engagements and admission administration	B.2.2 Guidance Diagnostic Programs: processes, dissemination with guidance on Career Development Intervention ad Counseling program	B.2.3 Student Affairs programs of development and Inter-Intra School-Agency participation	B.2.4 Alumni services and projects	B.2.5 Students well-being: Health Standards and Medical Safety and Security Dormitory Food Services
B2 overall	Pearson's r	—					
	df	—					
	p-value	—					
B.2.1 School level marketing engagements and admission administration	Pearson's r	0.842	—				
	df	37	—				
	p-value	< .001	—				
2.2 Guidance Diagnostic Programs: processes, dissemination with guidance on Career Development Intervention ad Counseling program	Pearson's r	0.872	0.644	—			
	df	37	37	—			
	p-value	< .001	< .001	—			
B.2.3 Student Affairs programs of development and Inter-participation	Pearson's r	0.769	0.408	0.820	—		
	df	37	37	37	—		
	p-value	< .001	0.010	< .001	—		
B.2.4 Alumni services	Pearson's	0.789	0.641	0.491	0.441	—	
	df	37	37	37	37	—	
	p-value	< .001	< .001	0.001	0.005	—	
B.2.5 Students well-being: Health Standards and Medical Safety and Services	Pearson's r	0.743	0.592	0.602	0.478	0.502	—
	df	37	37	37	37	37	—
			< .001	< .001	0.002	0.001	—

The dataset employs Pearson's correlation coefficients (r-values) to explore associations within the B2_OVERALL metric and its subcategories (B.2.1 to B.2.5), shedding light on various facets of organizational activities. The strong positive correlation (r=0.842) between B2_OVERALL and school-level marketing engagements and admission administration indicates that organizations actively involved in marketing and admission administration tend to demonstrate higher overall effectiveness within the B2_OVERALL metric.

Furthermore, a significant positive correlation (r=0.872) is observed between B2_OVERALL and guidance diagnostic programs, encompassing career development intervention and counseling. This underscores the pivotal role of comprehensive guidance programs in contributing to elevated organizational performance. Unfortunately, correlation coefficients for B.2.3 (Student Affairs Programs), B.2.4 (Alumni Services and Projects), and B.2.5 (Students Well-being) are not provided, hampering a comprehensive understanding of their impact on the B2_OVERALL metric.

The available correlations highlight the positive associations of active engagement in marketing, admission administration, and guidance programs with higher overall effectiveness, yet the lack of certain coefficients necessitates further exploration to gauge the influence of other factors within the B2_OVERALL metric.

In summary, the findings show that IQA compliance has a positive significant relationship with administrative Performance Management System (PMS) (p-value=0.019), but not significantly correlated with productivity-accomplishment (p-value=0.210), and engagement in partnership and collaboration (p-value=0.821). ORE compliance is not significantly correlated with IQA compliance (p-value=0.082), PMS evaluation (p-value=0.061), productivity accomplishment (p-value=0.134) and in partnership and engagement (p-value=0519).

This shows that the ORE compliance is not encompassing with the template of IQA compliance. The PMS evaluation and assessment is not significantly correlated with the productivity and accomplishment leading to innovation and change (p-value=0.094) and partnership and collaboration (p-value=0.924). This means that the PMS evaluation and assessment has not encompassing these parameters for personnel satisfaction and awareness that required their participation and engagement.

Participation-Engagement in extension and outreach program has positive significant relationship in compliance and engagement in research and development but not significant relationship in engagement participation in competency skills and training development, and extent of engagement-participation in academics related undertakings activities with the p-value of 0.440 and 0.263 respectively. While engagement participation in competency skills and training development has positive significant relationships (p-value=0.017) with periodic evaluation-assessment services and customer feedbacks but no significant relationship (p-value=0.095) with engagement-participation in academic activities.

The School level marketing and admission administration has significant positive relationship with guidance and counselling (p-value=0.001), student affairs programs of development (p- value=0.010), Alumni services (0.001) and students wellbeing (p-value=0.001). The same goes to guidance and counselling to Alumni services (p-value=0.001), and student wellbeing services (p-value=0.002), that corresponds to strong positive correlations.

Table 4 Administrative Office Performance Based on the Three Categories:
A_OVERALL, B1_OVERALL, and B2_OVERALL

	DEPARTMENT	N	Missing	Mean	Media	SD	Minimum	Maximum
A_OVERALL	BEMO	3	0	85.7	85.4	2.610	83.2	88.4
	CAMO	3	0	86.4	86.0	1.442	85.2	88.0
	CAS	3	0	85.1	85.2	2.203	82.8	87.2
	CESSD	3	0	87.8	87.6	2.107	85.8	90.0
	CLAMS	3	0	84.6	85.6	1.908	82.4	85.8
	COED	3	0	89.7	89.6	1.901	87.8	91.6
	CRC	3	0	87.9	88.2	4.110	83.6	91.8
	CRID	3	0	88.6	89.8	3.175	85.0	91.0
	FMO	3	0	89.9	89.0	1.858	88.6	92.0
	HRMO	3	0	89.1	89.4	0.577	88.4	89.4
	ITDO	3	0	88.3	88.2	0.902	87.4	89.2
	SSO	3	0	87.5	87.4	1.901	85.6	89.4
	TAP	3	0	89.2	89.8	2.358	86.6	91.2
B1_OVERALL	BEMO	3	0	84.8	84.4	0.693	84.4	85.6
	CAMO	3	0	85.9	87.0	3.717	81.8	89.0
	CAS	3	0	83.6	83.4	1.114	82.6	84.8
	CESSD	3	0	90.0	89.8	1.908	88.2	92.0
	CLAMS	3	0	86.4	86.4	0.000	86.4	86.4
	COED	3	0	93.7	93.8	1.301	92.4	95.0
	CRC	3	0	87.9	88.8	1.501	86.2	88.8
	CRID	3	0	92.3	93.0	3.055	89.0	95.0
	FMO	3	0	89.3	89.4	0.306	89.0	89.6
	HRMO	3	0	86.5	86.2	2.411	84.2	89.0
	ITDO	3	0	89.2	90.2	2.458	86.4	91.0
	SSO	3	0	86.5	87.0	1.102	85.2	87.2
	TAP	3	0	87.8	88.0	1.510	86.2	89.2
B2_OVERALL	BEMO	3	0	81.0	81.0	0.000	81.0	81.0
	CAMO	3	0	85.0	85.0	0.000	85.0	85.0
	CAS	3	0	81.8	81.8	0.000	81.8	81.8
	CESSD	3	0	93.0	93.0	0.000	93.0	93.0
	CLAMS	3	0	88.1	88.0	0.902	87.2	89.0
	COED	3	0	86.0	86.0	0.000	86.0	86.0
	CRC	3	0	89.7	89.0	1.155	89.0	91.0
	CRID	3	0	86.0	86.0	0.000	86.0	86.0
	FMO	3	0	87.0	87.0	0.000	87.0	87.0
	HRMO	3	0	85.0	85.0	0.000	85.0	85.0
	ITDO	3	0	86.0	86.0	0.000	86.0	86.0
	SSO	3	0	85.0	85.0	0.000	85.0	85.0
	TAP	3	0	89.0	89.0	0.000	89.0	89.0

Rating Scale: 96-100 (Excellent-Highly demonstrated engagements and participation), 91-95 (Very Good-Highly Sustained engagements and participation, 86-90 (Good-Fully sustained engagements and participation, 81-85(Fair-Adequately sustained engagements and participation)

Table 4 represents a comprehensive evaluation of departmental performance across three distinct categories: A_OVERALL, B1_OVERALL, and B2_OVERALL. In the A_OVERALL category, COED, stands out with a notable mean score of 89.7, reflecting a robust overall performance. The accompanying standard deviation of 1.901 suggests some variability within COED, pointing to specific areas that may benefit from closer scrutiny for further enhancement. Meanwhile, CRC, exhibits a slightly lower mean of 87.9 but with a higher standard deviation of 4.11, indicating more diversity in performance metrics and suggesting targeted areas for improvement. FMO, maintains a commendable mean of 89.9 with a low standard deviation of 1.858, signaling consistent excellence across various metrics.

CONCLUSIONS

The utilization of Asian Institute of Maritime Studies (AIMS) data for Quality Assurance Management (QUAM) compliance and strategic decision-making in higher education institutions is paramount for ensuring continuous improvement and excellence. The data analytics conducted for last three years encompass various dimensions of governance and management, engagements and participation, networks and partnerships, and collaborations. Through systematic organization and analysis employing descriptive-correlational methods, valuable insights have been unearthed to inform strategic decision-making processes. The analyses delve into a range of variables across the academic years 2021-2022, 2022-2023, and 2023-2024, utilizing statistical tools to discern patterns and connections. Descriptive statistics like mean, median, and standard deviation offer a comprehensive understanding of each variable's characteristics, while correlation matrices unveil relationships between variables, elucidating their interconnectedness.

AIMS administrative performance analysis using QUAM is consistent with PACUCOA's emphasis on stakeholder participation, governance, and quality assurance. Strong implementation of PDCA principles; planning via compliance monitoring, implementing through staff engagement, verifying through performance evaluation, and acting on targeted interventions is shown in consistently high IQA compliance and engagement scores. The emphasis on methodical procedures and results-driven improvement that Baldrige advocates by Laide (2018) is supported by the correlation that exists between administrative competencies, QA methods, and institutional performance. The correlation between sustained accreditation preparedness and strong research, extension, and training involvement over a three-year period highlights the direct contribution of proactive administrative leadership to institutional advancement toward the highest PACUCOA certification level.

In conclusion, the utilization of AIMS data for QMS compliance and strategic decision-making offers immense potential to drive organizational excellence and enhance the higher education landscape. By leveraging data analytics techniques and fostering a culture of continuous improvement, institutions can harness the power of data to inform evidence-based decision-making, drive performance improvement initiatives, and achieve sustainable growth and excellence.

RECOMMENDATIONS

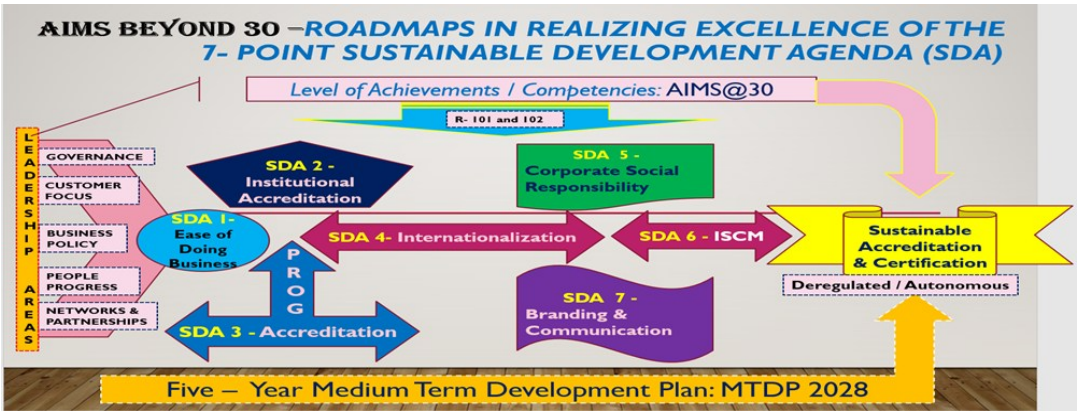
Based on the findings, these can be recommended to optimize AIMS data utilization and enhance organizational effectiveness in higher education institutions. Firstly, in order to foster a culture of continuous improvement and data-driven decision-making it is essential to capitalize on the insights gathered from AIMS data analytics. With this, establishing mechanisms for regular data collection, analysis, and dissemination, empowering stakeholders to make informed decisions and drive organizational excellence will entail. Secondly, targeted interventions should be implemented to address areas of improvement identified through data analytics. This may involve providing training and support to enhance staff competencies, streamlining processes to improve compliance levels, and fostering strategic partnerships to enhance engagement and collaboration.

Moreover, leveraging technology and data analytics tools can facilitate data collection, analysis, and reporting processes, enabling real-time monitoring of performance metrics and timely intervention to address emerging challenges. Additionally, encouraging a culture of transparency and accountability is crucial to ensure data integrity and promote trust among stakeholders. Moreover, establishing clear communication channels for sharing findings, soliciting feedback, and fostering collaborative problem-solving approaches should be fostered.

Furthermore, investing in capacity-building initiatives to enhance data literacy and analytical skills among staff members is imperative to maximize the utility of AIMS data. This may include providing training workshops, resources, and access to data analytics tools to empower staff to extract actionable insights and drive continuous improvement initiatives. The Training Needs Analysis (TNA) data gathered each trimester should be utilized to propose capacity-building programs and seminars tailored

to the needs of each Department, Center, and Schools. The Human Resource Management Office (HRMO) should revisit this data to promote inclusivity and empower staff and faculty members in delivering quality services to stakeholders. The Outreach-Extension Capacity Building Seminar spearheaded by the Center for outreach and Extension Development to promote collaboration among the institution, external partners and communities aligned with the 17 Sustainable Development Goals (SDGs) should be continued. Research Capacity Building Training Plans should be more emphasized as highest level of PACUCOA Accreditation requires research-driven results and utilization. Additionally, fostering interdisciplinary collaboration and knowledge sharing can further enrich data analytics practices, encouraging innovation and creativity in problem-solving within the AIMS community

The Proposed Roadmap Framework



The "AIMS Beyond 30" strategic roadmap outlines a comprehensive plan by the Asian Institute of Maritime Studies (AIMS) to achieve excellence through a 7-Point Sustainable Development Agenda (SDA), guided by the Medium-Term Development Plan (MTDP 2028). The core leadership areas—governance, customer focus, business policy, people progress, and networks—serve as the foundation for initiatives aimed at enhancing institutional growth and sustainability. The plan begins with streamlining operations (SDA 1: Ease of Doing Business) and achieving both institutional and program-level accreditations (SDA 2 and SDA 3), which validate educational quality. It then focuses on internationalizing the curriculum (SDA 4), strengthening Corporate Social Responsibility (CSR) initiatives (SDA 5), and implementing Integrated Safety and Compliance Management (ISCM) (SDA 6). These steps ensure adherence to global standards and foster a safe learning environment. Branding and communication strategies (SDA 7) enhance the institution's visibility and stakeholder engagement. Ultimately, the roadmap aims for Sustainable Accreditation & Certification, leading to a deregulated, autonomous status. This vision reflects AIMS' commitment to becoming a leader in maritime education, driving continuous improvement, and aligning with global industry demands for a sustainable future.

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Education Forward, but Where and How? Exploring the Goal of Education and the Skills Needed

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ABSTRACT

The theme of this conference is "Education Forward". But forward in what direction? Are the educational goals of previous generations still right for the twenty-first century? This research is part of a larger research project that explores the implications of recent discoveries in the human sciences for education. The purpose of this research was to identify the goal of education and outline the skills that this goal calls for. This research gathered data on the goal of education through the methods of environmental scanning and literature review. Then the research analyzed its data and identified the required skills with the methods of recursive chunking and engagement. The result of the analysis is that education is an applied human science whose goal is to foster the skills for thoughtful individual and community life-long and life-wide flourishing. In other words, the job of education is to foster the skills that individuals and communities need to always flourish. The necessary skills can be grouped into six inter-related domains: physical; cognitive; emotional; social; economic; and self-directed learning. Recent discoveries have given us a new direction and solution for *education forward*.

Keywords: Human Sciences; Life-long and life-wide learning; Self-directed learning; Skills for self-actualisation

1. CONTEXT

Rapid discoveries in the physical sciences sparked the industrial revolutions that have led to previously unimaginable global prosperity. But this prosperity does not appear to be bringing increased with research suggesting that happiness around the world is decreasing, especially among young people. This reducing sense of life-satisfaction, especially in our youth is quite troubling. Further, considering that the youth are largely enrolled in education, it suggests that our education systems are failing to deliver life-satisfaction. Since the theme of this conference is "Education Forward", it is crucial that we ask the question, "Forward in what direction?". Is education moving forward in the right direction? Luckily, the rapid discoveries are not only in the physical sciences, but also in the human sciences. The human sciences are the sciences concerned with understanding humans – both individuals and the cultures and institutions we build. The human sciences are now providing answers on the direction education should take, but also how. This research explores and suggests answers to the dual questions of the direction to move forward in and how to move forward.

2. RESEARCH METHODS

This is conceptual research – research that seeks to understand broad, overarching conceptual issues. It draws knowledge from diverse sources and analyses it inductively. Thus , this research is a scholarship of integration (Boyer, 1990), in contrast to much of the modern research in the physical sciences which often focuses on narrow, tiny discovery. The scholarship of integration is intrinsically multidisciplinary, blending knowledge across multiple disciplines. This research uses two methods of data collection: (1) environmental scanning (Choo, 2003; Gordon & Glenn, 2009); and (2) the traditional literature review. Environmental scanning is the process of gathering information from many diverse sources, such as news, blogs, and personal conversations – of scanning the environment. Environmental scanning alerts us to current topics that may be of value, and the literature review allows us to focus on and examine the research on an issue in depth.

The research then integrates the data to design and model the solutions. Integration is through the processes of recursive chunking and engagement. Recursion is the process of repeatedly examining and evaluating the collected information so as to clarify it – analogous to the mathematical process of recursion that is used to improve accuracy by repeatedly interrogating an issue using previous results. Chunking is the process by which the brain forms complex memories and ideas, by repeatedly reviewing less complex ideas simultaneously. And engagement refers to repeatedly discussing and obtaining constructive feedback from others.

The processes of data collection and analysis and design are repeated, but not always in the same direction. This research is part of a larger research project that explores the implications of developments in the human sciences for education. For example, the focus of the project's research last year was on social skills. And the goal of education was only briefly touched on. But a comment by a participant at a seminar presenting that research triggered further exploration of the goal of education. That the central theme of this conference aligns with the current research is a serendipitous coincidence.

3. THE GOAL OF EDUCATION

3.1 Policy Perspectives

In the political and public sphere, the Australian federal government's Department of Education described its purpose as contributing "to Australia's economic prosperity and social wellbeing by creating opportunities and driving better outcomes through access to quality education" (Department of Education, 2023, p. 4). By contrast, the Australian Federal Treasurer introduced a wellbeing framework for measuring what matters – what government must seek to achieve - listing five wellbeing themes: healthy, secure, sustainable, cohesive, and prosperous (Australian Government, 2023). The Queensland State Government's Department of Education specified a common national

commitment to "equity and excellence in education – that all children and young people are confident, creative lifelong learners active in their community" (Queensland Government, 2022, p. 8).

3.2 Philosophical and Academic Perspectives

In contrast, in the academic and scholarly sphere, in a review in the *British Journal of Educational Studies*, Kristjánsson (2017) criticised the well-being paradigm existing at the close of the 20th century, which he argued "was based on the child as emotionally vulnerable which essentially psychologised, therapeutised and instrumentalised student well-being" (p. 88). He reported that "a number of prominent educational philosophers have developed theories of flourishing as the overarching aim of education" (p. 87). He characterised the thriving paradigm as taking a strengths-based approach to student well-being in contrast to the well-being paradigm. He added that the paradigm of flourishing as the goal of education, "is not meant to supplant anything (except perhaps the obsession with high-stakes testing), but rather to enhance and add new layers to already existing school practices" (p. 88).

The influential European educational theorist Gert Biesta (2015) described education as having three goals: (1) qualification; (2) socialisation; and (3) subjectification. He stated that "qualification has to do with the transmission and acquisition of knowledge, skills and dispositions" (p. 7). He describes socialisation as "through education we also represent and initiate children and young people in traditions and ways of being and doing, such as cultural, professional, political, religious traditions, etc." (p. 7) He described socialisation as partly explicit, but "also works behind the backs of students and teachers, for example in the ways in which education reproduces existing social structures, divisions and inequalities" (p. 7). His description of subjectification is perhaps best described in his later book, *World-Centred Education: A View for the Present* (Biesta, 2021)which describes subjectification as:

> about arousing the desire in another human being for wanting to exist in and with the world in a grown-up way, that is, as subject. Trying to exist in a grown-up way is trying not to be purely driven by one's desires but always raise the question whether what one desires or encounters as a desire is what one should desire, in light of living one's life well, with others, on a planet with limited capacity for fulfilling all our desires. (p. 35)

Across the Atlantic ocean, in the *American Educator*, in an article titled, 'All Children Thriving: A New Purpose for Education", Cantor (2021) suggested five guiding principles for the equitable whole-child design of education to achieve the purpose of thriving: "(1) Positive Developmental Relationships; (2) Environments Filled with Safety and Belonging; (3) Rich Learning Experiences and Knowledge Development; (4) Development of Skills, Habits, and Mindsets; and (5) Integrated Support Systems" (p. 22).

All the above authorities have important differences. The Australian Federal Government's Department of Education (2023) identified economic prosperity first, and social wellbeing second. It does not identify individual wellbeing as a goal. The Federal Government also identified wellbeing as its goal – though tellingly, it was the Treasurer who released the paper rather than the Prime Minister. The British and American works cited use the words flourishing and thriving, which are analogous. Biesta's (2015, 2021) three component framework did not appear to have recognised current developments in the human sciences. Socialisation and subjectification are skills that can be taught. But I sense an important implication in these works that I disagree with. They exercise benevolent control of learners – of deciding what is best for the learner. I therefore prefer the term self-actualisation to thriving, as the term self-actualisation implies that the individual choses what dimensions they wish to thrive in.

Furthermore, nearly all the works appear not to apply current developments in the human sciences. In our larger research project, we identified five paradigmatic discoveries in the science of learning, discoveries that provide the opportunity to transform education. I turn to these discoveries in the next section.

3.3 Developments in The Science of Learning

I list the five paradigmatic discoveries in the science of learning below. Readers interested in further details are directed to the open-source citations provided (Somasundaram, 2017, 2018; Somasundaram et al., 2019; Somasundaram et al., 2023).

1. **Thinking**: We humans have two different, powerful, and valuable ways of thinking.
2. **Learning**: Learning *is* Memorization, and we now know how memory works;
3. **Behaviour**: Cognitive, sensory-motor, emotional, social, and endocrine operations are all closely integrated;
4. **Stages**: Sensitive periods in the human life-cycle provide windows of both greater opportunity and danger; and
5. **Self-Regulation**: Habits trump will-power.

These discoveries have several important implications for education to achieve its goal:

1. We know how learning works and therefore the purpose of education can be efficiently and effectively achieved.
2. Body, mind, and environment are all closely integrated. Education must focus on all aspects, not simply cognition.
3. Most of what is taught is soon forgotten. Ideally, education should be just-in-time, delivered when it is most needed.
4. Skills that are habituated through use are most deeply learned.
5. Different neurobiological stages in life are best suited for learning different skills.

3.4 Consolidating the Goal of Education into a Single Sentence

As such, I propose that the goal of education should be:

To foster the skills for individual and collective life-wide and life-long self-actualisation.

This multifaceted goal can be explored by deconstructing the goal into its key words and phrases:
The word ***foster*** captures the principle that the scope of education n is broader than simply instruction or direct classroom teaching by professionals. For example, education funding largely ignores the most crucial education period in life – the first thousand days. Strategies such as Parents as First Teachers (Praat, 2011) receives too little attention in educational policy (Somasundaram et al., 2023).
The word ***skills*** capture the principle that education is an applied science, and must focus on delivering useful, practical benefits: skills. A skill is the capacity to perform a useful task well and knowledge is only useful when we use it it skilfully to deliver a real benefit. While the skill of passing exams is useful since it often opens the gate for further study and entry into the workforce, educators must always consider the extent to which the skills tested in exams are the most valuable in daily life.

The phrase ***individual and collective*** captures the principle that humans are social animals. No human can survive on their own. Even a survivalist living in an isolated cave far from others uses clothes and instruments manufactured by other humans of a quality the survivalist would be able to achieve. Individuals need the skills to work collectively. And collectives need the skills to work collaboratively.
The phrase ***life-wide and life-long*** captures the principle that emphasis must be placed on skills needed both immediately and for the whole future and at all times of day and night (for example, both the body and mind perform valuable tasks during night time, and ensuring these tasks are performed optimally is itself a skill). A significant portion of contemporary education is devoted to preparing individuals for adult tasks—often focusing on scenarios that may never arise or skills that become obsolete or are forgotten by the time they are required. In contrast, children and adolescents may be facing long-lasting damage because they do not possess the sills to thrive in their current lives.

Finally, the phrase ***self-actualisation*** emphasises the principle that education must foster the skills for self-empowerment. It is for the individual and collective to thoughtfully decide their own personal goals. It is the role of education to foster the skills to achieve those goals. Personal goals need to be skilfully decided and periodically reviewed. Importantly, Goals may not be achievable because of personal and environmental limits and striving for a goal that one does not reach leads to burn-out. Self-actualisation requires skilled analysis, design, and implementation.

4. DECONSTRUCTING THE GOAL INTO A CURRICULUM

As an applied science, a definition of the goal of education must be clear, implementable, and measurable. A goal should clearly speak to education's expertise, and how it is distinct from other sciences. The expertise that education brings to the table is that of skills development. A skill is the capacity to perform a useful task (knowledge in itself is often necessary but is not itself useful without the capacity for application).

Education's expertise lies in the understanding of learning and instructional analysis, design, and delivery. I use the word foster to draw attention to the scope of education beyond direct teaching in educational institutions and includes setting up learning environments in all aspects of life. Parenting, coaching, counselling, mentoring are all responsibilities of the discipline of education.
But what matters in practice is the deconstruction of the word self-actualisation into a learnable set of skills – and that deconstruction lies firmly within education's expertise – a task comparable to developing a curriculum for a School Certificate in self-actualisation as one would develop a curriculum for a School Certificate in Mathematics.

Of benefit for the deconstruction of the word self-actualisation is the hierarchy of human needs psychologist Maslow proposed almost a quarter century ago (Figure 1). However, while Maslow's hierarchy is widely applied, it suffers from two critical weaknesses from an educational perspective. Firstly, research into the existence of such a hierarchy suggests that the needs are not necessarily hierarchical – individuals may persue a goal that Maslow regarded as less fundamental in favour of a more fundamental one. Secondly, Maslow was describing needs, while educators' focus is on the skills that are required to meet these needs.

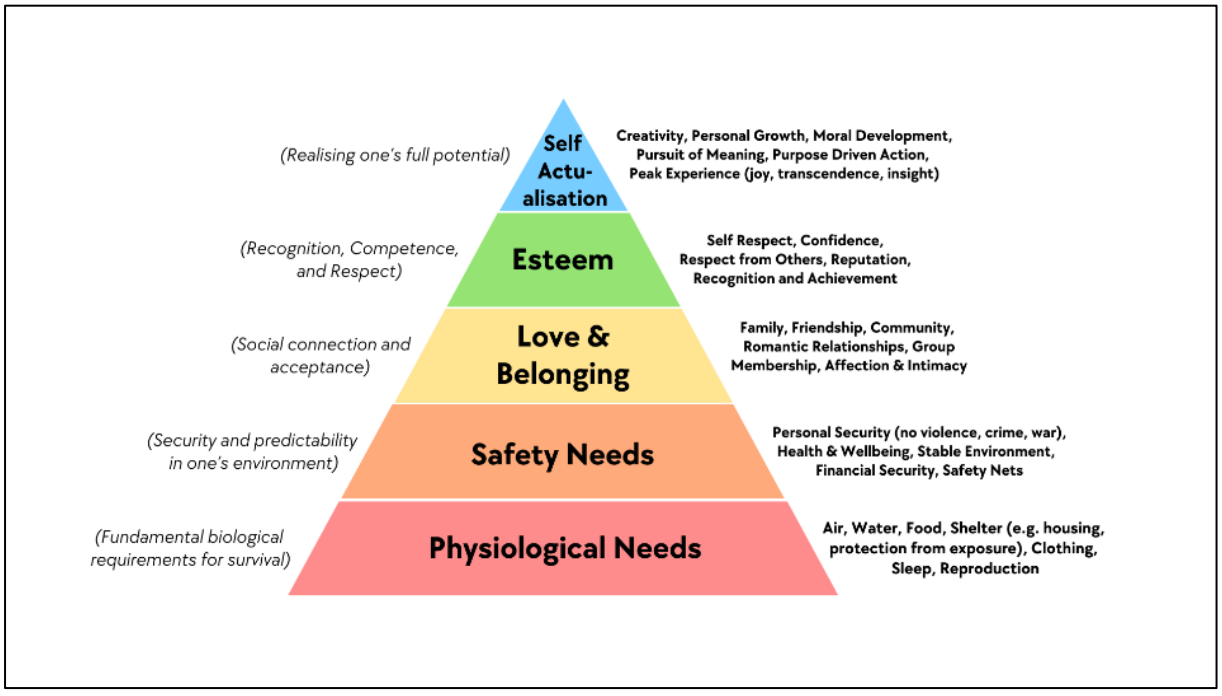

Figure 1 A Visualisation of Maslow's Hierarchy of Needs (Crocker, 2025).

I therefore deconstruct thriving into five interrelated dimensions: (1) physical; (2) Mental; (3) emotional; (4) social; and (5) economic. Each of the dimensions are achievable through the practice of relevant skills. To these five sets of skills, I add a sixth the meta-skill of self-directed learning – the skill of systematically learning skills (Figure 2). The skill of self-directed learning is a meta-skill, and probably the most important of the sets of skills, since it permits the learner to master any skill they wish to. To achieve self-actualisation.

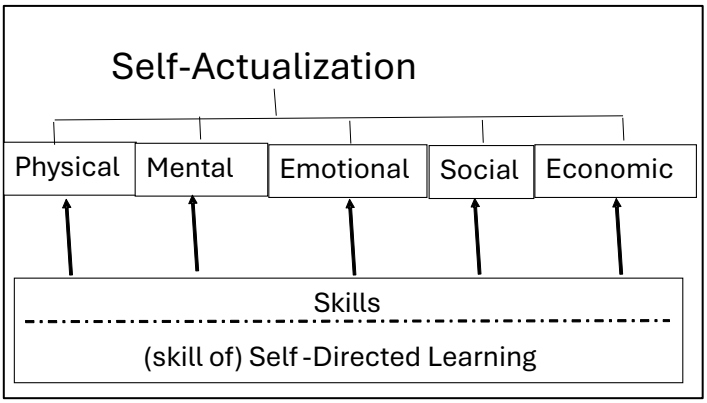

Figure 2 Taxonomy of the skills for self-actualisation

Let me illustrate the depth and breadth of these skills with a few descriptions. The success of a school's physical education programme is measured far more by the physical health and skills the students possess when they reach seventy than whether the school wins the local football tournament. By social skills, I mean not just interpersonal abilities, but also the skills to effectively work-in and even foster the growth of teams and institutions. There exists a substantial body of knowledge on working in groups to achieve common objectives and the different skills that are required by members for successful outcomes. Institutional skills permit individuals to objectively examine, adapt to, and influence the many institutions one engages in (families, classrooms and schools, sports teams, supermarkets and shopping malls are all institutions that school children engage with. Every institution has its own (often implicit) rules and policies that individuals must master if they wish to successfully engage with the institution (Thornton et al., 2012). Economic skills are the skills needed to plan for and obtain the resources one needs to self-actualise. Within the scope of economic skills are those technical and specialised skills valued by employers and thus permit the individual to earn the money necessary for self-actualisation.

Both the terms self-directed learning and self-regulated learning are used in the literature, often interchangeably. Typically, the term self-directed is used to imply self-directing (choosing the direction), while self-regulated implies that the direction and the curriculum are mandated, and the individual takes responsibility for ensuring the material is learned (Loeng, 2020). I use the term directed to imply the functions of a director of a single-person institution. That is the person develops, executes, and monitors strategic and operational educational goals and plans. They also select and manage the resources to achieve their educational goals (an educational goal may be to achieve a skill, or it may be to obtain a credential that certifies to a third party that they have that skill). The individual has the skills to wisely choose and succeed in different learning pathways such as fully independent self-education, to learn in partnership with others, textbooks, or enrolment in a teaching institution. They have agency: they accept both authority and responsibility. They are the director – they work both on and in *their* business of self-education.

5. DISCUSSION

This deconstruction of self-actualisation into a curriculum helps clarify the differences and similarities with the philosophies of other educational theorists. The implementation of my perspective on thriving calls for a substantial revision of the existing curriculum – a view different from that expressed by

Kristjánsson's (2017) view that an objective of flourishing "is not meant to supplant anything (except perhaps the obsession with high-stakes testing), but rather to enhance and add new layers to already existing school practices" (p. 88). (Furthermore, I hold that testing – both formative and summative – is a crucial part of instructional design. The problem with test anxiety lies with poor emotional skills in learners, teachers, and parents. The road to self-actualisation will have multiple high-stakes events, and dealing with them is a necessary skill.)

Another difference is that a common focus of education implied in many of the writings cited above is an implication that education is about schools its preparation for adulthood. This research views education as life-long and life-wide, that education should be focused more on delivering the skills for thriving today and less on the future (an economic principal of discounting future profits particularly cogent for education - a case I make later in Chapter 5). It is education's responsibility to deliver the skills to thrive today to a student living in a dysfunctional family or gang-infested neighbourhood (often comorbidities).

As such my thinking aligns with Cantor & Osher's (2021) principles on thriving that emphasises relationships and environment, but I would add the caution that education's scope and responsibility lies with skills. It is not education's responsibility to change the environment. But it *is* education's responsibility to provide the skills to *al*l the stakeholders who *together* have the capacity to change the environment for the better.

Biesta's (2015, 2021) three purposes (qualification; socialisation; and subjectification) provide a good counterpoint to elaborate my theoretical perspective. By qualification, I take Biesta to mean the formal and explicit purpose of education – what it is consciously designed to deliver. I hold that the whole of the purpose must be expressed in the curriculum – for if it cannot be explicitly expressed in a curriculum (and assessments), it cannot be reliably delivered. Furthermore, I hod that the discipline of education knows how to decipher the skills needed to achieve any purpose, and to construct a curriculum to achieve that purpose. Both socialisation and subjectification must be expressed as subsets of qualification if education is to serve its designed purposes – and my deconstruction of thriving does so.

Qualification – education equipping individuals to earn an income – is captured as an economic skill. Socialisation is captured as social skills. Biesta's (2015) concerns regarding the implicit nature of much of socialisation are addressed by the application of aspects of the human sciences such as institutional logics, dominance hierarchies, and the logics of educational institutions.

Biesta's (2021) term "subjectification" is a complex and ambiguous construct. It includes the awareness of identity – a process that begins about the age of two, when a toddler begins to recognise themselves as a distinct individual (a subject) and begins the process of testing the logics of their environment (the boundaries of behaviour) – giving rise to the behaviour labelled the terrible twos and threes (Hughes et al., 2020). Developments in the human sciences permit what has been hidden and poorly understood explicit and capable of embedding in a curriculum. His description of living in a grown-up way implies thriving mixed with recognising the rights of others (stakeholder analysis as a social skill (Somasundaram & McDonald, 2024)) and recognising the issue related to resource management.

Furthermore, we propose that we should re-imagine education as not simply the purview of a school and university system for children and young adults, but learning as a life-long and life-wide[1] collective collaborative activity. We have proposed a fishbone model of neurobiological and socioeconomic life stages that education should consider when designing curricula and instruction.

[1] Life-long and life-wide each have two implications. Firstly, learning occurs all the time (for example, the right amount and type of sleep is critical for long-term memory formation and skill retention). Secondly, skills that are valuable in immediate life (especially skills needed outside school to achieve immediate thriving) or used throughout life are probably more valuable that skills that are only useful for a short period in the future.

6. LIMITATIONS

This research is a theoretical, conceptual investigation focusing on education having a single purpose. In practice, education is a huge, complex industry serving and balancing the needs of many stakeholders. For example, educational institutions are also a place for safely occupying students. This allows parents to work, knowing their children are being safely cared. For shop-owners, occupied teen-agers are not going to be shop-lifting. For older students, post-secondary education also represents a way to post-pone having to get a boring job. And for teachers and others employed in the education industry, it is a reliable way of earning an income. These are just some of the (secondary) purposes of education not otherwise explored by this research.

Furthermore, the justification for deconstructing of the purpose into six interrelated curriculum dimensions could be considerably strengthened. Is six the right number? Should perhaps emotional and social skills be combined into one dimension such as is done in Yale University's RULER (Brackett & Rivers, 2014; Nathanson et al., 2016) program? Perfect answers to these questions are unlikely to exist, and we should not delay implementation waiting for a perfect curriculum.

7. PROGRESSING THIS WORK

Both the purpose of education and the deconstruction proposed by this research have substantial difference to current educational practice. Therefore, achieving this purpose will require lots of hard work. While some of the work is technical – such as developing and implementing detailed curricula and lesson plans, the priority is to develop consensus and establish collaborative institutions and networks. It is societies right and responsibility to decide the purpose of education, and as discussed previously, thee currently exist differing views. We thus, as a society, need to first reach consensus on what we want education to achieve. Educators have the right and responsibility lead the development of that consensus.

Furthermore, we need to progress research that ties elements of the curriculum to the short-term and long-term outcomes that curriculum delivers. As educators, we need to be able to better justify the curriculum. It is my intention to further progress this research by developing cost-benefit models that can tease out the relative benefits of the six dimensions described in this paper.

8. CONCLUSION

The primary theme of this conference is "Education Forward". But to move forward, we need to be confident of our direction and the steps we should take. This conceptual research paper seeks to provide these answers. Based on my research, I propose that the goal of education should be to foster the skills for individual and collective life-wide and life-long self-actualisation. I also propose that self-actualisation has six inter-related dimensions - (1) physical; (2) mental; (3) emotional; (4) social; and (5) economic. Each of the dimensions are achievable through the practice of relevant skills. To these five sets of skills, I add a sixth the meta-skill of self-directed learning – the skill of systematically learning skills.

This research contributes to current scholarship on the purpose of education in several key areas. Firstly, this research emphasises the importance of practicality, of moving from theoretical purpose to the identification of the dimensions of the practical skills that the curriculum must drive. Secondly, it emphasizes the need for the skills for self-empowerment. Thirdly, it recognises the need for not only individual skills but also for community building and community empowerment. And fourthly, while most of the scholarly literature discusses mental, emotional, and social skills, this research also emphasises physical skills, economic skills and self-direct learning skills.
Current developments in the human sciences mean that we now know how to foster any skill effectively and efficiently. All we need to succeed is the willingness to apply the new science, collaboration, and motivation.

Finally, and perhaps most importantly, the purpose of educational systems and institutions is not for me, or us the scholarly community, to decide – for that would abrogate the very idea of self-actualisation. It is the responsibility of society as a whole to decide what skills its institutions should foster. But we have both he capacity and responsibility to lead that discussion.

Well-being, thriving, flourishing, and self-actualisation are all broadly similar words, and different people will interpret these words differently. As such, scholars and policy-makers may well be meaning the same concept with the word they chose to describe the purpose of education. However, what sets this research apart from other scholarly works on the direction of "Education Forward" is the deconstruction of the goal of self-actualisation into six inter-related sets of skills for which practical, rigorous curricula could be developed.

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The Development of Indicators of Teaching Professional Engagement Among Senior Students in the Faculty of Education

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ABSTRACT

Professional engagement among teacher is a key factor in order to enhance quality of education in Thailand that reflect to their dedication and determination for teaching development, including provide student care with professional standard by compassion and benevolence. The development of indicators and components for professional engagement able to evaluate level of compassion and benevolence for provide classes to their students by student center approach. The aim of this study was developing indicators and components for professional engagement among senior teacher students, faculty of education. 108 students were responded with convenience sampling method. The questionnaire was adopted from professional engagement among teacher questionnaire by Klassen et al (2013). Validity with an IOC ranged between 0.67 – 1.00 and reliability was 0.866. The data was analyzed by mean, standard deviation, percentage, factor loading, extracting by principal component analysis: PCA with varimax method. The results showed that the data were suitable for factor analysis (KMO = .807; Bartlett's test of Sphericity = 1060.44, df = 210, $p < .001$). The analysis revealed five key components: 1) Engagement in self-development for instructional practices, (2) Social engagement through supervision processes and school activities, (3) Social engagement in the teaching profession, (4) Professional identity and pride in being a teacher, and (5) Professional engagement through collaborative networks and peer interactions. These components collectively explained 66.96% of the total variance, with factor loadings ranging from 0.565 to 0.869. The indicators developed through this research can be used to assess professional engagement levels among graduating education students and serve as a foundation for designing programs that foster stronger professional identity and commitment in future teachers.

Keywords: Indicators, Teaching Professional Engagement, Senior Students

INTRODUCTION

The teaching profession is a specialized field that plays an important role in the development of both youth and society. The person in this profession must possess the knowledge, skills, and spirituality of a teacher. In particular, students in education programs should be developed to have both academic competence and positive attitudes, along with a sense of pride in the profession and a dedication to self-development to enhance the quality of learning in accordance with educational standards.

One of the critical factors influencing success in the teaching profession is professional engagement. It refers to the positive attitude, dedication, and responsibility of a professional role toward one's professional role. There is not driven by financial gain, but by a sense of pride in being a teacher and a continuous effort to develop professional standards. According to the study by Rurkkham (2018), job satisfaction among teachers in the compulsory education system is associated with 59.4 percent of their professional engagement. Furthermore, he also explained that if educational institutions can enhance teachers' job satisfaction, their level of professional engagement will increase as well. Similarly, the study by Phaphinid (2012) explains that the engagement professional process was divided into 5 parts, including 1) past teaching experiences 2) teaching experiences nowadays3) making social interaction 4) making mutual commitment and 5) a sense of professional engagement to their school. Consequently, professional engagement promotion and development among the teaching profession should begin with a systematic plan. Especially the final period of study, which makes the transition from student to teacher, which is an essential direction of one's self-development and long-term professional growth. Consequently, understanding the components and factors that reflect professional engagement in the context of Thai student teachers. It is a critically important issue in both academic and educational policy contexts.

The study of indicators and components of professional engagement among final-year student teachers at the Faculty of Education, Ramkhamhaeng University, will contribute to the development of assessment approaches, analysis, and enhancement of student teachers' readiness in terms of professional spirit and attitudes that affect the passion of being a teacher who truly loves the profession. Ultimately, the findings can lead to the improvement of teacher education quality in Thailand's higher education system.

Literature review

Professional engagement in the teaching profession is a crucial factor in driving the quality of national education, as it reflects the dedication and determination to improve teaching practices and take care of students in accordance with educational standards, with kindness and compassion. Although professional engagement in the teaching profession is important, its value and importance are often overlooked. Xie (2010) explained that professional engagement in the teaching role affects the quality of instruction. Consistent with the study by Huo and Wang (2024), they found that teachers who have high professional engagement and teaching potential lead to high results of student learning. Teachers with high professional engagement can overcome work stress and burnout in their careers and have better mental health. Moreover, high professional engagement can make teachers more active and effective in their work, as well as increase school participation and willingness to take responsibility for students' benefits. Therefore, the development of professional engagement in educational program students is as important as academic knowledge.

Professional engagement in teaching was adapted from work engagement by Schaufeli & Bakker (2004); they explained that work engagement includes three dimensions: vigor, dedication, and absorption. Vigor is the first dimension of professional engagement that refers to energy at work and psychological stability to cope with challenges. (Bakker et al., 2008) The second dimension is dedication; it refers to positive emotional concentration in creative work, perceiving work as a challenge, and work happiness and satisfaction. Teachers will take pride in their work and recognize its value; it is significant and meaningful to their lives, while they also feel inspired by the work they do. (Bakker et al., 2007; Zhang et al., 2021) Work engagement is a state in which the individual is

focused and fully concentrated on the task; the time, it seems, passes quickly. This state is often accompanied by a deep sense of enjoyment, making it difficult for the individual to disengage from the work. (Bakker et al., 2008; Klassen et al., 2013)

Moreover, Klassen et al. (2013) developed the Teacher Professional Engagement Scale. According to Klassen, the teaching profession differs from others. In many professions, work engagement is often driven by communication and interaction with colleagues, and such engagement may occur only during working hours. However, the teaching profession involves a deeper and more sustained form of commitment. Klassen et al. try to develop the Engaged Teachers Scale (ETS) in order to assess the level of teacher engagement in instruction and educational management for their students, with the following components:

1. Emotional Engagement
2. Social Engagement with students
3. Engagement with colleague
4. Cognitive Engagement

These components are related to enthusiasm, commitment, and work engagement, as well as the processes of instructional planning, student engagement, and classroom management. Accordingly, the preliminary components have been identified as follows for further analysis of indicators:

1. Emotional engagement consists of enthusiasm, work energy, dedication to tasks, and enjoyment at work.

2. Social engagement with students consists of empathy, aspiration for students to succeed, dedication to work, and efforts to create new activities for students.

3. Engagement with colleagues consists of sharing knowledge and skills with colleagues, teamwork, and supporting each other in solving problems.

4. Cognitive engagement consists of work enthusiasm, pursuit of new ideas, learning new things, and perceiving problems as challenges.

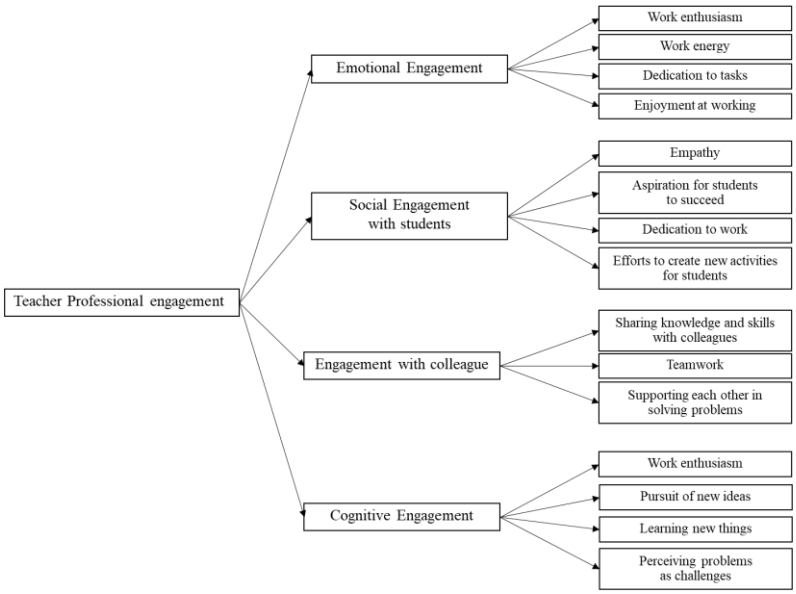

Figure1 Component of Teacher Professional engagement

RESEARCH QUESTION

What are the indicators of teaching professional engagement among senior students in the Faculty of Education?

The purpose of the research

1. Developing indicators and components for professional engagement among senior teacher students, faculty of education.
2. Study professional engagement among senior teacher students, faculty of education.

METHODOLOGY

Participants:

The participants in this study were 108 final-year undergraduates from the Faculty of Education, Ramkhamhaeng University, who were enrolled in the second semester of the 2024 academic year. The participants were selected using convenience sampling. Following the concept of McCallum, Widaman, Zhang, and Hong (1999, cited in Tabachnick & Fidell, 2014), they show that samples in the range of 100–200 are acceptable with well-determined factors. The survey was conducted in March 2025 through an online survey using Google Forms.

Research procedures:

1. Instrument

This study adopted the Teacher Professional Engagement Questionnaire developed by Klassen et al. (2013), which consists of 20 items measured on a 5-point Likert scale, ranging from 5 (highest level of agreement) to 1 (lowest level of agreement).

The questionnaire was examined for content validity by 3 experts, with Item-Objective Congruence (IOC) values ranging from 0.67 to 1.00, and the overall reliability was 0.866.

2. Data Analysis

2.1. Descriptive statistics, including mean, standard deviation, and percentage, were used to analyze the collected data.

2.2. Exploratory Factor Analysis (EFA) was conducted to group variables, using Principal Component Analysis (PCA) for factor extraction and orthogonal rotation via the varimax method. The suitability of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. Factor loadings were examined, and any item with a factor loading less than 0.55 was excluded from the factor. Each retained factor was required to have an eigenvalue greater than 1, based on the criteria proposed by Hair (2015).

2.3. Confirmatory Factor Analysis (CFA) was conducted, and the normality of the data distribution was assessed using skewness and kurtosis values, based on the Maximum Likelihood (ML) estimation method. The model fit was evaluated using several fit indices, including the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), Bartlett's Test of Sphericity, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA).

RESEARCH FINDINGS

The study involved 108 students, consisting of 91 females (84.3%) and 16 males (14.8%). The results of the analysis are as follows:

1. The results of the exploratory factor analysis of teacher professional engagement.
2. The factor loadings and indicators after orthogonal rotation using the Varimax method.
3. Mean, standard deviation, skewness, kurtosis, and peakedness of the variables related to teacher professional engagement.
4. The results of the confirmatory factor analysis of teacher professional engagement.

The details are as follows:

1. The Results of the Exploratory Factor Analysis on Teacher Professional engagement.

The exploratory factor analysis on teacher professional engagement provided the following results: A total of 108 students participated in the study. The examination of the relationships among variables revealed five components of teacher professional engagement: (1) Engagement in self-development for instructional practices, (2) Social engagement through supervision processes and school activities, (3) Social engagement in the teaching profession, (4) Professional identity and pride

in being a teacher, and (5) Professional engagement through collaborative networks and peer interactions. The Eigenvalues of these components ranged from 1.17 to 6.80. The researchers used the Kaiser-Meyer-Olkin (KMO) measure to evaluate the suitability of the data for factor analysis, which yielded a value of 0.807, while Bartlett's Test of Sphericity produced a value of 1060.440. Moreover, a KMO value above 0.80 indicates adequacy of the sample size, and a statistically significant result from Bartlett's test ($p < .05$) (Table 1) suggests that the variables were appropriately correlated for factor analysis.To assess the appropriateness of each variable for inclusion in the factor analysis, the Communality (h^2) values were examined. According to Hair et al. (2010), communality values should not be lower than 0.50 to confirm that variables are sufficiently explained by the common factors. The results showed that all 20 variables used in the analysis had communality values ranging from .546 to .725, indicating that all variables were suitable for factor analysis.

Table 1: The number of variables, eigenvalues, percentage of variance (% of variance) and cumulative percentage of variance (% cumulative) for each component of the professional engagement (n = 108)

	Component	The number of variables	Eigenvalues	% of variance	% of cumulative
1	Engagement in self-development for instructional practices (EI)	6	6.80	32.37	32.37
2	Social engagement through supervision processes and school activities (PA)	4	2.76	13.13	45.49
3	Social engagement in the teaching profession (TP)	4	1.92	9.13	54.62
4	Professional identity and pride in being a teacher (PI)	3	1.42	6.78	61.40
5	Professional engagement through collaborative networks and peer interactions (CP)	3	1.17	5.56	66.97
	Total	20			
	Note: KMO = 0.807, Bartlett's Test of Sphericity = 1060.440, df = 666, p-value = .00				

2. The Factor Loadings and Indicators after Orthogonal Rotation Using the Varimax Method

The factor loadings and indicators, after orthogonal rotation using the Varimax method, revealed that all factor loadings exceeded 0.55 (Hair et al., 2015), resulting in five distinct components:

Component 1: Engagement in self-development for instructional practices (EI)—factor loadings ranged from .570 to .830.

Component 2: Social engagement through supervision processes and school activities (PA)—factor loadings ranged from .565 to .813.

Component 3: Social engagement in the teaching profession (TP)—factor loadings ranged from .640 to .864.

Component 4: Professional identity and pride in being a teacher (PI)—factor loadings ranged from .722 to .766.

Component 5: Professional engagement through collaborative networks and peer interactions (CP)—factor loadings ranged from .661 to .812 (Table 2).

Table 2: The Factor loadings and Indicators after Orthogonal Rotation Using the Varimax Method

	Component				
	1	2	3	4	5
(1) Engagement in self-development for instructional practices (EI)					
C6 I often learn new content and apply it in the classroom.	.830				
C7 I use a variety of assessment methods.	.825				
C3 I can analyze and solve problems that occur in the classroom.	.744				
C5 I can effectively use technology (traditional or digital media) to enhance teaching and learning.	.725				
C9 I am able to analyze problems that arise in the classroom.	.663				
C1 I frequently seek out new knowledge and teaching methods.	.570				
(2) Social engagement through supervision processes and school activities (PA)					
S8 I feel that feedback from supervisors is helpful for improving my teaching.		.813			
C2 I can effectively apply what I've learned to my classroom teaching.		.688			
T10 I feel that school meetings and special events are important aspects of being a teacher.		.680			
T11 I am willing to provide guidance to students beyond academic matters.		.565			
(3) Social engagement in the teaching profession (TP)					
S6 I feel that my supervising teacher understands my needs and problems.			.869		
S5 I can openly share my thoughts and concerns with my supervising teacher.			.864		
S7 I consider my supervising teacher and supervisor as role models in the teaching profession.			.668		
S9 I am glad to have supervising teachers and supervisors who support and advise me.			.640		
(4) Professional identity and pride in being a teacher (PI)					
T2 I feel enthusiastic every time I enter the classroom to teach.				.766	
T3 I feel that the teaching profession is part of my identity.				.744	
T1-4 I feel happy when performing teaching duties and teaching my major subject.				.722	
(5) Professional engagement through collaborative networks and peer interactions (CP)					
S2 I frequently exchange teaching ideas and experiences with fellow student teachers.					.812
S1 I have good relationships with other student teachers.					.697
S3 I have opportunities to work with other student teachers in various projects.					.661

3. Means, Standard Deviations, Skewness, and Kurtosis of the Variables among Student Teachers

To assess the normality of the data prior to conducting Confirmatory Factor Analysis (CFA), it is essential to examine indicators of a normal distribution, particularly skewness and kurtosis values. Since the commonly used estimation method in CFA, Maximum Likelihood (ML), assumes that the data are normally distributed, deviations from this assumption can lead to model distortion and unreliable parameter estimates. As shown in Table 3, the skewness and kurtosis values of almost all variables fall within the acceptable thresholds, skewness < ±2 and kurtosis < ±7, based on the criteria suggested by Gao et al. (2008). However, variable S7 exhibited a skewness of -2.354 and kurtosis of 9.487, exceeding the recommended limits. Therefore, it was necessary to exclude this variable from the analysis to preserve the accuracy of parameter estimation and the validity of the model.

4. The Results of Confirmatory Factor Analysis (CFA) of Student Teachers' Professional engagement

The confirmatory factor analysis revealed that Component 3 (TP), which initially consisted of indicators S6, S5, S7, and S9, did not meet the criteria. Specifically, S5 and S6 had factor loadings lower than .40, and the overall weight of Component 3 was also below .40, based on the guideline by Hair et al. (2019). Moreover, indicator S7 had already been removed in the earlier stage. As a result, Component 3 was eliminated from the model, leaving four remaining components: Component 1 (EI), Component 2 (PA), Component 4 (PI), and Component 5 (CP). In addition, within Component 1 (EI), indicators C5 and C1 adversely affected the RMSEA value, failing to meet the model fit criteria. As suggested by the Modification Indices (MI), these indicators were removed from the model. Once these adjustments were made, the model fit improved, as illustrated in Figure 1 (First-order Model) and Figure 2 (Second-order Model).

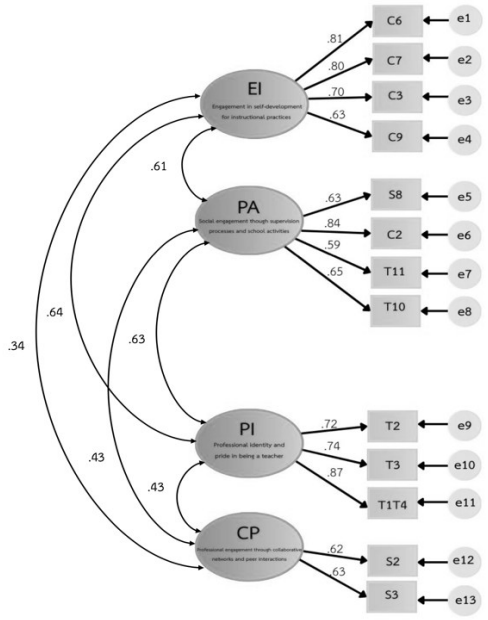

Figure 2 First Oder

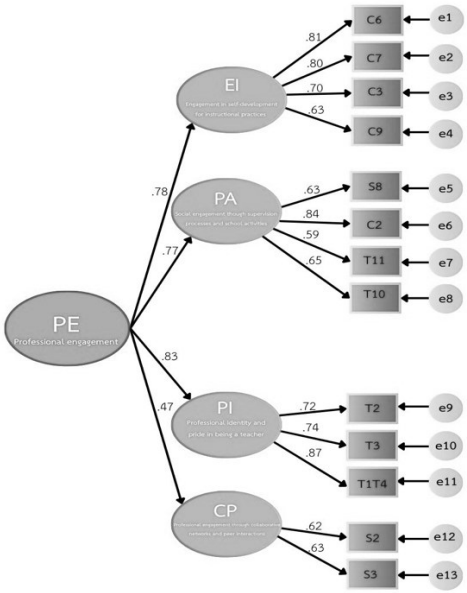

Figure 3 Second order

Figure 2: The Second-order Confirmatory Factor Analysis (CFA) Model. This figure illustrates the four dimensions of the Professional Engagement, demonstrating a good fit to the empirical data, with the following fit indices: Chi-square = 81.492, df = 61, p-value = .000, CMIN/DF = 1.336, Comparative Fit Index (CFI) = .957, Tucker-Lewis Index (TLI) = .936, Root Mean Square Error of Approximation (RMSEA) = .056. These values indicate that the model is consistent with the empirical data and meets the recommended fit criteria.

CONCLUSION

The development of indicators and components of professional engagement among final-year teacher education students in the Faculty of Education aimed to establish a framework for promoting students' engagement in the teaching profession. This was achieved through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) based on responses from 108 students. The results of the Exploratory Factor Analysis, using Varimax rotation, revealed that professional engagement comprised five key components: (1) Engagement in self-development for instructional practices (EI), (2) Social engagement through supervision processes and school activities (PA), (3) Social engagement in the teaching profession (TP), (4) Professional identity and pride in being a teacher (PI), and (5) Collaborative networks and peer interactions (CP). These five components collectively explained 66.97% of the total variance, and the factor loadings for all items were found to be appropriate (> .55), in accordance with the recommendations of Hair et al. (2019). However, in the Confirmatory Factor Analysis (CFA) process, some variables were removed to ensure the model's accuracy. Specifically, Item S7 was excluded due to skewness and kurtosis values exceeding acceptable thresholds, while Items S5 and S6 were excluded due to factor loadings below .40. As a result, the third component (TP) was eliminated, and the second-order CFA was conducted using the remaining four components. The results of the second-order CFA demonstrated a good fit between the model and empirical data, with the following fit indices: Chi-square = 81.492, df = 61, p = .041, CMIN/DF = 1.336, CFI = .957, TLI = .936, and RMSEA = .056, which are within the acceptable criteria as proposed by Hair et al. (2019). In conclusion, the structure of professional engagement developed in this study was found to be theoretically sound and empirically valid. The study's findings validate the potential application of this structure in educational planning and development, with the aim of enhancing teacher students' engagement with their profession.

DISCUSSION

The development of the components and indicators of professional engagement among Pre-service teachers will lead to educational management that emphasizes self-development in instructional practices, the use of supervision processes and school activities to foster student engagement in the teaching profession, the promotion of professional identity and pride in being a teacher, and the encouragement of collaborative networks and peer interaction among students. These elements align with the four components identified in the study's model of professional engagement. Further discussion of the findings can focus on the following key areas:

Aspect 1: Engagement in Self-Development for Instructional Practices (EI)

Self-development in instructional practices includes perseverance in learning new content and applying it in the classroom, finding diverse assessment methods that align with learners' needs, and making efforts to analyze and solve problems that occur during instruction. These characteristics align with the cognitive engagement component (Dilekçi et al., 2025), which emphasizes that teachers who are engaged in their work tend to be attentive to their teaching and strive to think critically and resolve classroom issues. Similarly, Coetzee et al. (2025) identified the willingness component as an indicator of enthusiasm for self-development to enhance professional capacity. Applying insights from these studies to the development of teacher education suggests that educational programs for pre-service teachers should emphasize the promotion of self-directed learning. This includes organizing extracurricular activities that support instructional and assessment innovation, in parallel with regular coursework. Additionally, we should encourage the integration of classroom situation analysis and problem-solving in real teaching scenarios to enhance the practical teaching abilities of student teachers.

Aspect 2: Social Engagement through Supervision Processes and School Activities (PA)

This aspect includes receiving constructive feedback from supervising instructors that contributes to the improvement of students' teaching practices. Student teachers are able to effectively apply the knowledge they have learned to classroom instruction. School meetings and special events are considered integral parts of the teaching profession, and student teachers are prepared to provide

guidance to students on matters beyond academics. This aligns with the findings of Klassen et al. (2013), who described *social engagement* as involving interactions with students, such as offering support outside of class hours and participating in various school activities. Applying these insights to teacher education suggests that supervision processes and school-based activities should be utilized to foster professional engagement among student teachers. This can be achieved by enhancing the capacity of supervising instructors to provide meaningful guidance and support during teaching practice, promoting activities that encourage students to apply their instructional knowledge and skills, providing real-world teaching experiences in schools, and encouraging student teachers to act as mentors or advisors to their pupils.

Aspect 3: Professional Identity and Pride in Being a Teacher (PI)

This aspect includes feeling enthusiastic every time one enters the classroom to teach, perceiving the teaching profession as an integral part of one's life, and experiencing happiness while performing teaching duties, particularly when teaching one's subject area. This concept aligns with *work engagement* as discussed by Dilekçi et al. (2025), which highlights the emotional aspect, suggesting that teachers should feel joy, pride, and a sense of meaning in teaching. Such feelings contribute to teachers' inner strength and their ability to work creatively with others. Similarly, Coetzee, Veldsman, Potgieter, and Ferreira (2025) emphasized indicators such as *work enjoyment* and *intrinsic motivation*. Applying these insights to the development of teacher education suggests that teacher preparation programs should focus on fostering a strong professional identity and pride in the teaching profession. This can be achieved by encouraging students to recognize the importance of classroom learning, cultivating their sense of belonging in the teaching profession, and emphasizing the value of being a teacher until it becomes an essential part of their personal identity—achieved through work-integrated learning processes.

Aspect 4: Collaborative Networks and Peer Interactions (CP)

This aspect includes sharing opinions and teaching experiences with fellow student teachers, building positive relationships with peers, and having opportunities to work collaboratively on various projects with other student teachers. The study by Klassen et al. (2013) highlighted the component of *Social Engagement: Colleagues (SEC)*, indicating that positive relationships with colleagues serve as a motivating force in professional work. Moreover, participation in school activities further strengthens one's sense of professional engagement. Applying this concept to the development of teacher education, it is essential to promote collaborative networks and peer interactions among student teachers. This can be achieved by organizing seminar courses that emphasize the exchange of teaching experiences and ideas, integrating teamwork into learning processes, and encouraging interaction within peer groups. Additionally, students can collaborate and strengthen their engagement with the teaching profession by implementing projects or activities within the Faculty of Education.

From the above aspects, it is evident that teacher education should not be limited to "teaching ability" alone. Instead, it should focus on designing learning processes that foster professional engagement in teaching. This approach aims to instill a strong professional identity, commitment, and pride in being a teacher, which in turn will lead to sustainable and continuous professional practice in the future.

LIMITATION

1. This study employed a convenience sampling method in its research design. The participants were senior students from the Faculty of Education, Ramkhamhaeng University, who were not randomly selected and represented a specific institutional context. As a result, the findings may lack generalizability to other populations, institutions, or educational settings.

2. The sample size in this study consisted of 105 participants. Although McCallum, Widaman, Zhang, and Hong (1999, as cited in Tabachnick & Fidell, 2014) suggest that a sample size between 100 and 200 is generally acceptable when the factor structure is well-defined, limitations remain. During the confirmatory factor analysis (CFA), the software recommended merging certain variables, which may indicate that the sample size was not sufficient to yield stable and distinguishable factor loadings. This limitation could have affected the reliability and interpretability of the CFA results.

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Work Engagement and Digital Citizenship as Predictors of Institutional Performance: The Mediating Role of Organizational Climate and Leadership Practices

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ABSTRACT

Recent research has confirmed that faculty work engagement and digital citizenship are not just emerging ideas but essential factors for institutional success. The study will employ descriptive-correlational and causal predictive approaches to investigate the relationship between faculty work engagement and digital citizenship that impact institutional performance, with organizational climate and leadership practices serving as mediators. The study employed the PROCESS Macro (Model 4) for SPSS 26.0 to analyze parallel mediation effects, using bootstrapping to determine confidence intervals for indirect effects. The Job Demands-Resources (JD-R) Theory and Social Exchange Theory (SET) provide the frameworks for understanding the influence of institutional performance in forming the foundation of this research. Leadership behaviors played a key mediating role in the relationships between work engagement and digital citizenship, showing the strongest link with institutional performance ($r = .643, p < .01$). However, organizational climate did not significantly impact these relationships. Correlation analysis revealed strong positive correlations among the variables, especially between digital citizenship and work engagement ($r = .787, p < .01$). The study concludes that effective leadership strategies are crucial for fostering faculty involvement and digital responsibility, thereby enhancing institutional performance. These highlight the importance of empowering faculty and cultivating leadership as vital strategic objectives for universities aiming to sustain institutional success and meet quality standards.

Keywords: engagement, digital behavior, institutional outcome, organizational environment

INTRODUCTION

The importance of faculty work engagement and digital citizenship as new concepts has been emphasized in current studies. Faculty members are among the important contributors to the success of the Higher Education Institutions (HEIs). Highly engaged teachers exhibit qualities of dynamism and commitment and are expected to display a significant influence on their teaching, research, and community service (Schaufeli et al., 2022). Most often, the continuous growth of digital tools in education has, in a way, propelled the concept of digital citizenship for faculty members, especially in terms of responsible, ethical, and inclusive conduct in the online environment (Choi et al., 2017; ISTE, 2016). Faculty work engagement and digital citizenship have been linked to enhanced institutional performance, where no comprehensive frameworks exist that analyze how these elements collectively impact institutional results. In the context of the Philippines, particularly among regional HEIs, a limited empirical research demonstrates the connection between teachers' beliefs and behaviors and the institutional performance outlined in national policy frameworks comparable to the Institutional Sustainability Assessment (ISA) from the Commission on Higher Education (CHED, 2016), without this notion, leaders of an institution have reduced authority to make decisions regarding faculty development and devising digital policies.

Theoretically, the study addresses a major gap in higher education literature by proposing and testing an integrative model that links faculty work engagement and digital citizenship to institutional performance. While the Utrecht Work Engagement Scale (UWES) has been widely validated as a measure of employee engagement (Schaufeli et al., 2022), and the Digital Citizenship Scale (DCS) has gained recognition for measuring responsible and ethical digital behavior (Choi, Glassman, & Cristol, 2017), few studies have combined these frameworks in one institutional performance model. The Leadership Practices Inventory (LPI) continues to be an effective tool for evaluating leadership behavior in educational settings (Howell et al., 2022). As noted by Katou, Budhwar, and Patel (2021), organizational success in academia is increasingly determined by how well institutions integrate internal leadership and employee engagement with structured performance systems.

Institutional performance. HEIs are influenced by multiple factors including faculty work engagement, digital citizenship, leadership practices, and organizational climate. Recent studies underscore how these dimensions interact to shape institutional success. Institutional performance is commonly measured by research output, teaching quality, faculty development, and student services. The work of Gopez et al. (2024) emphasized defining clear indicators that help universities improve academic and administrative work. *Work engagement.* Characterized by vigor, dedication, and absorption, has been shown to improve teaching quality, research productivity, and institutional image (Schaufeli et al., 2022; Kisa & Uysal, 2020). Institutions with highly engaged faculty tend to rank better and perform more effectively in various academic metrics (Rashid et al., 2020). *Digital citizenship.* This involves the ethical and responsible use of technology in academic work. Faculty members with strong digital citizenship contribute to inclusive, professional digital environments (Choi et al., 2017; Lee & Kim, 2023). However, studies (Castañeda et al., 2023; PhilAir, 2024) reveal gaps in training on data privacy and digital ethics, especially in Philippine HEIs. International research affirms institutional support boosts faculty's digital behavior and engagement (Esteve-Mon et al., 2024; Park & Lee, 2023). *Organizational Climate.* A positive organizational climate marked by respect, fairness, and participation improves faculty satisfaction and productivity. Studies in local (De Guzman & Ramos, 2023; CHED, 2024) and international contexts (Halim & Subramaniam, 2023; Müller et al., 2023) confirm that supportive environments enhance institutional performance and faculty retention. *Leadership Practices*. Transformational and participatory leadership in HEIs is linked to stronger faculty engagement and better institutional outcomes. Leaders who are transparent, ethical, and supportive, faculty morale and performance (Delos Reyes & Padilla, 2023; CHED, 2024). Global evidence further highlights the need for emotionally intelligent leadership in post-pandemic recovery (Suryani et al., 2023; Liu & Taylor, 2023).

This study explores how work engagement and digital citizenship will influence institutional performance in HEIs and investigates whether leadership practices and organizational climate serve as

mediators or moderators in these relationships. Specifically, the study aims to: (1) assess the levels of faculty work engagement, digital citizenship, leadership practices, organizational climate, and institutional performance; (2) determine the relationships among work engagement, digital citizenship, and institutional performance; and (3) analyze the mediating or moderating roles of leadership practices and organizational climate in these relationships.

Theoretical Framework

This study integrates the Job Demands-Resources (JD-R) Theory (Demerouti et al., 2001) and Social Exchange Theory (SET) (Blau, 1964) to explain how faculty work engagement and digital citizenship influence institutional performance, directly and indirectly through organizational climate and leadership practices. JD-R Theory proposes that job demands (e.g., workload, administrative pressure) may lead to stress unless offset by job resources (e.g., leadership support, digital tools, recognition). In this study, work engagement (measured via UWES) and the digital citizenship scale (DCS) function as job resources, which enhance institutional performance by shaping a healthy organizational climate and productive leadership practices. SET enhances this by highlighting mutual relationships that, when the faculty sense fairness, trust, and institutional backing, they are more inclined to exhibit greater commitment and responsible digital citizen behavior. Leadership practices refer to the behaviors, strategies, and actions taken by institutional leaders to guide, influence, and support faculty members (Kouzes & Posner, 2017).

Moreover, organizational climate reflects the collective perceptions and emotional tone of the work environment as experienced by faculty, encompassing fairness, collaboration, recognition, and support (Patterson et al., 2005). Previous empirical studies (Liu & Taylor, 2023; De Guzman & Ramos, 2023) have validated these constructs as separate factors with distinct measurement models and mediation effects. While digital citizenship is traditionally framed in terms of ethics and behavior in technology use, it can also be situated meaningfully within both the JD-R Theory and SET frameworks. Under JD-R, digital citizenship can be understood as a personal resource, specifically a competence-related resource that enables faculty to manage digital demands such as online instruction, digital collaboration, and institutional communication (Schaufeli & Bakker, 2004; Tummers & Bakker, 2021). Responsible digital conduct demonstrates a faculty member's capability to navigate, engage with, and positively impact digital platforms, thus improving their effectiveness in teaching, learning, and research.

From the SET perspective, digital citizenship aligns with the notion of reciprocal responsibility. Faculty who practice ethical, inclusive, and participatory digital behaviors contribute to a more respectful and efficient digital educational environment. In return, they are more likely to receive recognition, support, and trust from both colleagues and leadership, thus reinforcing a positive cycle of exchange and institutional commitment (Cropanzano & Mitchell, 2005). In the context of this study, digital citizenship is both a motivational and social asset that supports institutional performance, especially when activated by leadership and institutional support.

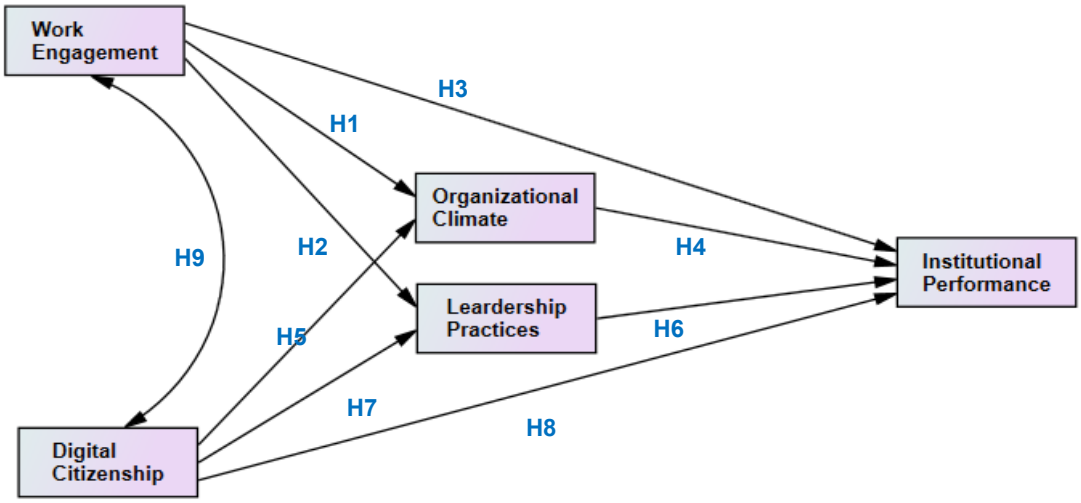

Figure 1
Hypothesized Model of the Study

The figure represents a hypothesized model illustrating the relationships among work engagement, digital citizenship, organizational climate, leadership practices, and institutional performance. Based on the effects type (path) labeled H1 to H11 and the mediation arrows, the following hypotheses can be tested in *Direct Effects:* **H1**: Faculty Work Engagement positively influences Organizational Climate, **H2**: Faculty Work Engagement positively influences Leadership Practices., **H3**: Faculty Work Engagement positively influences Institutional Performance, **H4**: Organizational Climate positively influences Institutional Performance., **H5**: Organizational Climate positively influences Digital Citizenship., **H6**: Leadership Practices positively influence Institutional Performance., **H7**: Digital Citizenship positively influences Leadership Practices, **H8**: Digital Citizenship positively influences Institutional Performance, and **H9**: Faculty Work Engagement positively influences Digital Citizenship; *Mediating Effects:* **H10:** Organizational climate mediates the relationship between work engagement and institutional performance., and **H11:** Leadership practices mediate the relationship between digital citizenship and institutional performance. These collectively indicate the hypotheses that institutional performance is influenced both directly and indirectly by the mediating effects of organizational climate and leadership practices, driven by levels of work engagement and digital citizenship.

METHODOLOGY

This study adopted a descriptive-correlational and causal predictive approach to investigate the influence of faculty work engagement and digital citizenship on institutional performance, with organizational climate and leadership practices as mediators (Creswell, 2018). The paper utilized the PROCESS Macro (Model 4) for SPSS 26.0 (Hayes, 2018) to examine parallel mediation effects. This method was suitable for examining observed data and determining causal pathways between the study variables. Participants included full-time and probationary faculty members of the university, selected through stratified random sampling to ensure diverse representation across academic ranks and disciplines. A sample of 247 respondents met recommended thresholds for mediation analysis (Hair et al., 2010). The study measures five standardized instruments that were used to collect quantitative data. The Utrecht Work Engagement Scale (UWES) measured the faculty's work engagement to evaluate three dimensions of work engagement: vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002; Schaufeli & Bakker, 2003). The Digital Citizenship Scale (DCS), designed for faculty to assess the behavior of an ethical digital user in areas such as exercising the rights and responsibilities of the community, participation, online communication, and responsibility toward technology (Choi, Glassman, & Cristol, 2017). The Leadership Practices Inventory (LPI) measures the five aspects of transformational leadership: setting an example, providing a vision, taking risks,

enabling others to act, and offering support (Kouzes & Posner, 2017). The Organizational Climate Scale (OCS) gathers insights about staff opinions on the types and levels of support they receive from the organization, the effectiveness of the communication system, collaboration, and fairness (Patterson et al., 2005). The criteria for assessing performance in an HEI consist of indicators borrowed from the CHED Institutional Sustainability Assessment (ISA) Framework and the Balanced Scorecard, including teaching effectiveness, research productivity, community engagement, and institutional reputation (CHED, 2016; Kaplan & Norton, 1996).

Table 1
Reliability Coefficients of Survey Constructs

Construct	Cronbach's α	Cumulative Variance (%)	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
Institutional Performance	0.962	79.450	.900
Leadership Practices	0.977	82.139	.925
Organizational Climate	0.960	77.007	.914
Work Engagement	0.973	78.409	.896
Digital Citizenship	0.950	84.215	957

All instruments were pilot tested with 30 faculty members and subjected to reliability analysis, with Cronbach's alpha coefficients of .70 or higher considered acceptable for inclusion. The internal consistency of all constructs used in the study was confirmed to be excellent, as shown in Table 1 by Cronbach's alpha values ranging from .950 to .977. Digital Citizenship (α = 0.950), Institutional Performance (α = 0.962), Organizational Climate (α = .960), Work Engagement (α = 0.973), and Leadership Practices (α = 0.977) all exceeded the .90 threshold, indicating high reliability. In terms of sampling adequacy, Kaiser-Meyer-Olkin (KMO) measures ranged from 0.896 to 0.957, confirming the suitability of the data for factor analysis. The total variance explained by the constructs ranged from 77.01% to 84.22%, showing that a significant part of the variance in each set of items is captured by the respective underlying factor. These results confirm that the survey tools used were both reliable and statistically sound for further analysis.

*Ethical Compliance***.** The study followed the ethical guidelines set by the Philippine Health Research Ethics Board (PHREB) and received clearance from the Liceo de Cagayan University Research Ethics Board (LdCUREB). Informed consent was obtained from all participants, ensuring their voluntary participation and confidentiality. Digital data was encrypted and password-protected, while physical records were securely stored. All data will be retained for five years before permanent disposal, in compliance with national and institutional ethics standards.

RESULTS AND DISCUSSION

These results of the statistical analyses conducted to examine the relationships among Work Engagement, Digital Citizenship, Organizational Climate, Leadership Practices, and Institutional Performance. The study surveyed 247 faculty members, with a majority being female (75.7%). Most participants were under 40 years old, comprising early-career (30–39 years, 40.9%) and young professionals (20–29 years, 39.3%). Mid-career (7.3%), senior (10.1%), and near-retirement faculty (2.4%) made up the rest. These figures indicate a predominantly young academic workforce in the participating HEIs.

The study found high levels across all five measured areas among faculty in HEIs. Faculty work engagement recorded the highest mean (M = 4.57, SD = 0.50), followed closely by digital citizenship (M = 4.51, SD = 0.42), both rated at excellent levels. Institutional performance also scored highly (M = 4.26, SD = 0.72), reflecting effective teaching, research, and service delivery. Leadership practices

(M = 4.06, SD = 0.81) and organizational climate (M = 4.04, SD = 0.93) were frequently evident, indicating generally supportive institutional conditions. As shown in Table 2, the *Pearson Product-Moment Correlation* analysis revealed that institutional performance was most strongly associated with leadership practices (*r = 0.643, p < .01*), indicating that effective leadership significantly influences how institutions function and achieve their goals. This was supported Suparman, Rahayu, and Firmansyah (2024) study, which emphasized the role of transformational leadership in enhancing teaching quality, research productivity, and community engagement. Similar results were observed in a few HEIs, where leadership styles were key predictors of institutional outcomes (Tembo, Tabalasa, & Muleya, 2024).

Table 2
Correlation Coefficient Between Variables

Variable	Institutional Performance	Work Engagement	Digital Citizenship	Organizational Climate	Leadership Practices
Institutional Performance	1				
Work Engagement	.181**	1			
Digital Citizenship	.219**	.787**	1		
Organizational Climate	.367**	.175**	.388**	1	
Leadership Practices	.643**	.249**	.372**	.612**	1
M	**4.26**	**4.06**	**4.04**	**4.57**	**4.51**
SD	0.718	0.807	0.930	0.504	0.421

** $p < 0.01$

In the present study, leadership practices were also positively associated with organizational climate (*r = 0.367*), digital citizenship (*r = 0.219*), and work engagement (*r = 0.181*), reflecting the interconnected nature of leadership, institutional culture, and faculty behavior. While the correlation between work engagement and institutional performance was the weakest among the five variables, it remained statistically significant, highlighting that engaged faculty those who exhibit vigor, dedication, and absorption are more likely to contribute to institutional success when supported by capable leaders and a conducive environment (Delos Reyes & Padilla, 2023).

The study also found strong positive correlations between digital citizenship and work engagement (*r = 0.787, p < .01*), suggesting that faculty who demonstrate responsible and ethical digital behavior tend to be more engaged in their work. This aligns with the findings of Park and Lee (2023), who reported that digital citizenship is closely linked with digital well-being and job satisfaction. Moreover, digital citizenship was positively associated with both leadership practices (*r = 0.372*) and organizational climate (*r = .388*), indicating that faculty digital behavior reflects their perceptions of institutional support and culture. Organizational climate, in turn, showed significant correlations with both leadership (*r = 0.612*) and work engagement (*r = 0.175*), reinforcing its role in shaping faculty experience and motivation (Liu & Taylor, 2023). These results suggest that leadership and climate not only support institutional goals but also foster individual behaviors, like engagement and digital responsibility, that contribute to performance. All observed correlations were statistically significant at the .01 level, providing robust support for the study's theoretical model grounded in the JD-R and SET.

Relationship between Work Engagement, Digital Citizenship, as mediated by Work Engagement, Leadership Practices on Institutional Performance.

A mediation analysis was conducted using PROCESS Macro for SPSS (Model 4; Hayes, 2018) to examine whether Organizational Climate and Leadership Practices mediate the relationship between Work Engagement and Institutional Performance (Table 3). The total effect of Work Engagement on Institutional Performance *was statistically significant*, *b = 0.346, SE = 0.125, t = 2.78, p = .007,* with a 95% confidence interval [0.099, 0.594].

Table 3

Mediation Analysis of the Effect of Work Engagement on Institutional Performance via Organizational Climate and Leadership Practices

Effect Type (Path)	Effect (b)	SE	*t*	*p*	95% CI
Total Effect (WoEng → InPerf)	0.346	0.125	2.78	**.007**	[0.099, 0.594]
Direct Effect (WoEng → InPerf)	0.220	0.113	1.95	**.055**	[–0.004, 0.444]
Total Indirect Effect	0.206	0.066	-	-	[0.087, 0.345]
Indirect via Organizational Climate	0.002	0.007	-	-	[–0.012, 0.018]
Indirect via Leadership Practices	0.204	0.064	-	-	[0.090, 0.342]

F = 54.449 R^2 = *.634* ΔR^2 = .420

This suggests that higher levels of faculty engagement are associated with improved institutional performance when mediators are not included. When Organizational Climate and Leadership Practices were entered as mediators, the direct effect of Work Engagement on Institutional Performance was *no longer significant*, *b = 0.220, SE = 0.113, t = 1.95, p = .055, CI [–0.004, 0.444*], indicating partial mediation.

The total indirect effect of Work Engagement on Institutional Performance was *statistically significant, b = 0.206*, BootSE = *0.066, 95% CI [0.087, 0.345]*. Of the two mediators, only Leadership Practices *significantly mediated the relationship*, *b = 0.204, BootSE = 0.064, 95% CI [0.090, 0.342]*, while the indirect effect through Organizational Climate was non-significant, *b* = 0.002, BootSE = *0.007, 95% CI [–0.012, 0.018*].

The mediation model exhibited a robust explanatory power, with an **R^2** value of **0.634**, indicating that 63.4% of the variance in institutional performance was accounted for by integrating the impacts of faculty work engagement, leadership practices, and organizational climate. This is a significant finding in educational settings, where effect sizes tend to be small due to the intricacies of human and organizational behavior. The alteration in *R^2 (ΔR^2 = 0.42*0) additionally suggests that adding mediators, especially leadership practices, considerably improved the model's predictive precision. While PROCESS Macro (Hayes, 2018) does not directly test the statistical significance of ΔR^2, the substantial increase in explained variance, coupled with the statistically significant indirect effects derived from bootstrapped confidence intervals, supports the mediating role of leadership (Hayes, 2018). The analysis results consciously suggest that leadership practices and organizational climate do not merely occur in parallel with faculty behaviors but actively shape how those behaviors translate into institutional outcomes.

These findings elucidated that faculty engagement positively impacts institutional performance, and its influence is heightened when supported by effective leadership. This resembles the JD-R Theory, which considers work engagement as a crucial motivational resource that enhances faculty productivity (Schaufeli & Bakker, 2008; Tummers & Bakker, 2021). However, engagement alone is insufficient without strategic direction underscoring the role of leadership in channeling faculty effort towards institutional success. The findings also affirm SET's posits that faculty respond with greater commitment and performance when they perceive leadership as supportive and reasonable (Cropanzano & Mitchell, 2005; Saks, 2006). This interplay between JD-R Theory and SET reinforces the assumption that leadership is not merely an administrative layer but a vital mechanism through which faculty engagement and digital behavior are transformed into institutional goals. Thus, HEIs must prioritize leadership development as a strategic means of sustaining institutional performance and quality.

Table 4

Mediation Analysis of the Effect of Digital Citizenship on Institutional Performance via Organizational Climate and Leadership Practices

Effect Type (Path)	Effect (b)	SE	*t*	*p*	95% CI
Total Effect (DiCitz → InPerf)	0.446	0.147	3.04	**.003**	[0.1545, 0.7368]
Direct Effect (DiCitz → InPerf)	0.260	0.138	1.88	**.063**	[–0.0138, 0.5338]
Total Indirect Effect	0.186	0.115	-	-	[0.0091, 0.4683]
Indirect via Organizational Climate	–0.049	0.062	-	-	[–0.1918, 0.0554]
Indirect via Leadership Practices	0.235	0.096	-	-	[0.0799, 0.4626]

F = 56.028 R^2 = *.639* ΔR^2 = .409

An analysis on mediation was conducted using PROCESS Macro (Model 4; Hayes, 2018) to determine whether Organizational Climate and Leadership Practices mediate the effect of Digital Citizenship on Institutional Performance (*Table 4*). The total effect of Digital Citizenship on Institutional Performance was *statistically significant*, *b = 0.446, SE = 0.147, t = 3.04, p = .003*, with a 95% confidence interval *[0.1545, 0.7368]*.

The finding implies that Digital Citizenship statistically predicts positively institutional performance when mediators are not included. When the mediators were introduced, the direct effect of Digital Citizenship on Institutional Performance became *non-significant, b = 0.260, SE = 0.138, t = 1.88, p = .063, 95% CI [–0.0138, 0.5338],* suggesting a partial mediation. The total *indirect effect was significant*, *b = 0.186, BootSE = 0.115, 95% CI [0.0091, 0.4683*]. Among the two mediators, Leadership Practices had *a significant indirect effect*, b = 0.235, BootSE = 0.096, 95% CI [0.0799, 0.4626], indicating that it played a key role in the mediation pathway. In contrast, the indirect effect via Organizational Climate was *not significant*, *b = –0.049, BootSE = 0.062, 95% CI [–0.1918, 0.0554]*. The non-significant direct effect of digital citizenship on institutional performance does not suggest irrelevance. Instead, it highlights the **critical mediating role of leadership practices** in harnessing digital competencies and behaviors toward institutional outcomes. Efforts to improve institutional performance should focus not only on promoting digital citizenship for itself, but also on strengthening digital leadership capacities that can embed these values into strategic and operational functions (Fah et al., 2025).

The mediation model revealed that digital citizenship was significantly influenced by institutional performance, with a total variance explained of $R^2 = .639$. The involvement of leadership practices and organizational climate as mediators contributed to an extra **40.9%** (**ΔR^2 = .409**) of the model's predictive capability, highlighting the important role of leadership in shifting the digital behavior of faculty to meaningful institutional outcomes. While the PROCESS Macro lacks a formal test for ΔR^2 significance, the substantial increase in explained variance and the statistically significant indirect effects verified through bootstrapping affirm the mediating role of leadership (Hayes, 2018). This implies that the effects of digital citizenship are better grasped not on its own, but as a component of a self-motivated framework where leadership directs accountable digital actions into concrete institutional performance. Supporting the results in earlier studies, like those of the work of Abuowda, Iwidat, and Alawnah (2024), which indicate that leadership enhances faculty organizational citizenship behavior, especially when influenced by institutional ICT frameworks, which are implemented accordingly.

Anchored in JD-R Theory and SET, results highlight that digital skills serve as a personal asset that produces organizational advantages when stimulated by leadership. JD-R Theory views digital citizenship as enabling faculty skills managing the digital challenges, whereas SET presents leadership as a mutual process that encourages ethical conduct through support and acknowledgment (Schaufeli

& Bakker, 2008; Cropanzano & Mitchell, 2005). Anwar and Saraih (2024) similarly, digital leadership enhances teachers' sharing of knowledge and emotional intelligence, strengthening institutional performance. Kasmia and M'hamed (2023) also noted that HEIs with strong digital leadership are more effective in embedding technology in teaching and governance. Although organizational climate remains conceptually relevant, its mediating effect was not statistically significant in this study, possibly due to overlapping influences with leadership or unmeasured contextual factors. Leadership is unequivocally the key mechanism through which digital citizenship translates into significant institutional gains. Leadership is unequivocally the key mechanism through which digital citizenship translates into significant institutional gains.

The results emphasize the crucial role of leadership and practices in transforming faculty work engagement and digital citizenship into meaningful institutional outcomes. While both teachers' work engagement and digital behaviors provide benefits, their full impact is realized when supported by effective, ethical, and interpersonal leadership. HEIs may need to focus on leadership development that reflects academic values, encourages faculty support, and fosters a culture of digital responsibility. Although the organizational climate did not significantly mediate the results, it remains important for maintaining morale and collaboration. This includes leadership assessments in mentoring, performance reviews, and strategic planning that help institutions meet standards and other quality benchmarks. The institution's success is closely connected to faculty members' potential contributions through both their digital practices and professional responsibility.

CONCLUSIONS

The paper examined the impact of faculty work engagement and digital citizenship on institutional performance in HEIs. It also looked at leadership practices and organizational climate as factors that could mediate these relationships. The main goal was to understand how these elements interact to impact outcomes in the academic context. The findings indicated a favorable link between teachers' work engagement, digital citizenship, and institutional performance. However, these impacts were primarily indirect. The analysis also revealed that leadership practices were identified as the most important mediator to quantify institutional outcomes. The faculty who demonstrated responsible digital actions were more effective in enhancing institutional success when they received supportive leadership. Although organizational climate was relevant, it did not have a statistically significant mediating effect in this study, suggesting that its impact might be more complex or depend on specific circumstances.

The correlation analysis revealed a strong relationship between leadership practices and institutional performance, through meaningful links between digital citizenship, engagement, and climate. The study achieved all its research goals, revealing generally high levels across the five key areas of faculty work engagement, digital citizenship, leadership practices, organizational climate, and institutional performance. Mediation analyses confirmed that leadership practices are essential for translating faculty behaviors to improved institutional outcomes. These result highlights the importance of leadership practices in HEIs. Effective leadership involves more than just management tasks and creates an environment where faculty can create, innovate, and align their initiatives to the institutional goals. This research advances discussion on organizational psychology and educational leadership in applying the (JD-R) Theory, which views engagement and digital skills as resources needing organizational support, and (SET), which sees the institution in a setting of mutual responsibility and shared value between leaders and faculty.

Key Limitations:

- The study used a cross-sectional design, which limits the ability to draw causal inferences.
- Data were collected from a single institution, which may limit the generalizability of the results.
- The non-significance of mediation by organizational climate may be due to:
- Limitations in the measurement tool used for climate assessment,
- Possible underrepresentation of contextual or cultural factors.

Despite these limitations, the findings affirm the importance of fostering faculty work engagement and digital professionalism. Lifelong institutional success is more likely when empowered, engaged faculty work within environments shaped by competent and values-driven leadership. Leadership development and faculty empowerment must be pursued as strategic priorities for academic excellence and institutional sustainability. The institution develops Leadership Programs that emphasize ethical, transformational, and digital leadership competencies.

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Katahuran: Navigating Politeness, Urgency, and Emotional Regulation in Online Academic Discourse

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ABSTRACT

This study explores the interplay of politeness strategies, digital urgency, and emotional regulation in online academic communication among undergraduate students of a state university. Drawing on discourse analysis of Facebook Messenger interactions, the research reveals how culturally grounded politeness markers such as honorifics, hedges and gratitude expressions are used to negotiate power, maintain harmony, and express accountability in multilingual digital spaces. Digital urgency was often mitigated through deferential tone, temporal hedging, and strategic message framing, reflecting students' sensitivity to academic expectations and interpersonal dynamics. Emotional regulation was evident in both linguistic choices and platform-specific behaviors, including message revisions and use of the unsend function, which signalled self-monitoring and relational awareness. Findings highlight the importance of culturally embedded communication practices in managing high-stakes online interactions. This study contributes to digital pragmatics by showing how students show respect, emotional control, and competence in online discourse. It recommends integrating digital discourse competence and developing culturally-responsive communication toolkit for academic settings. As educational exchanges increasingly shift to digital platforms, understanding how students navigate urgency and emotional tone while upholding politeness offers crucial insights into effective and inclusive online learning environments.

Keywords: Digital Pragmatics, politeness strategies, emotional regulation, digital urgency

THE PROBLEM AND ITS BACKGROUND

In online academic landscape, platforms like Facebook Messenger have become vital tools for instruction and coordination in the Philippines (Tagg, 2015; Tang & Hew, 2019). Group chats (GCs) allow real-time communication among students and instructors, covering convenience, but also posing challenges in managing urgency, emotion and politeness. Messages such as "*Ma'am, sorry murag dili na jud maapas ang ouput, pwede ma extend gamay pls?" (Sorry, ma'am, but I don't think I can meet the deadline. May I ask for an extension, please?)* reflects how students blend politeness with urgency through hedges, apologies, and honorifics (Correo, 2014; Rudio, 2025; Supriyanta & Ghozali, 2017).

Digital urgency often prompts emotionally-charged, time-sensitive messages about deadlines and requirements, and students navigate respect and stress using polite language (AlAfnan & dela Cruz-Rudio, 2023; Briones & Liwanag, 2023; Rudio, 2025), which helps mitigate social distance and maintain harmony.

Politeness strategies and emotional regulation thus play a key role in sustaining respectful digital academic discourse, often masking anxiety with culturally familiar markers like *"sorry kaau" (so sorry)* or *"Thank you ma'am."* Yet, research on the intersection of urgency, emotion and politeness in Philippine higher education remains limited. While studies often address formal discourse or code switching (Bautista, 2004; Mangila, 2019; Olitres, 2023; Santos, 2022), few explore how students negotiate urgent concerns with instructors while upholding respect (Terogo, 2023).

Statement of the Problem

This research explored how undergraduate students managed digital urgency and emotional regulation in online academic communication, focusing on politeness strategies used in interactions with their instructor.

Specifically, the study sought to answer the following questions:

1. What politeness strategies were employed in online academic communication?
2. How was digital urgency managed by students and instructor?
3. What strategies were used by students in the regulation of emotions?
4. What patterns emerged in the management of emotional tone in urgent academic communication?
5. How can insights from the results of the study be integrated into the development of an online communication toolkit?

Theoretical Framework

Three major theoretical perspectives guided this study. Together, they supported the examination of language use, social dynamics and emotional tone in online academic communication. The politeness Theory by Brown and Levinson (1987) was used to explain how individuals manage face-threatening acts through strategies like positive politeness, negative politeness, and off-record communication. It served as a foundation for identifying and categorizing politeness strategies in online academic communication.

The Emotion Regulation Theory by Gross (1998) outlined student-instructor management of emotional expressions and responses, which identifies how they articulated or suppressed emotional states in written messages. Digital Pragmatics by Tagg (2015) provided context for interpreting language use and the dynamics of online communicative norms, urgency and interactional cues in online communications.

Review of Related Literature

Politeness, Digital Urgency and Emotion in Digital Academic Communication

More than etiquette, politeness is a strategic, culturally shaped means of maintaining social harmony in both real-time and asynchronous exchanges. Brown & Levinson's (1987) Politeness Theory remains foundational in explaining how face-threatening acts (FTAs) like requests or complaints are softened through language (David, Hei, & Dealwis, 2012). On platforms like Messenger, students and instructors use politeness strategies to balance transactional goals with relational sensitivity (Anwar, Ikhwan M. Said, & Gusnawaty, 2022; Santos, 2022). This dynamic is shaped by linguistic hybridity, mixing English, and Bisaya with other cultural values such as *pagtahod* (respect) (Locher, 2013).

Research confirms that Filipino speakers deploy politeness strategies heavily in online academic settings. Correo (2014) examined Bicolano participants in an asynchronous university forum and found frequent use of Brown and Levinson's (1987) politeness strategies to manage FTAs, often using phrases signaling apology or regret to manage potential embarrassment or anxiety. Similarly, studies involving Filipino higher education students found that their email requests to professors employed politeness strategies by Blum-kulka & Olshtain (1984), Brown and Levinson (1978), and Suparno, Fitriana, Nadra, Gunawan, & Boulahnane (2023) showing consistent use of appropriate mitigators even in power-imbalance contexts. These findings indicate that Filipino students instinctively employ strategies aligned with hierarchical and collectivist cultural norms in online spaces.

Digital urgency refers to the perceived pressure for immediate response of action within time-sensitive academic communication. Instructors and students alike are subject to this pressure, especially when conversations are mediated by always-on platforms like Messenger. AlAfnan and Dela Cruz-Rudio (2023) argue that urgency can override traditional politeness norms, creating tensions between clarity and courtesy. This is particularly pronounced in contexts where students feel compelled to be polite while urgently seeking help or requesting extensions.

Santos (2022) argue that the rapid nature of digital academic environments can contribute to miscommunication and relational strain. In the local context, Briones & Liwanag (2023) highlighted how Filipino students often operate under tight schedules, contributing to a sense of academic urgency. However, urgency does not preclude politeness. In fact, politeness becomes even more vital when conveying urgency to maintain interpersonal harmony (Chandra, 2021).

Emotional regulation refers to how individuals manage, suppress, or express emotions, especially in contexts where written communication lacks non-verbal cues (Gross, 1998, 2015). In asynchronous digital settings like academic group chats, students must perform emotional labor such as expressing stress, apology, or gratitude, while maintaining composure and showing respect. Gross' (1998) process model highlights strategies such as reappraisal and suppression, which students use to navigate fear of judgment, role expectations, and ambiguity created by delayed feedback.

Santos (2022) and Correo (2014) observe that Filipino students often signal hesitation, reassurance, or self-effacement in digital messages to instructors, pragmatic choices that aim to preempt negative evaluation and mitigate face-threatening acts. Similarly, Graham and Hardaker (2017) found that emotional regulation in digital learning frequently intersects with linguistic politeness, particularly in cultures like the Philippines where confrontation is often avoided. Here, emotional management is not only pragmatic but also culturally grounded, shaped by norms of *katahuran* (respect) and *pakikisama* (relational harmony).

Despite these insights, existing studies tend to treat emotional regulation, digital urgency, and politeness as isolated constructs (AlAfnan & dela Cruz-Rudio, 2023; Ambarwati, Nurkamto, & Santosa, 2019; Briones & Liwanag, 2023). Little attention has been given to how these elements intersect in the lived experiences of students composing high-stakes academic messages. Moreover, few investigations examine how Filipino undergraduates balance emotional control and relational politeness when

responding to urgent academic situations. This gap signals the need for research that integrates these interwoven dimensions of digital interaction, especially within group chat environments where institutional power and cultural values intersect.

METHODOLOGY

Research Design

This study employed a qualitative descriptive research design appropriate for capturing the nuanced and context-specific use of language in digital spaces, particularly in multilingual environments. The design followed a pragmatic approach to online discourse analysis, enriched by sociolinguistic and politeness theory frameworks.

Participants and Setting

The participants included the 32-undergraduate teacher-education students from a single section enrolled in the same course during one academic semester, who engaged with their instructor via Facebook Messenger. For analysis, the class conversation was segmented into three chronological batches. Students were purposively selected according to gender, age, and prior digital academic communication experience. All had previously used Facebook Messenger for academic purposes, though frequency and depth varied.

Ethical Considerations: At the start of the semester, participants were informed that the group chat formed part of their academic participation. Informed consent was secured to use anonymized communication data for research, ensuring confidentiality, voluntary participation, and compliance with institutional ethical review protocols.

Data Collection, Coding, and Analysis

Data were collected from existing Facebook Messenger threads, whether in real time or asynchronous exchanges. The dataset consisted of 38 threads amounting to 135 turns and 2,451 words across the semester.

Following Braun and Clarke's (2006) six-step thematic analysis, the process began with familiarization, noting recurring patterns, emotional tones, and unique phrasing. Manual open coding followed, then grouped into subthemes and broader themes.

Analysis was conducted in three batches: Batch 1 for the beginning of the semester, Batch 2 for the middle of the semester, and Batch 3 for the end of the semester, to identify any temporal variations. Urgency mitigation patterns were analyzed to capture broader trends. Excerpts were presented verbatim to preserve language code and context.

In this research, the main author served as the primary coder, a dual role allowed for contextually informed engagement with the data, given her familiarity with the academic setting. To mitigate potential bias and enhance trustworthiness, as well as record insights and potential influences, reflexive journaling was used. A secondary coder reviewed a subset of the data to check for consistency. Intercoder agreement was calculated manually via percentage agreement, and disagreements were resolved through discussion. This combination of reflexivity, peer verification, and methodological transparency aimed to strengthen the rigor of the contextual interpretation of the use of *po* and mixed-code utterances.

Findings informed the design of an Online Communication Toolkit for students and educators, which included practical templates, language suggestions, and graphics promoting respectful, regulated and effective online communication tailored to cultural and institutional contexts.

RESULTS AND DISCUSSION

Politeness strategies in online academic communication

The data was divided into three batches. Table 1 shows the strategies used in online academic communication.

Table 1. Specific politeness strategies in online communication

Strategy Category	Specific Strategy With Example	Utterances			
		Batch 1	Batch 2	Batch 3	Total
Negative Politeness **Strategies**	Use of honorifics "Nagpanik mi po" (*We panicked.*) "Yes, ma'am." "Ma'am, good morning po."	12	9	14	35
Positive Politeness **Strategies**	Apologies for delay/errors "Sorry kayo ma'am I thought mao na to" (*So sorry ma'am, I thought that was it.*) "Sorry for the late announcement." "So sorry for the delay…"	7	5	6	18
	Expressing gratitude *"Thank you in advance, ma'am, for your patience.*" "Thanks for adding me here." "Salamat kaau!" (*Thank you very much*!)	6	8	10	24
	Greetings and closings "Hello, everyone!" "Good morning, beautiful people!"	4	6	7	17
	Affirmative politeness "Noted po" "Okay po"	5	7	8	20

Across all three batches, students predominantly employed positive politeness strategies, particularly expressions of gratitude *(24 utterances)*, greetings and closing *(17 utterances)*, and the use of honorifics *(35 utterances)* which is used most frequently. These strategies functioned to build rapport and affirm solidarity between students and the instructor. Batch 1 displayed a more informal tone, while Batch 3 conversations maintained more formal exchanges and apologies and self-corrections. In Batch 2, politeness was more formulaic and consistently observed, with frequent use of deferential language and hedging strategies.

The use of honorifics in both formal and informal messages suggested a hybrid digital politeness norm influenced by Filipino sociolinguistic culture (Locher, 2013; Locher & Graham, 2010a; Santos, 2022). While all groups displayed a shared awareness of respectful address, the communicative tone varied. Batch 1 reflects less formal rapport, potentially shaped by earlier or more frequent engagements with the instructor. This could also be because the topics during this time were more relaxed, as the semester was still starting and there were no major deadlines yet. In contrast, Batch 3's frequent message edits and apologies suggest a more performance-conscious environment, suggesting a heightened digital urgency or proximity to final deadlines and a consciousness of the approaching end of the semester where their final grades will be posted.

Another noteworthy feature is the blend of English and Cebuano expressions, revealing the multilingual repertoire used to express politeness in a more natural and culturally recognized manner (Mangila, 2019; Reponte-Sereño, Cuevas, & Sagayno, 2023). The utterances *"Sorry kayo, Ma'am"* and *"Salamat kaau."* illustrate hybrid politeness forms rooted in local linguistic norms and extends Brown and Levinson's (1987) politeness theory by illustrating how these strategies can be blended in a multilingual, culturally layered environment. This also suggests that strategies were not merely chosen from a

universal set, but creatively merged to fit the socio-linguistic repertoire of the speakers. From a digital pragmatics perspective, these patterns underscore how the features of a platform interact with sociocultural norms to produce new forms of relational work that may not appear in face-to-face setting.

Managing Digital Urgency

Digital urgency was typically marked by clarifications (23 utterances), rapid follow-ups (14 utterances), early or late-hour responses and posts (18 utterances), and unsending of messages (8 utterances). Table 2 presents the urgency management used by the students and instructor.

Table 2. Strategies for Urgency Management in online communication

Category	**Strategy with sample utterances**	**Batch 1**	**Batch 2**	**Batch 3**	**Total**
Urgency Management	Request clarifications "Hello ma'am, pwede 4 members ma'am?" "Can we ask for clarification about the group assignments for the project?" "Pwede magsubmit late for this task due to technical issues?" "Ma'am pls respond"	6	8	9	23
	Follow up with tasks "Have you already completed the draft?" "Uploading pa po." "Sorry kaayo nadouble send."	4	4	6	14
	Unsending of messages 5/10/23, 10:21 PM — Student 17 unsent a message	3	2	3	8
	Posting beyond class hours "ma'am sorry jud, nag crash ang laptop nako. Will submit ASAP!" "Pls. disregard the previous submission ma'am 😭😭😭😭." "I can't open the link po."	5	6	7	18

In all batches, urgency management was observable in how students responded quickly to instructions even after submissions. Batch 1 students often managed urgency by explicitly stating challenges and requesting clarification, sometimes with emojis or humorous undertones or a sad emoji. Batch 2 showed handling of digital urgency in a more structured and professional language, often aligning follow-ups with task accountability. Batch 3 conversations displayed task-driven urgency and follow ups, often apologizing for errors in file uploads or expressing concern about meeting expectations. Students were also quick to self-correct and resubmit outputs, indicating a sense of responsibility tied to submission deadlines.

The last batch of utterances was marked with follow ups, unsending of sent messages and posting messages beyond class and office hours adding to the sense of urgency in relation to the students desire to submit their outputs on or before the deadline and their conscious effort to re-examine and edit their messages or inquiries. Noticeably, for the concerns where many students were affected, such as the inquiry about the link where the students should submit outputs, many students clicked the heart or like button to show that they also have the same concern adding to the sense of urgency of the message. The reply of the instructor to these messages were also given likes and hearts, indicating that many students, not just the one who sent the message, have been waiting for their instructor's reply.

This phenomenon of unsending messages appearing most frequently in Batch 3, can be mapped onto Gross's (1998) process model of emotion regulation as response-focused regulation strategy. Retracting a message helps students modify the emotional impact of their output and reduce potential

embarrassment, misinterpretation or perceived imposition. This is noteworthy in online setting because it combines affective management and politeness preservation.

The management of urgency in online communication highlighted the effort to maintain a well-facilitated flow of communication despite obvious pressures (AlAfnan & dela Cruz-Rudio, 2023; Briones & Liwanag, 2023).

Strategies used by students in the regulation of emotions in online communication

Across all batches, students used language to justify delays (12 utterances) and manage emotional tone, often through apologies (17 utterances), admissions (14 utterances), and gratitude (21 utterances), strategies that reflect emotion-focused regulation (Blum-kulka & Olshtain, 1984; Santos, 2022; Widiadnya, Seken, & Santosa, 2018). This can be seen in Table 3.

Unsent messages also indicated self-correction and emotional control (Tagg, 2015). Gratitude emerged as prosocial regulation tool to soften face-threatening acts and restore harmony, especially after late submission or urgent requests (Correo, 2014; J.R Martin & White, 2005). Emotion regulation was not just individual but culturally embedded, reinforcing the relational aspect of Filipino academic discourse.

Table 3. Strategies in the regulation of emotions in online communication

Category	Strategy	Batch 1	Batch 2	Batch 3	Total
Emotional Regulation	Justify delays "Naglisod pa mi sa formatting po" "sending pa ma'am as of now" "I can't access the link po."	3	5	4	12
	Admission of error/unsending messages *"Late na ko naka-check ma'am"* *"9 pages ni xa, not the 8 pages before."*	5	4	5	14
	Gratitude as emotional buffer "Hay salamat!" "Omg thank you mam!!! Thank you!!!"	6	7	8	21
	Apologies "Sorry kaayo ma'am." "Sorry ma'am." "Hello everyone, naa na mo? sorry kaayo, posible madelay atong klase kay wala pa mahuman amo meeting"	5	4	8	17

In Batch 1, emotional regulation was marked by structured politeness and moderated urgency. Students used honorifics, temporal hedging *("as of now po"),* and admissions as face-saving strategies aligned with Brown & Levinson (1987). Gratitude closings signaled resolution and confidence.

Batch 2 showed deeper emotional regulation through unsent messages reflecting self-monitoring and repair (Tagg, 2015). Apologies and justifications indicated emotional transparency and trust in the consistency of instructor empathy. These align with Dandoy & Goldstein's (1990) cognitive appraisal, highlighting perceived social support.

Batch 3 linked emotional regulation with digital urgency. Students used Messengers's unsend feature to correct errors, showing stress reappraisal. Frequent apologies and polite hedging reflected relational sensitivity and pragmatic control.

Message framing through mitigating preambles such as "*We know you're busy ma'am…*", indirect requests and sequenced gratitude also showed planning and deference. These reflect politeness as interactional achievement and emotional regulation as a key component of respectful online communication (Locher & Graham, 2010b).

Emotional regulation was also demonstrated by the instructor's soft mitigation strategies, modeling how delays can be acknowledged without causing undue stress. It was also evident how the instructor managed to be transparent with the class schedule, giving advanced notice about delays. Instructor contributions to the conversation also shaped the interactional climate of the group chat. The instructor's use of timely acknowledgments, clarifications and strategic softeners reinforced a reciprocal politeness dynamic. This aligns with Brown and Levinson's (1987) notion that politeness is co-constructed and supports the digital pragmatics view that the relational tone emerges from both the sender's and receiver's behavior. Recognizing the instructor's role underscores that hybrid politeness norms in this setting are not unilateral but the result of a mutual adaptation between authority and learner roles in a highly collectivist culture.

Patterns in management of emotional tone in urgent academic interactions

In urgent online academic exchanges, emotional tone significantly shaped student-instructor dynamics. Emotions such as stress, apology, and gratitude were conveyed through both explicit markers and subtle discursive strategies, influenced by urgency, relational norms, and cultural expectations for respect.

Stress and Anxiety. Stress was expressed through disclosures, message frequency, and emotive punctuation (Gross, 1998; Terogo, 2023). Expressions like *"ma'am sorry jud, nag crash ang laptop nako. (Ma'am, I'm so sorry, my laptop crashed.) Will submit ASAP!"* reflected attempts to mitigate negative judgments and maintain face (Brown & Levinson, 1987). Indirect signals like *"Mam pls respond"* also conveyed emotional urgency while preserving politeness (Santos, 2022; Widiadnya et al., 2018).

Apology as emotional and pragmatic strategy. Apologies (Blum-kulka & Olshtain, 1984; Rudio, 2025) were common in the face of delays or errors, and signaled both guilt and deference, aligning with negative politeness (Brown & Levinson, 1987). Paired with justifications, they reflected the Filipino value of *pakikisama*, fostering smooth interpersonal relations (Pe-Pua & Protacio-Marcelino, 2000).

Gratitude as closure. Gratitude served as positive politeness and emotional closure, softening high pressure requests and reinforcing solidarity (Pe-Pua & Protacio-Marcelino, 2000).
Interestingly, gratitude was also used preemptively, even before the instructor responded.
Such usage suggests that students anticipated potential inconvenience and buffered it with appreciation, a form of emotional hedging that maintained relational warmth while managing task-related urgency.

Implicit regulation through message structuring. Beyond lexical choices, students also managed emotional tone through message structuring techniques such as placing requests between greeting and expression of thanks, use of self-effacing phrases, inclusion of emojis or softened punctuation. These devices reveal that even when explicit emotions were not stated, students actively regulated the emotional undertones of their digital interactions. The multimodal elements (punctuation, emojis, sequencing) supported the view of digital discourse as affectively charged and pragmatically rich (Suparno et al., 2023; Tang & Hew, 2019).

Across the three batches, Batch 3 consistently showed the highest use of strategies, with apology, gratitude, and stress disclosure serving as tools for digital politeness and relational maintenance. These were not merely expressions of feeling but functioned within a broader system of digital politeness and relational maintenance, especially salient in what Briones & Liwanag (2023) called high-context, collectivist cultures like the Philippines. This highlights the inherent tension in urgent online academic communication: speed and efficiency often collided with social harmony and emotion.

Implications for Educational Practice and the Online Communication Toolkit

The findings in this study emphasize the importance of teaching not just digital literacy, but also digital emotional and pragmatic competence. Instructors and institutions should recognize how digital platforms alter communication dynamics, especially in a collectivist culture like the Philippines. The

online communication toolkit (Appendix A) could help bridge the gap between academic expectations and the informal yet respectful discourse students engage in online. This aligns with the goals of culturally responsive pedagogy (Krasnoff, 2016) and affirms the value of multilingualism in Philippine higher education.

This toolkit can be used as both a reference and a training resource in workshops, integrated into syllabi or shared as a file in GCs, and can become a support material that sustains respectful and efficient digital interaction.

CONCLUSION

This study investigated how politeness strategies, digital urgency, and emotional regulation intersected in the online academic communication between students and their instructor. This study of patterns illustrates how platform affordances interact with cultural norms that produce a unique ecosystem of politeness, urgency management, and emotional regulation that both adapts to and reshapes existing theoretical models.

Analysis of Messenger interactions across three batches revealed the adaptation of positive and negative politeness strategies that are primarily culturally-grounded to negotiate authority and maintain social harmony in a multilingual online space. Students managed digital urgency through polite hedging and deferential tone, balancing academic responsiveness with relational sensitivity. Emotional regulation strategies that students used included the use of platform features and self-censorship, demonstrating management of emotion in combination with the affordances of online communication. Patterns showed urgency often co-occurring with softened emotional tone and message framing, reflecting the students' awareness of academic and interpersonal expectations. These insights support the design of an online communication toolkit that equips students and educators with culturally-responsive and emotionally aware strategies for respectful online interactions.

RECOMMENDATIONS

Based on the findings, the study recommends the following:

a. Integrate digital discourse competence into teacher education to equip students with pragmatic skills for respectful and emotionally-regulated online communication
a. Offer development programs on digital pragmatics and sociolinguistics, emphasizing culturally-responsive strategies and the role of local language resources
b. Expand future research across platforms, disciplines and institutions to explore generalizability and cultural specificity of online academic discourse strategies across disciplines and institutions and to address the differences in features of platform applications. A more balanced dyadic analysis where more instructors' language patterns, not just one, will also be thoroughly analyzed to provide a richer account of the reciprocity in online academic discourse is also recommended.

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Appendix A: Online Communication Toolkit

Component	Description
1. Introduction to the Toolkit	Purpose, scope, relevance, and brief overview of the study.
2. Core Principles	Respect, Clarity, Social Sensitivity in Urgency, Emotional Regulation, Multilingual Awareness, Accountability — each with 2–3 bullet examples of application.
3. Communicative Scenarios & Message Templates	For each scenario: (a) common situation, (b) polite template, (c) common mistakes.
4. Emotional Regulation Tips	Self-check questions, words that de-escalate, "What to avoid in the GC," empathy reminders, instructor notes.
5. Group Chat Management Tips	Clear messaging, time awareness, threading, avoiding overload, minimizing urgency, assigning roles, using pin/summaries, instructor notes.
6. Educator's Corner	Model behaviors, feedback strategies, language choices.
7. Aids and Quick References	Politeness Ladder, "Should I Send This Now?" flowchart, Tone Check Visual, sample structured message layouts.
8. Final Reminders & Commitment Page	"Before You Click Send" recap, commitment statement template.

Faculty Performance via Student Sentiment: NLP Techniques

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ABSTRACT

This study investigates the application of Natural Language Processing (NLP) techniques to enhance faculty performance evaluation through sentiment analysis of student feedback at ABC College, Philippines, using Student Evaluations of Teaching (SET) data from 2019 to 2024. Addressing the challenges of manual analysis, namely time-intensity, subjectivity, and inconsistency, the research employs four NLP models: BERT, Flair, VADER, and NRCLex, to classify sentiments into positive, negative, and neutral categories. A dataset of 187,197 preprocessed records, reduced from an initial 313,727 entries, was analyzed, with 500 comments manually annotated by experts to establish ground truth. Predictive modeling, validated with accuracy, precision, recall, and F1-score metrics, assessed model reliability. Results show Flair achieving the highest performance (accuracy 0.97, F1-score 0.97), followed by BERT (accuracy 0.96, F1-score 0.96), while VADER (accuracy 0.66, F1-score 0.65) and NRCLex (accuracy 0.53, F1-score 0.37) underperformed, highlighting the superiority of transformer-based models in capturing sentiment nuances. Confusion matrices indicate BERT's strength in minimizing false positives for negative sentiments and Flair's edge in identifying true positives, while VADER offers balanced multi-class classification and NRCLex excels in positive sentiment detection but struggles with neutral and negative distinctions. This research contributes to educational data analytics by providing a scalable, data-driven framework, to sentiment analysis by benchmarking diverse NLP tools in an educational context, and to evaluation frameworks by enabling real-time, objective feedback systems.

Keywords: sentiment analysis, BERT, VADER, NRCLex, Flair

INTRODUCTION

Advancements in Artificial Intelligence (AI) and Natural Language Processing (NLP) have profoundly impacted fields like healthcare and education. In education, student feedback plays a critical role in assessing teaching strategies, course materials, learning platforms, and overall instructional approaches. Institutions typically collect this feedback at the end of each semester via surveys that include both quantitative and qualitative data, such as student demographics, course information, numerical ratings, and open-ended comments. While quantitative data provides statistical insights into course evaluations, qualitative data reveals deeper student sentiments and intentions. By applying NLP techniques, such as feature extraction and selection, educators can analyze textual responses to uncover meaningful patterns, enhancing their understanding of student perspectives on courses, content, and teaching effectiveness. (Shaik et al., 2022)

Evaluating faculty performance is essential for ensuring quality education in higher education institutions. Through regular assessment of teaching performance, institutions can uphold academic standards, identify areas for improvement, and enhance student learning outcomes. These evaluations also guide important administrative decisions such as promotions, tenure, and professional development. Beyond institutional benefits, performance reviews provide faculty with valuable feedback that supports their growth, strengthens their teaching practices, and enhances job satisfaction. A strong performance management system reflects the institution's commitment to continuous improvement and professional development. It fosters a supportive environment where faculty are empowered to contribute meaningfully to the institution's goals (Patimo, 2020)

In the realm of educational data analytics, faculty performance is traditionally evaluated through quantitative metrics such as grades, attendance, peer reviews, and standardized surveys (Smith & Johnson, 2020). However, the application of sentiment analysis to formal student feedback for faculty assessment, particularly through a comparative evaluation of multiple natural language processing (NLP) models, remains a relatively underexplored domain, despite its established use in contexts like product reviews and social media monitoring (Brown et al., 2021). This study distinguishes itself by employing a multi-model comparison, rigorously assessing four distinct NLP approaches, BERT (Devlin et al., 2019), Flair (Akbik et al., 2019), VADER (Hutto & Gilbert, 2014), and NRCLex (Mohammad & Turney, 2013), which span transformer-based models, lexicon-based methods, and hybrid techniques, thereby providing a comprehensive analysis uncommon in existing literature. Furthermore, the integration of predictive modeling, validated against human-annotated ground truth using robust performance metrics such as accuracy, precision, recall, and F1 score, adds a novel dimension to sentiment classification. Tailored specifically to the education sector, this research addresses a high-impact yet understudied area by leveraging student feedback to enhance faculty evaluation, offering evidence-based insights that can inform the development of automated, scalable, and objective performance review systems, potentially mitigating the subjectivity and bias inherent in manual assessments. This work contributes significantly to educational data analytics by introducing an NLP-driven approach to interpret qualitative student comments quantitatively, to sentiment analysis research by establishing empirical benchmarks for the evaluated tools in an educational context, and to evaluation frameworks by demonstrating how combined model performance metrics can guide institutional decision-making, thereby laying a foundation for future hybrid systems that integrate sentiment analysis with other faculty performance indicators.

Statement of the Problem

The evaluation of faculty performance plays a crucial role in maintaining instructional quality, enhancing teaching effectiveness, and supporting faculty development. One of the most direct and informative sources of evaluation is student feedback, which is frequently provided through open-ended textual comments. These qualitative responses offer rich insights into students' perceptions, experiences, and satisfaction levels regarding teaching practices, classroom interactions, and overall course delivery. However, manually analyzing such feedback is a time-consuming and resource-intensive task, especially when dealing with large volumes of data across multiple courses or faculty members. Evaluators must read and interpret a wide range of comments, which often vary in tone,

clarity, and depth. This process not only demands significant effort but also introduces the risk of personal bias and inconsistency. Different reviewers may interpret the same comment in various ways, leading to subjective judgments that can compromise the accuracy and fairness of the evaluation. Furthermore, without a standardized approach, important insights may be overlooked, and the overall reliability of the assessment may be diminished. As a result, the manual analysis of open-ended student feedback can limit the effectiveness of faculty performance reviews and hinder data-driven decision-making. (Liu et al., 2019)

The following research questions guide this study:

1. Which among BERT, Flair, Vader, NRCLex sentiment analysis models achieves the highest accuracy, precision, recall, and F1 score in predicting faculty-related sentiments?
2. How can open-source sentiment analysis systems be integrated into real-time feedback processes to enhance the responsiveness of educational institutions?

Objectives

This study aims to apply multiple NLP-based sentiment analysis tools, BERT, Flair, Vader, and NRCLex on student feedback regarding faculty performance, while highlighting the potential of open-source technologies to strengthen real-time feedback processes in educational institutions. It seeks to develop and implement a predictive model that classifies student sentiment into positive, negative, or neutral categories, and to compare the predicted sentiment annotations with human-annotated ground truth in order to assess model reliability. Furthermore, it aims to evaluate the performance of each sentiment analysis approach using accuracy, precision, recall, and F1 score, and to determine the most effective method for assessing faculty performance in an educational context, enabling scalable and cost-effective deployment in real-time feedback systems.

Scope and Limitations

This study explores the use of various sentiment analysis methods on qualitative student feedback from faculty evaluations at ABC College in the Philippines, utilizing Student Evaluations of Teaching (SET) data from 2019 to 2024. It applies VADER, BERT, NRCLex, and Flair to extract sentiment features, enabling a comparison between lexicon-based and transformer-based techniques. The analysis is limited to textual SET responses. Although ethical and fairness concerns in automated faculty evaluation are acknowledged, the study does not include a formal bias or fairness analysis. Its main contribution is presenting a scalable, data-driven framework for incorporating sentiment analysis into faculty evaluation processes, with potential relevance for broader academic use.

Related Literatures

VADER is a rule-based sentiment analysis tool well-suited for social media text. Las Johansen (2018) used VADER with the Plutchik emotion model to analyze 1,292 tweets and 25 news articles on the West Philippine Sea dispute, revealing predominantly neutral sentiment (95%). Its ability to process informal language, emoticons, and acronyms made it effective for assessing public opinion on socio-political issues. Similarly, Ali et al. (2023) applied VADER to over 1.8 million tweets to analyze public sentiment on COVID-19 measures in Pakistan, such as lockdowns and vaccinations. Neutral sentiment dominated across datasets. VADER's speed and domain-agnostic lexicon made it effective for large-scale analysis, though its limitations in handling context-rich or specialized language suggest the need for complementary methods.

Studies of Mahrukh et al. (2023) and Kaur et al. (2024) both highlight Flair as a powerful, machine learning-based tool utilizing a character-level LSTM or RNN neural network for contextual understanding. Mahrukh et al. (2023) used Flair to generate sentiment labels from movie subtitles for fMRI data, noting that while it was less accurate than lexicon-based tools for subtitle classification, its fMRI data classification performance was strong, suggesting its labels are relevant for brain studies. Kaur et al. (2024) demonstrated Flair's effectiveness in analyzing nuanced emotional content in love letters, emphasizing its "advanced features and contextual embeddings" and multilingual support,

though they also pointed out its high processing demands. Empirically, Flair showed moderate agreement with transformer-based models like Hugging Face, indicating a consistent, context-aware approach distinct from simpler lexicon-based methods.

BERT, as detailed by Chen et al. (2020), is a powerful deep learning model for fine-grained sentiment analysis. Their study proposed a novel approach to enhance BERT's semantic learning by integrating specific commodity feature words and emotional words, which were extracted through dependency parsing. These extracted words were added to the end of sentences and fed into the model during pre-training, thereby improving BERT's attention mechanism to focus on emotional content. This refined BERT model (BERT-2) achieved high accuracy and F1 scores (94.67% and 94.55% respectively) on Chinese review datasets (specifically product review data), significantly outperforming traditional models like TextCNN, LSTM, and Bi-LSTM. The results demonstrated BERT's robust capability for sentiment polarity discrimination by effectively learning text semantics in different contexts through its Transformer-based architecture.

On the other hand, NRCLex, as presented by Awais and Durrani (2023), is a lexicon-based Python library used for sentiment and emotion analysis. It employs a dictionary-based method that classifies text by associating words with positive, negative, and various emotional connotations (e.g., joy, anger, sadness, fear, trust) from its built-in lexicons. The library assigns sentiment scores ranging from -1 (most negative) to +1 (most positive) and emotion strength scores from 0 to 1 for specific feelings. Awais and Durrani (2023) utilized NRCLex to analyze consumer reviews, successfully categorizing sentiments and emotions. They emphasize NRCLex's efficiency for rapid and accurate analysis of large text volumes, making it valuable for applications such as market research, customer feedback analysis, and social media monitoring. The study highlights NRCLex's straightforward methodology and its adaptability for specific use cases by allowing modifications to emotion categories and scoring systems.

Sentiment Analysis

Sentiment analysis, a branch of Natural Language Processing (NLP), identifies emotions, opinions, and attitudes in unstructured text to support informed decision-making. In education, it helps track student emotions, analyze group dynamics, and interpret feedback to improve teaching and learning (Onan, 2021; Kastrati et al., 2021). The field combines NLP, AI, psychology, and sociology (Dervenis, 2024; Shaik et al., 2023) and typically uses two main approaches: deep learning (DL) and lexicon-based methods. DL models learn complex patterns with minimal manual input, while lexicon-based methods use predefined word sentiment scores (Lalata et al., 2019; Kastrati et al., 2021; Shaik et al., 2023).

VADER

VADER (Valence Aware Dictionary and sEntiment Reasoner) is a rule-based sentiment analysis tool that uses a predefined lexicon to assess emotional tone and polarity in text. Unlike machine learning models, it requires no labeled data, making it efficient for large-scale applications such as public opinion monitoring and educational feedback analysis. VADER performs well on informal language, particularly social media, with reported accuracy of up to 86.7% when neutral sentiments are excluded (Efuwape et al., 2022; Lazrig & Humpherys, 2022; Chadha & Chaudhary, 2023; Cristescu et al., 2023). However, its static lexicon may limit its adaptability to formal texts and evolving language use, necessitating periodic updates.

Flair

Flair is a machine learning-based sentiment analysis tool that leverages contextual word embeddings to capture nuanced and complex emotional expressions. Offering pre-trained models, multilingual support, and fine-tuning capabilities, it outperforms rule-based methods like VADER in accuracy and adaptability (Akbik et al., 2019; Kaur et al., 2024; Radecki & Rybicki, 2024). While well-suited for advanced sentiment tasks, Flair requires higher computational resources and may occasionally yield

polarized outputs. Its strength lies in text classification and sequence labeling, making it a robust choice for academic and industry applications.

BERT

BERT (Bidirectional Encoder Representations from Transformers), introduced by Google in 2018, revolutionized sentiment analysis through its deep contextual language understanding. In education, BERT-based models have shown high accuracy (often >90%) in analyzing student feedback for faculty evaluation and course reviews, outperforming earlier methods like Word2Vec and GloVe (Sindhu et al., 2019; Geetha et al., 2021; Prottasha et al., 2022; Belo et al., 2023). While effective, challenges persist in low-resource settings and in detecting fine-grained sentiment. Future research calls for standardized tools, multimodal integration, and improved generalization across domains (Eke et al., 2021; Shuqin & Raga, 2024).

NRCLex

NRCLex is a Python-based, lexicon- and rule-driven sentiment analysis tool that leverages the NRC Emotion Lexicon to classify text into eight emotions and two sentiment polarities. With a 27,000-word crowd-annotated lexicon, it enables efficient and psychologically grounded emotion detection, particularly useful in social media and crisis contexts (Olusegun et al., 2023; Feizollah et al., 2022; Ainapure et al., 2023). While it offers ease of use and scalability, its reliance on word-level associations may limit accuracy in domain-specific or brief texts. Nonetheless, NRCLex remains a practical tool for large-scale affective analysis (Liu et al., 2025).

Python

Python dominates data science (DS) and machine learning (ML) due to its accessibility, broad library ecosystem, and cross-domain versatility. In NLP, libraries like NLTK, spaCy, and Hugging Face support large-scale model deployment, driving 78.6% of the commercial market. Deep learning frameworks such as PyTorch and TensorFlow are foundational, with PyTorch favored for GPU efficiency and TensorFlow for scalability. Python also powers 86.2% of medical imaging systems in research and supports predictive analytics through tools like pandas and scikit-learn. These capabilities position Python as the core language for modern AI development (Mantrala, 2025; Castro et al., 2023; Umarani et al., 2021).

METHODOLOGY

This study adopted a systematic process that begins with the collection of student feedback, followed by data preparation and pre-processing. Sentiment analysis was then conducted using four approaches, BERT, VADER, FLAIR, and NRCLex to determine the polarity of the feedback. The classified data were subsequently evaluated to identify the most effective sentiment analysis model for predicting faculty evaluation ratings. The framework for this process was adapted from Lalata et al. (2019) and modified to align with the specific objectives and context of the present study as illustrated in Figure 1.

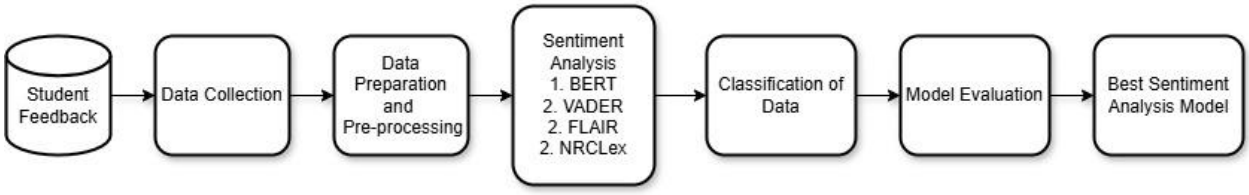


Figure 1. Conceptual Framework

Faculty evaluation is a structured process aimed at examining a faculty member's performance, teaching effectiveness, research outputs, and overall professional capability. Its core objectives include ensuring accountability, enhancing the quality of instruction, encouraging faculty growth, and preserving high academic standards within educational institutions. One of its significant benefits is the provision of constructive feedback, which guides faculty members in identifying improvement areas and refining their instructional approaches (Ching, 2019).

In this study, faculty evaluation records from ABC College, covering the academic years 2019 to 2024, served as the primary dataset. The questions employed for the faculty evaluation by students comprised three key sections designed to elicit comprehensive feedback. The first section focused on best practices, specifically targeting aspects such as teaching methods and classroom management, allowing students to highlight effective instructional strategies and organizational techniques employed by the faculty. The second section addressed areas for improving the course and subject, encouraging students to identify specific challenges or gaps in the curriculum or delivery that could enhance the learning experience. The third section invited other suggestions, providing an open-ended opportunity for students to offer additional insights or recommendations beyond the structured categories, thereby enriching the dataset for a holistic assessment of faculty performance.

Initially consisting of 313,727 entries, the dataset underwent rigorous preprocessing to ensure accuracy, consistency, and readiness for analysis. This process involved the manual removal of special characters and blank entries (Rastogi, 2022), as well as the automated elimination of stopwords through Python in Google Colab (Yadav, 2023). Further cleaning steps included converting all text to lowercase for uniformity, removing common stopwords such as "a," "the," and "there" to improve processing efficiency, eliminating punctuation and extra spaces, and correcting misspellings or repeated letters using a spellchecker. Lemmatization was also applied to reduce words to their base form through morphological analysis, thereby enhancing semantic precision and interpretability (Lalata et al., 2019). After these steps, the dataset was reduced to 187,197 records.

These four models, BERT, VADER, NRCLex, and FLAIR were employed to extract sentiment-related features from the faculty evaluation dataset. BERT generated polarity outputs restricted to positive and negative classifications, along with a confidence score for multi-class sentiment classification. VADER, in contrast, provided polarity scores across three categories, positive, neutral, and negative, plus a compound score reflecting overall sentiment intensity. FLAIR also determined sentiment polarity (positive or negative) and produced probability scores indicating the model's confidence in its predictions. NRCLex identified the predominant emotional category in each comment, such as joy, anger, or sadness, which was then mapped to a simplified sentiment label (positive, negative, or neutral) to ensure consistency across models. Following feature extraction, the processed data underwent analysis using four sentiment analysis models.

A total of 500 student comments from a single course section were manually annotated by three experts to establish ground truth sentiment labels. These labels were compared against predictions generated by an ensemble sentiment analysis model. For each sentiment analysis method, VADER, BERT, NRCLex, and FLAIR, the distribution of predicted sentiments (positive, negative, and neutral) was documented as percentage values. Model performance was assessed through a cross-validation procedure using Accuracy (reported as a percentage, where higher values reflect superior performance), Precision (ranging from 0 to 1, with 1 denoting perfect precision), Recall (also between 0 and 1, where 1 indicates flawless recall), and the F1-score (the harmonic mean of precision and recall, with 1 representing the best possible score).

As noted by Alaparthi & Mishra (2020), these four metrics, accuracy, precision, recall, and F1-score are commonly employed to benchmark sentiment analysis models.

The codes for the four sentiment analysis models evaluated in this study are openly available in the project's GitHub repository at https://github.com/amddph/P25166.git to support transparency and

reproducibility. The raw narrative feedback comments are not shared, as they may contain information that could directly or indirectly identify faculty members.

RESULTS AND DISCUSSION

The four sentiment analysis models, BERT, VADER, NRCLex, and FLAIR were evaluated individually to develop the ensemble predictive model.

Table 1. Performance Metrics of Sentiment Analysis Models (BERT, Vader, NRCLex, Flair)

Model	Accuracy	Precision	Recall	F1-Score
Vader	0.66	0.74	0.66	0.65
BERT	0.96	0.97	0.96	0.96
Flair	0.97	0.97	0.97	0.97
NRCLex	0.53	0.28	0.53	0.37

The table presents the performance of four sentiment analysis models evaluated using accuracy, precision, recall, and F1-score.

Among the models, FLAIR achieved the highest overall performance, with an accuracy, precision, recall, and F1-score of 0.97, indicating near-perfect classification consistency across all metrics. BERT closely followed with slightly lower but still outstanding values (accuracy 0.96, precision 0.97, recall 0.96, F1-score 0.96), demonstrating strong reliability and balanced performance.

VADER showed moderate results, with an accuracy of 0.66 and an F1-score of 0.65, suggesting it was less effective in correctly identifying sentiment compared to the deep learning models (BERT and FLAIR). Its precision (0.74) was higher than its recall (0.66), meaning it was better at correctly labeling positive predictions than at capturing all relevant cases.

NRCLex recorded the weakest performance, with an accuracy of 0.53 and a notably low precision of 0.28, indicating a high rate of false positives. Although its recall (0.53) was similar to its accuracy, the low F1-score (0.37) reflects an imbalance between precision and recall, limiting its effectiveness for accurate sentiment classification in this dataset.

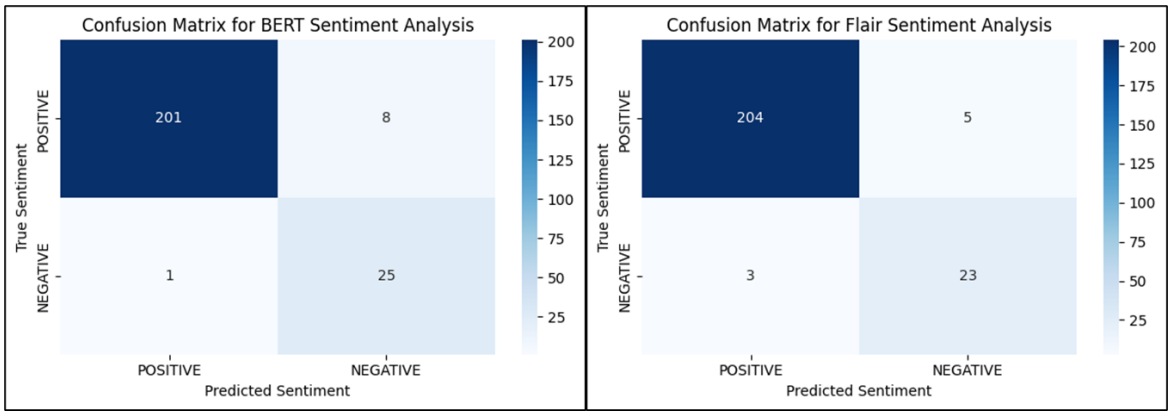
The results indicate that deep learning–based models, namely FLAIR and BERT, are considerably more effective than lexicon-based approaches such as VADER and NRCLex in capturing sentiment nuances within the faculty evaluation dataset. This performance advantage can be attributed to the advanced architectures and contextual learning capabilities of these transformer-based models. Both BERT and FLAIR are pre-trained on extensive text corpora, enabling them to identify subtle semantic relationships and interpret sentiment within complex linguistic structures. BERT's bidirectional encoding processes each word in the context of both its preceding and following terms, enhancing its ability to detect nuanced sentiment expressions with high precision (Devlin et al., 2019; Alaparthi & Mishra, 2020). Similarly, FLAIR leverages contextual string embeddings that maintain word order and semantic meaning, allowing it to accurately handle idiomatic phrases, sarcasm, and domain-specific terminology (Akbik et al., 2019).

In contrast, VADER and NRCLex rely on static sentiment lexicons and rule-based heuristics, which limit their adaptability to varied linguistic contexts. While VADER incorporates certain refinements, such as accounting for punctuation, capitalization, and degree modifiers, it still struggles with negation handling and non-literal expressions (e.g., "not bad") that require deeper contextual inference (Hutto & Gilbert, 2014). NRCLex, based on the NRC Emotion Lexicon, similarly assigns sentiment based solely on the presence of predefined emotion-associated words, without considering surrounding context, making it prone to false positives and misinterpretations (Mohammad & Turney, 2013). These

inherent limitations explain their relatively lower accuracy scores, 0.66 for VADER and 0.53 for NRCLex, compared to the near-perfect performance of the transformer-based models in this study.

Figure 2. Confusion Matrices of BERT and Flair

The confusion matrices for BERT and Flair sentiment analysis provide valuable insights into the performance of these models in classifying student feedback sentiments as either positive or negative. For the BERT sentiment analysis, the matrix reveals that out of the true positive instances, 201 were correctly predicted as positive, while 8 were incorrectly classified as negative. For true negative instances, 25 were accurately identified as negative, but 1 was mistakenly labeled as positive. This indicates that BERT demonstrates a strong ability to correctly identify positive sentiments, with a high



true positive rate, though it occasionally misclassifies a small number of negative sentiments as positive. In contrast, the Flair sentiment analysis matrix shows that 204 true positive instances were correctly predicted as positive, with 5 misclassified as negative, and for true negative instances, 23 were correctly identified as negative, with 3 erroneously labeled as positive. Flair also exhibits a robust performance, particularly in accurately predicting positive sentiments, with a slightly higher true positive count than BERT, though it has a marginally higher rate of misclassifying negative sentiments as positive compared to BERT.

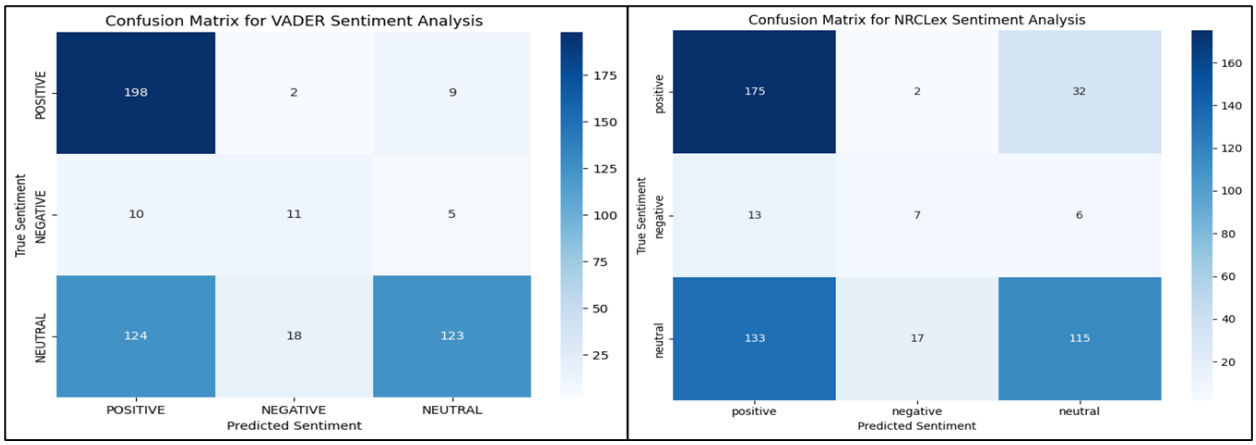


Figure 3. Confusion Matrices of Vader and NRCLex

The confusion matrices for VADER and NRCLex sentiment analysis provide a comparative insight into their performance in classifying student feedback into positive, negative, and neutral sentiments. For VADER, the matrix shows that 198 true positive instances were correctly predicted as positive, with 2 misclassified as negative and 9 as neutral; for true negative instances, 11 were accurately identified as negative, with 10 misclassified as positive and 5 as neutral; and for true neutral instances, 124 were correctly predicted as neutral, with 18 misclassified as negative and 15 as positive, indicating

a strong tendency to correctly identify neutral sentiments but with some confusion between positive and negative classes. In contrast, the NRCLex matrix reveals that 175 true positive instances were correctly predicted as positive, with 2 misclassified as negative and 32 as neutral; for true negative instances, 7 were accurately identified as negative, with 13 misclassified as positive and 6 as neutral; and for true neutral instances, 115 were correctly predicted as neutral, with 133 misclassified as positive and 17 as negative, suggesting a notable tendency to over-classify neutral sentiments as positive.

Overall, both BERT and Flair perform well in sentiment analysis for faculty performance evaluation, with BERT demonstrating a slight edge in minimizing false positives for negative sentiments, thereby reducing the likelihood of misjudging negative feedback as positive, which is crucial for accurate faculty assessment. Flair, on the other hand, excels in correctly identifying a larger number of true positives, showcasing its strength in reliably detecting positive sentiments that reflect effective teaching practices, suggesting their complementary strengths that can be leveraged together to enhance the robustness of sentiment-based evaluations. Similarly, VADER demonstrates better balance across all sentiment classes, positive, negative, and neutral, with fewer misclassifications, offering a more consistent and versatile approach to interpreting the diverse range of student feedback. In contrast, NRCLex excels in correctly identifying positive sentiments, providing valuable insights into favorable feedback, but struggles with neutral and negative distinctions, often over-classifying neutral sentiments as positive, which highlights their differing strengths and underscores the importance of selecting the appropriate model based on the specific nuances of faculty performance evaluation through sentiment analysis

CONCLUSION

This study demonstrates the transformative potential of NLP-based sentiment analysis in enhancing faculty performance evaluation at ABC College, leveraging student feedback from 2019 to 2024 to address the inefficiencies of manual assessment methods. The comparative evaluation of BERT, Flair, VADER, and NRCLex reveals that transformer-based models, particularly Flair (accuracy 0.97, F1-score 0.97) and BERT (accuracy 0.96, F1-score 0.96), outperform lexicon-based approaches like VADER (accuracy 0.66, F1-score 0.65) and NRCLex (accuracy 0.53, F1-score 0.37) in capturing the nuanced sentiments within educational contexts. The integration of predictive modeling with human-annotated ground truth underscores the reliability of these tools, with BERT excelling in reducing false positives for negative feedback and Flair leading in true positive identification, while VADER offers balanced multi-class performance and NRCLex highlights positive sentiment strengths. These findings contribute significantly to educational data analytics by providing a scalable, objective framework, to sentiment analysis research by establishing empirical benchmarks, and to evaluation systems by enabling real-time feedback integration. Despite limitations, such as the lack of bias analysis and focus on textual data, this research lays a foundation for future studies to explore multimodal inputs and fairness considerations. Ultimately, the adoption of these NLP techniques can foster a data-driven, equitable approach to faculty development, aligning with institutional goals of academic excellence and continuous improvement

FUTURE RESEARCH

Future research should expand upon these findings by exploring granular feature-level sentiment analysis to identify specific attributes eliciting sentiments, and implement longitudinal sentiment tracking to discern evolving perceptions and evaluate pedagogical interventions over time. Integrating sentiment analysis directly into learning analytics platforms would also empower educators with real-time insights, fostering adaptive teaching practices. Furthermore, cross-institutional validation and the development of domain-specific lexicons or models tailored for educational feedback could enhance generalizability and accuracy. Investigating Explainable AI (XAI) techniques is crucial to increase transparency and trust in automated systems, providing actionable explanations for classifications. Acknowledging resource constraints, comprehensive manual verification of the entire 187,197 student comments was not feasible for this study; thus, future efforts, given adequate time and resources,

could undertake a more extensive manual validation to further strengthen the robustness of these classifications. Ultimately, these recommendations aim to refine the framework for broader academic application, ensuring continued improvement in instructional quality and faculty performance review processes.

Declaration on the use of AI in the writing process

During the preparation of this work, the authors used ChatGPT to enhance readability and refine the language, as well as other AI tools for data visualization. After using this tools or services, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

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Bridging the Digital Divide through Cost-Effective Computer Adaptive Testing: A Systematic Review and Implementation Framework

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ABSTRACT

This systematic literature review explores how the digital divide affects the use of computer adaptive testing (CAT) in higher education and general education from 2018 to 2025. Drawing from 109 peer-reviewed studies and guided by the PRISMA framework, the review highlights four key challenges: limited access, lack of digital skills, low motivation, and uneven usage, all of which make it difficult to implement CAT fairly and effectively, especially in underserved and developing areas. The findings show that poor infrastructure, digital literacy gaps, cultural barriers, and high costs often hinder the success of CAT and may deepen existing educational inequalities. However, several promising solutions, such as using mobile devices, tailoring test difficulty automatically, and training teachers, offer ways to help close these gaps. To support more equitable adoption of CAT, this review proposes a practical, multi-layered framework for future research and policymaking. It emphasizes the importance of inclusive strategies that work across different contexts. Still, the study acknowledges its limitations, including a focus on research from more developed countries and a lack of long-term studies, pointing to the need for further investigation in low-resource settings.

Keywords*:* Computer Adaptive Testing, digital divide, assessment equity, systematic literature review, active machine learning

1. INTRODUCTION

The UNESCO 2020 Global Education Monitoring Report reveals persistent educational inequalities worsened by COVID-19, which disrupted learning for 1.6 billion students. Forty percent of low-income countries failed to support at-risk students during closures, with poverty, gender, and disability creating additional barriers (UNESCO, 2020). This highlights the critical need for inclusive educational tools prioritizing equity for marginalized communities. Computer adaptive testing (CAT) in higher education personalizes assessment by adjusting question difficulty to individual abilities, improving efficiency and accuracy. Zawacki-Richter et al.'s (2019) systematic review of 146 studies showed CAT's growing role in AI-driven systems, particularly in STEM. However, technological barriers including limited infrastructure and high costs disproportionately affect under-resourced institutions, with insufficient focus on equitable access potentially widening existing disparities.

The digital divide compounds these issues through disparities in device access, internet connectivity, and digital literacy. Van Deursen and van Dijk (2014) demonstrated how such gaps hinder technology deployment in underserved regions. Misiejuk and Wasson (2017) noted that while adaptive systems like CAT offer scalable personalized education, infrastructure limitations risk exacerbating inequities in low-resource settings. CAT's dependence on robust infrastructure, psychometric expertise, and digital competence makes it vulnerable to digital divide challenges. Pre-2019 systematic literature reviews (SLR) focused on psychometric foundations rather than higher education institutions (HEIs) or equitable access implications (Zawacki-Richter et al., 2019). This literature gap necessitates targeted examination of how the digital divide affects CAT adoption and cost-effective bridging strategies.

This systematic review synthesized 2018-2025 evidence to identify barriers, analyze disparities, and propose practical implementation frameworks for equitable, cost-effective CAT adoption in HEIs. The study ensures CAT benefits reach all students regardless of socioeconomic or geographic constraints through research questions addressing digital divide impacts on CAT application in HEIs. The following research questions are posited:

- RQ1: What digital divide dimensions (access, skills, motivation, usage) impact CAT implementation in HEIs?
- RQ2: How do sociodemographic, socioeconomic, and institutional factors contribute to CAT adoption disparities across HEIs?
- RQ3: What technological and pedagogical barriers exist for CAT integration in HEIs, particularly in underserved regions?
- RQ4: How does the digital divide affect CAT fairness, validity, and effectiveness across diverse HEI populations?
- RQ5: What strategies bridge the digital divide in CAT adoption, and what is their reported efficacy?

2. METHODOLOGY

To answer the RQs, this SLR followed the PRISMA framework to enhance transparency and methodological rigor (Page et al., 2021). However, full adherence was not appropriate given the review's scope. PRISMA was developed for clinical and health intervention studies, particularly randomized controlled trials, while this review examined CAT and HEI research involving diverse methodologies and exploratory goals (Moher et al., 2009; Kitchenham & Charters, 2007).

Due to disciplinary differences, some PRISMA elements like meta-analyses or quantitative bias assessments were inapplicable or required adaptation. Studies included qualitative and mixed-methods research, making narrative synthesis and thematic analysis more suitable than statistical aggregation, as recognized by non-clinical field scholars (Popay et al., 2006; Snyder, 2019).

Table 1

Keywords search and their initial results

Database	Search String	# of results
Scopus	TITLE-ABS-KEY (("computer adaptive testing" OR "computerized adaptive testing" OR "adaptive testing" OR "CAT")) AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA , "COMP") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "EDUC")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp")) AND (LIMIT-TO (LANGUAGE , "English"))	6095
ERIC	(DE ("Computer Assisted Testing" OR "Computer Uses in Education") OR TI ("computer adaptive testing" OR "computerized adaptive testing" OR "adaptive testing" OR "CAT") OR AB ("computer adaptive testing" OR "computerized adaptive testing" OR "adaptive testing" OR "CAT")) AND (DE ("Access to Computers" OR "Access to Information" OR "Equal Education") OR TI ("digital divide" OR "digital inequality" OR "digital equity" OR "technology access") OR AB ("digital divide" OR "digital inequality" OR "digital equity" OR "technology access")) AND (TI ("cost-effective*" OR "cost efficient*" OR "economic viability" OR "affordable" OR "scalable" OR "cost benefit") OR AB ("cost-effective*" OR "cost efficient*" OR "economic viability" OR "affordable" OR "scalable" OR "cost benefit")) AND (TI ("implementation framework" OR "implementation model" OR "deployment strategy" OR "framework") OR AB ("implementation framework" OR "implementation model" OR "deployment strategy" OR "framework"))	347
IEEE Xplore	("All Metadata":computer adaptive testing)	1147
AISeL	(computer adaptive testing AND education)	649

This SLR maps the thematic patterns and conceptual developments rather than evaluate intervention effectiveness. Strict PRISMA adherence would have imposed misaligned limitations. Practical factors including literature scope, time constraints, and resources also influenced framework adaptation. Nevertheless, key systematic rigor aspects emphasized by PRISMA were maintained: clear search strategy reporting, inclusion/exclusion criteria, selection processes, and data extraction procedures.

2.1. Search Terms and Strategy

Research articles were collected from Scopus, ERIC, IEEE Xplore, and AISeL databases, selected for their broad peer-reviewed literature coverage. Reviews from 2018 to March 2025 were used, except for ERIC. Table 1 lists the primary search terms for each database. Boolean operators "OR" and "AND" were utilized during manuscript preparation in April 2025. Due to large result sets, Scopus subject areas were limited to "computer science, social science, and education." The ERIC database search used EBSCOhost field codes (DE, TI, AB) and synonyms ("digital equity" for digital divide, "scalable" for cost-effective) to broaden recall, with simplified structure for better execution and omitted date ranges.

2.2. Eligibility Criteria

The document-level criteria included full-text, peer-reviewed journal articles and conference proceedings in English published between 2019 and 2025 with clear methodological sections. Exclusions comprised non-peer-reviewed works, non-English publications, abstract-only entries, and grey literature including blogs, newsletters, opinion pieces, editorials, book reviews, and news articles. This focus on peer-reviewed literature ensures academic rigor.

The content-level criteria required studies to explicitly engage with CAT or adaptive assessment systems, offering substantive discussion on mechanisms, design, or implementation in educational settings. Priority was given to studies exploring cost-effective or scalable approaches using open-source platforms, minimal infrastructure requirements, or modular implementation models. Articles must highlight strategies enhancing CAT system efficiency, responsiveness, or performance, particularly in resource-limited environments. Studies focusing solely on traditional assessment methods or unrelated adaptive technologies were excluded.

Context-level criteria prioritized articles demonstrating awareness of equity, accessibility, and inclusivity, especially addressing the digital divide. This included research in underserved, rural, or developing educational contexts or proposing adaptive testing strategies applicable across varying

digital access levels. Systematic reviews or studies grounded in implementation frameworks were favored for their evaluative insight and practical deployment pathways. Contexts limited to high-resource, homogenous populations without accessibility considerations were deprioritized unless findings were transferable or scalable.

2.3 Initial Selection and Data Management

Screening within Scopus, ERIC, IEEE, and AISeL using document-level criteria yielded different results (Fig. 1). Search results were exported as NBIB (ERIC), TXT (AISeL), or BIBTeX (IEEE) files, then combined, converted, and exported to CSV using Zotero (2025) to match Scopus format using UTF-8 encoding. Lists were searched for duplicates in author, title, and DOI columns.

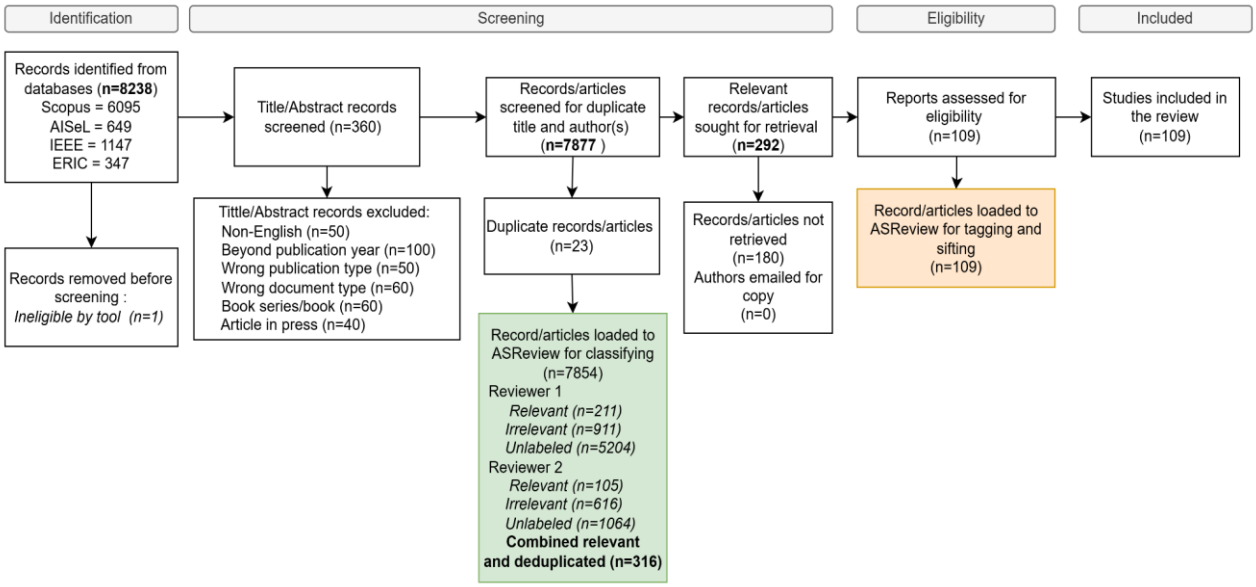

Fig. 1. Process flow and results of systematic review

Filtering for English-only publications from 2018 to 2025, restricting to journals and conference papers yielded these final article lists: Scopus (n=6031), ERIC (n=302), IEEE (n=1136), and AISeL (n=408). Before screening, cleaned files were consolidated to remove duplicate articles across databases. Combining datasets, sorting by title and author columns, and removing duplicate records (n=23) resulted in 7877 unique records.

2.4 Coding and Classification

Data were processed using ASReview, an SLR tool employing active learning to prioritize relevant studies through user feedback and text analysis. ASReview is a machine learning-based tool streamlining systematic review screening processes, supporting CSV, RIS, and Excel formats with Title, Authors,

Table 2

Coding and classification matrix

Label (RQ)	Relevant if..	Not relevant if..
RQ1: Key dimensions of the digital divide impacting CAT in HEIs	Mentions CAT (computer-assisted testing or translation) in HEIs and addresses digital divide dimensions (access, skills, motivation, usage). E.g., discusses technology access gaps or skill disparities in CAT implementation	No mention of CAT, digital divide, or HEIs. E.g., studies about animals (cats), non-educational technologies, or unrelated cultural/narrative contexts.
RQ2: Sociodemographic, socioeconomic, and institutional factors influencing CAT adoption in HEIs	Discusses sociodemographic (age, gender), socioeconomic (income, funding), or institutional factors (faculty training, HRM, organizational culture) affecting CAT adoption in HEIs. E.g., faculty training barriers or funding disparities.	No mention of HEIs, CAT, or sociodemographic/socioeconomic/institutional factors. E.g., studies on non-educational contexts, animal behavior, or unrelated policy issues.
RQ3: Technological and pedagogical barriers to CAT in underserved regions/developing countries	Addresses technological barriers (infrastructure, software) or pedagogical barriers (teaching methods, curriculum) to CAT in HEIs, especially in underserved or developing regions. E.g., lack of CAT software access or ineffective teaching strategies.	No mention of CAT, technological/pedagogical barriers, or educational contexts (HEIs or underserved regions). E.g., studies on robotics, animal biology, or non-educational technologies.
RQ4: Effect of digital divide on fairness, validity, and effectiveness of CAT outcomes	Examines digital divide's impact on fairness, validity, or effectiveness of CAT outcomes in HEIs (e.g., bias in test results, equity across diverse student groups)	No mention of CAT, fairness/validity/effectiveness, digital divide, or HEIs. E.g., studies on non-educational outcomes, animal studies, or unrelated social media trends.
RQ5: Strategies/interventions to bridge the digital divide in CAT adoption	Proposes or evaluates strategies (training, technology access, pedagogy, policy) to bridge the digital divide for CAT adoption in HEIs. E.g., autonomous learning or infrastructure investments.	No mention of strategies, CAT, digital divide, or HEIs. E.g., studies on unrelated interventions, animal care, or non-educational technologies.

Abstract, and DOI columns. The workflow uses models like Naive Bayes and Support Vector Machine (SVM) with Term Frequency-Inverse Document Frequency (TF-IDF) feature extraction to rank studies by predicted relevance (ASReview LAB developers, 2023; van de Schoot et al., 2020).

The tool requires initial labeling of 1-5 studies per research question as relevant or irrelevant, selecting entries with titles matching targeted keywords. These samples train the model, which iteratively re-ranks remaining studies through 20-50 iterations until prioritization stabilizes. ASReview analyzes titles and abstracts using the ELAS u4 AI model, an optimized SVM-based configuration from the Ensemble Learning Active Screening (ELAS) family designed for systematic reviews. ELAS u4 provides reliable, fast, and user-friendly performance for the most systematic review scenarios.

The researchers employed a structured two-stage approach using the Table 2 classification framework. Initially, every citation was screened by abstract within ASReview and tagged as relevant or not, reducing reviewer fatigue, promoting independent evaluation, and minimizing bias. Large datasets (n>1500) were split into multiple files for easier screening. The stopping threshold was set at 5% or 10% of the dataset, meaning ASReview stopped providing articles when the number of irrelevant records since the last relevant record was reached.

Subsequently, reviewers used the Table 2 schema to assign specific labels through systematic tagging, organizing and assessing documents for targeted information retrieval. Careful labeling refined the article pool to those most aligned with research questions, enriching review depth and clarity. Two independent reviewers conducted both passes, ensuring consistency and rigor throughout the coding and classification workflow.

2.5 Quality Assessment

A compiled list of relevant records was generated from independent assessments by two reviewers (Reviewer 1: relevant = 211, irrelevant = 911; Reviewer 2: relevant = 105, irrelevant = 616). After reconciling discrepancies and removing duplicates, a final set of eligible records (n = 316) was established, as shown in Table 3.

Table 3
Result of classification using ASReview.

Reviewer	Classifier used	Feature extraction technique	Query strategy	Balance strategy	Dataset	# records	Stopping Threshold	# of Unlabeled	Prior Knowledge (Training)		Actual	
									# of Relevant	# of Irrelevant	# of Relevant	# of Irrelevant
Reviewer 1	ELAS u4 (SVM)	TF-IDF	Maximum	Balanced	Scopus 1	1005	101	830	1	1	19	154
					Scopus 2	1005	50	899	5	3	22	84
					Scopus 3	1005	50	896	9	5	85	24
					Scopus 4	1005	50	876	19	1	19	110
					Scopus 5	1005	101	854	5	4	23	128
					Scopus 6	1006	101	849	2	2	39	118
					ERIC	302	302	0	5	5	4	293
Reviewer 2	ELAS u4 (SVM)	TF-IDF	Maximum	Balanced	IEEE	1147	57	1055	3	4	2	80
					AISeL	648	65	9	56	26	103	536

Table 4
Quality appraisal matrix.

Criteria	Description	Assessment Scale	Applicable RQs
1. Relevance to Research Questions	The study directly addresses at least one of the five RQs.	0 = Not relevant 1 = Partially relevant 2 = Directly relevant	All
2. Clarity of Research Aims	The purpose and objectives of the study are clearly stated.	0 = Not clear 1 = Somewhat clear 2 = Very clear	All
3. Methodological Rigor	Appropriateness and robustness of the study's design (e.g., qualitative, quantitative, mixed methods).	0 = Weak 1 = Moderate 2 = Strong	All
4. Sample Representativeness	The extent to which the sample represents the population of HEIs or students being studied.	0 = Not representative 1 = Somewhat representative 2 = Representative	RQ2, RQ4
5. Contextual Relevance	Study includes data from underserved or developing regions, or considers relevant socio demographic context.	0 = Not present 1 = Somewhat addressed 2 = Fully addressed	RQ2, RQ3
6. Measurement of Digital Divide Dimensions	Clearly operationalizes at least one dimension: access, skills, motivation, or usage.	0 = None 1 = One or two 2 = Three or more	RQ1
7. Analysis of Barriers	Identifies and analyzes barriers to CAT (technological, pedagogical, policy-related).	0 = Not analyzed 1 = Mentioned 2 = Analyzed in depth	RQ3
8. Equity and Fairness Considerations	Evaluates how CAT affects equity in learning outcomes or access.	0 = Not considered 1 = Mentioned 2 = Critically examined	RQ4
9. Intervention Description and Outcomes	Describes strategies or interventions to reduce the digital divide and evaluates their impact.	0 = No intervention 1 = Intervention described 2 = Intervention and outcomes evaluated	RQ5
10. Transferability of Findings	Insights are generalizable or transferable across similar HEI contexts.	0 = Low 1 = Medium 2 = High	All

An external researcher retrieved full-text versions of the selected studies for in-depth analysis from Scopus, IEEE, AISeL, and ERIC databases. For articles not freely available, alternative sources included Google Scholar, Sci-hub, Library Genesis (LibGen), Unpaywall, ResearchGate, and Directory of Open Access Journals (DOAJ). The finalized collection (n = 109) underwent systematic analysis using a structured data extraction and quality assessment matrix (Table 4). Given the matrix and research objectives, prompts were set for Grok (xAI, 2025) and Scholar GPT (OpenAI, 2025), with a test article loaded. Researcher assessments were matched with the AI tool's result, ensuring consistent evaluation criteria and minimizing reviewer bias in interpreting study findings.

For each study, Study ID, Author(s), Year, and Title were recorded in a worksheet. Studies were rated across ten quality assessment criteria using a 0-2 scale (Gough et al., 2012; Hong et al., 2018; UNESCO, 2019; OECD, 2021). Total scores determined Quality Ratings: 0-7 (Low quality), 8-14 (Moderate), and 15-20 (High). The Notes column captured key observations including country studied, CAT platform used, and specific HEI context.

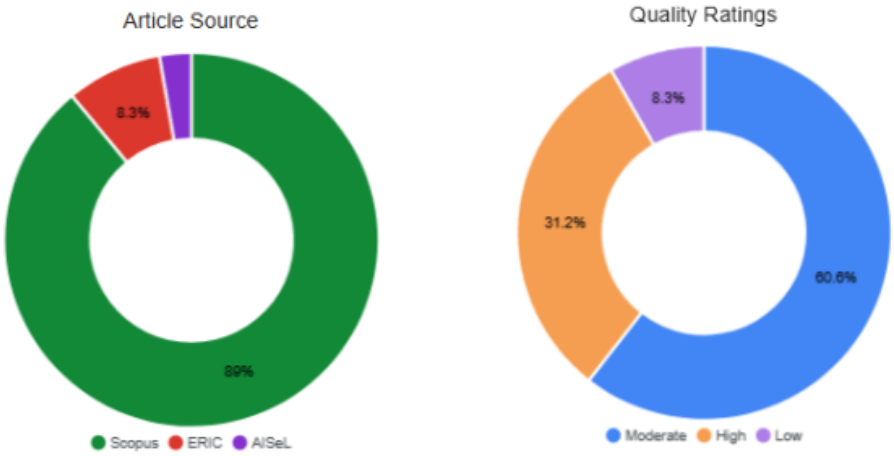

Fig. 2. Descriptive results

3. RESULTS

This systematic review included 109 studies that met all criteria. Appendix A outlines the result of the screening process, but only high-quality studies on CAT in HEIs and the digital divide (2019–2025) are

Fig. 3. Distribution of evaluated materials

shown due to space limits. Materials from IEEE provided no records directly addressing research questions related to digital divide and CAT in HEIs, as articles focused on computational methods, machine learning, and control systems unrelated to CAT, HEIs, or educational digital divide. AISeL contributed limited articles (n=3) compared to ERIC (n=9) and Scopus (n=97).

Fig. 4. Distribution of quality ratings and study focus

3.1 Descriptives

From 2019 to February 2025, most reviewed articles came from Scopus (89%, n=97), with the remaining 11% from ERIC and AISeL. Quality ratings were High Quality (31%, n=34), Moderate Quality (61%, n=66), and Low Quality (8%, n=9), as shown in Fig. 2. The Geochart in Fig. 3 displays research locale distribution, with the majority in China (n=13), USA (n=9), Japan (n=8), Turkey (n=7), and Germany (n=5). The stacked bar in Fig. 4 shows quality ratings (Low, Moderate, High) and study focus categories: HEI (studies involving university students, lecturers, or programs related to undergraduate/postgraduate studies or entrance examinations), K-12 (studies focusing on elementary, middle, or high school students, teachers, or curricula), and Other (studies not specifically tied to K-12 or HEI educational settings).

3.2 Research Questions Findings

This section presents results exploring the relationship between the digital divide and CAT implementation in HEIs using high and moderate quality articles focused on education (HEI and K-12), comprising 55 relevant articles.

3.2.1 RQ1: Digital Divide Dimensions Affecting CAT Implementation in Higher Education Institutions

Analysis revealed four primary dimensions significantly impacting CAT implementation. The access dimension encompasses critical infrastructure challenges as foundational barriers. Many institutions, particularly in developing countries like Malaysia and Indonesia, face substantial hardware limitations including insufficient servers and client machines lacking adequate RAM, hard disk space, and uninterruptible power systems for large examinee numbers (Pramono & Retnawati, 2020; Ali & Syazwani, 2019). Internet connectivity emerges as a critical bottleneck, with unstable networks, connection dropouts, limited bandwidth, and varying coverage quality, especially in rural areas lacking fiber optic infrastructure (Kim et al., 2022; Mizumoto et al., 2019; Ebenbeck et al., 2024).

The skills dimension reveals significant digital competence disparities among students and educators. Student challenges include fundamental computer operation deficiencies and irresponsible technology use during examinations (Pramono & Retnawati, 2020; Pramjeeth & Ramgovind, 2024). Educator competence emerges as key, with teachers frequently possessing minimal CAT understanding and

lacking technical backgrounds for effective implementation (Bello & Abdullah, 2021; Kaya et al., 2022). Assessment literacy varies from basic-level teachers with limited CAT perception to expert-level teachers demonstrating strategic use for concrete feedback and learning diagnosis (Ijiwade & Alonzo, 2023).

The motivation dimension encompasses psychological and cultural factors influencing CAT acceptance. Student motivation presents complex patterns, with some perceiving computer-based assessments as burdensome while experiencing decreased engagement (Yasuda et al., 2024; Ayanwale & Ndlovu, 2022). Cultural contexts significantly influence acceptance, as demonstrated in Japan where traditions of identical problem-solving create negative attitudes toward individually tailored assessments (Goto et al., 2023).

The usage dimension encompasses technical and pedagogical implementation challenges. Test development requires substantial investment in large, calibrated item banks with hundreds to thousands of psychometrically sound items (Ali & Syazwani, 2019; Melesko & Novickij, 2019; Štěpánek & Martinková, 2020). Technical implementation demands high expertise in developing robust CAT engines and implementing sophisticated algorithms while ensuring test security (Ma et al., 2023; Ayanwale & Ndlovu, 2024).

3.2.2 RQ2: Factors Contributing to CAT Adoption Disparities in Higher Education

Disparities result from complex sociodemographic, socioeconomic, and institutional factors. Geographic location emerged as critical, with rural HEIs experiencing unstable internet connections limiting web-based CAT platforms. Student preparedness represents significant barriers, as many demonstrate minimal computer literacy leading to technical difficulties and test anxiety. Institutional funding constraints require substantial capital investment for computer laboratories and infrastructure. Faculty preparedness emerged as critical, with significant personnel shortages possessing adequate CAT knowledge. Technical complexity requires sophisticated expertise for developing large item banks and implementing Item Response Theory models. These interconnected barriers require comprehensive strategies involving sustained investment and professional development.

3.2.3 RQ3: Technological and Pedagogical Barriers in Underserved Regions

Technological challenges include infrastructure limitations with insufficient computer laboratories, unstable internet connectivity, and unreliable power systems (Pramono & Retnawati, 2020). Financial burdens of adequate hardware procurement pose institutional constraints. Technical complexity demands specialized psychometrics expertise, creating bottlenecks due to qualified professional scarcity (Melesko & Novickij, 2019; Dwahdh & Alshraifin, 2025).

Pedagogical barriers encompass digital literacy deficiencies among students and educators, with minimal IT mastery creating assessment anxiety (Bello & Abdullah, 2021). Resistance manifests through cultural preferences for traditional uniform testing over personalized adaptive assessments. Trust issues regarding algorithm-based assessments compared to human judgment further impede acceptance (Goto et al., 2023).

3.2.4 RQ4: Digital Divide Effects on CAT Fairness, Validity, and Effectiveness

The digital divide significantly compromises CAT outcomes across diverse populations. Fairness suffers from unequal technological access creating systematic disadvantages unrelated to academic abilities. Digital literacy disparities cause heightened anxiety affecting performance (Pramjeeth & Ramgovind, 2024). Validity concerns arise when technological factors disrupt testing, causing performance to reflect technology struggles rather than academic proficiency (Goto et al., 2023). Effectiveness is hindered by high development costs creating financial barriers, particularly in developing regions (Bui et al., 2024; Štěpánek & Martinková, 2020).

3.2.5 RQ5: Strategies and Interventions for Bridging the Digital Divide

Several strategies show varying efficacy levels. Infrastructure enhancement focuses on adequate server provision and stable internet through telecommunications collaboration (Pramono & Retnawati, 2020). Mobile device integration shows promise, with Japanese HEIs successfully implementing smartphone-based CAT using Concerto platform (Yasuda et al., 2021). Digital literacy enhancement includes continuous training programs, with Malaysian research showing CAT reduced mathematics test anxiety compared to traditional testing (Ali & Syazwani, 2019).

Teacher professional development addresses digital competence through continuous IT and CAT training (Ijiwade & Alonzo, 2023). Technical complexity mitigation includes international cooperation for resource pooling and Automatic Question Generation integration, showing 23-90% test length reductions (Susanti et al., 2020; Müller et al., 2022). Automated item difficulty adjustment using Item Response Theory achieved 86% accuracy in matching CAT-assessed abilities with traditional tests (Cheng et al., 2021).

4. DISCUSSION

This systematic review of 109 studies explores the relationship between the digital divide and CAT implementation in HEIs, highlighting barriers and opportunities. CAT, intended to enhance assessment through personalization, faces challenges that may widen educational inequalities.

4.1 Digital Divide Dimensions and CAT Implementation

The analysis identifies four key digital divide dimensions impacting CAT: access, skills, motivation, and usage. Beyond mere access, psychological, cultural, and technical factors create complex barriers. Access issues, particularly in developing regions, stem from CAT's high technical requirements (e.g., Xeon/i7 processors, 12GB RAM, 1TB storage), demanding significant financial investment that many HEIs cannot afford, potentially deepening inequalities. The skills gap affects students, educators, and staff, requiring advanced digital literacy and tailored professional development to address varying teacher assessment literacy levels.

4.2 Cultural and Motivational Factors

Cultural contexts influence CAT acceptance, as seen in Japan’s resistance to individualized assessments due to preferences for uniform approaches. CAT’s adaptive nature can reduce anxiety for some students but increase it for others unfamiliar with adaptive testing. Technological barriers, like insufficient hardware and unstable connectivity, are pronounced in underserved regions (e.g., South Africa, Indonesia, Malaysia), compounded by low digital literacy and cultural resistance to adaptive testing. Implementation strategies must address these interconnected barriers through infrastructure investment and pedagogical reform.

4.3 Impact on Fairness, Validity, and Effectiveness

The digital divide undermines CAT’s fairness, creating disadvantages unrelated to academic ability due to unequal technology access. Validity is compromised when technological issues prevent students from demonstrating their capabilities, affecting score comparability. High costs and resistance in resource-constrained settings hinder CAT’s effectiveness, risking inaccurate educational decisions and long-term consequences for students. Comprehensive strategies are needed to ensure equitable benefits.

4.4 Promising Interventions

Mobile device integration, as seen in Japanese HEIs, leverages widespread smartphone availability to enhance CAT accessibility. Automated item difficulty adjustment systems using AI and machine

learning can address resource constraints. Targeted teacher professional development is critical to accommodate diverse educator needs and ensure implementation success.

4.5 Implication

Higher education institutions (HEIs) implementing equitable CAT systems must address infrastructure, human capital, and cultural factors holistically. Mobile-first strategies leveraging smartphones and telecom partnerships can ensure stable connectivity, bypassing traditional lab constraints. Continuous faculty training programs should build technical and pedagogical CAT skills, moving beyond one-time workshops. Equity-focused policies must include accessibility assessments, hybrid assessment models blending traditional and adaptive methods, and resource-sharing consortia to manage costs like item bank development. AI integration in CAT offers cost-effective item generation and difficulty adjustment but requires transparent algorithms, bias detection, and robust data governance to ensure fairness and privacy. AI literacy programs for faculty and students are essential to foster informed engagement with adaptive systems.

4.6 Limitations and Future Research

The review's findings are limited by a focus on developed countries, reducing generalizability to resource-constrained contexts. Future research should prioritize underserved regions and longitudinal studies to evaluate interventions. Simplified algorithms or hybrid models could enhance accessibility in low-resource settings. A multidimensional framework integrating technological, social, and cultural factors should guide equitable CAT deployment. Comprehensive policies pairing infrastructure and human capital development, alongside international cooperation for shared resources and culturally sensitive designs, are essential for sustainable success.

5. CONCLUSION

This systematic review highlights the benefits and challenges of implementing computer-adaptive testing (CAT) in educational assessment within digital divide contexts. CAT enhances assessment precision but faces multidimensional barriers requiring coordinated responses. Equity is central, as technological solutions alone cannot address infrastructure, human capital, cultural, and institutional challenges. CAT's potential to improve accuracy is offset by risks of exacerbating inequalities, necessitating equity-focused strategies. Successful adoption demands comprehensive interventions tailored to local contexts to avoid worsening disparities.

The review also explores AI tools to enhance literature review efficiency. ASReview used machine learning to streamline article screening, Grok supported rapid study relevance assessments, and Scholar GPT aided thematic synthesis. These tools improved efficiency but required human oversight for accuracy and nuanced interpretation. Combining AI with traditional methods balances computational efficiency with scholarly rigor.

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Appendix

A. Articles included in the final dataset.

Paper ID	Title	Author	Year	Journal/Conference	Total Score	Quality Rating	Datasource	Study Location
E236	Teaching How to Listen. Blended Learning for the Development and Assessment of Listening Skills in a Second Language	Caruso, Marinella; Gadd Colombi, Anna; Tebbit, Simon	2017	Journal of University Teaching and Learning Practice	24	High	ERIC	Australia
E265	The Importance of Digital Literacy in Quadratic Equations, Strategies Used, and Issues Faced by Educators	Kim How, Richeal Phil Thien; Zulnaidi, Hutkemri; Abdul Rahim, Suzieleez Syrene	2022	European Journal of Science and Mathematics Education	18	High	ERIC	Malaysia
E290	Using Auxiliary Data to Boost Precision in the Analysis of A/B Tests on an Online Educational Platform: New Data and New Results	Sales, Adam C.; Prihar, Ethan B.; Gagnon-Bartsch, Johann A.; Heffernan, Neil T.	2023	Journal of Educational Data Mining	21	High	ERIC	Not specified
E35	An Integrated Approach to the Teaching and Learning of Science and Mathematics Utilising Technology--The Teachers' Perspective	Johnston, Jennifer; Riordain, Maire Ni; Walshe, Grainne	2014	Journal on School Educational Technology	19	High	ERIC	Ireland
E36.	Analysis of PLEs' Implementation under OER Design as a Productive Teaching-Learning Strategy in Higher Education. A Case Study at Universidad Nacional de Educación a Distancia	Vázquez-Cano, Esteban; Martín-Monje, Elena; Castrillo de Larreta-Azelain, María Dolores	2016	Digital Education Review	19	High	ERIC	Spain
E44	Assigning a Socio-Economic Status Value to Student Records: A Useful Tool for Planning, Reporting and Institutional Research	Delaney, Julie; Tangtulyangkul, Ploy; McCormack, Robert	2013	Journal of Institutional Research	15	High	ERIC	Australia
S2061	Developing and evaluating a computerized adaptive testing version of the	Mizumoto A.; Sasao Y.; Webb S.A.	2019	Language Testing	20	High	Scopus	Not specified

Paper ID	Title	Author	Year	Journal/Conference	Total Score	Quality Rating	Datasource	Study Location
	Word Part Levels Test							
S2062	Developing and Piloting a Computerized Adaptive Test for a Culturally Appropriate Measure of Adaptive Behavior	Chen M.; Nah Y.-H.; Waschl N.; Poon K.; Chen P.	2022	Journal of Psychoeducational Assessment	22	High	Scopus	Singapore
S2065	Developing Computerized Adaptive Testing for a National Health Professionals Exam: An Attempt from Psychometric Simulations	Xu L.; Jiang Z.; Han Y.; Liang H.; Ouyang J.	2023	Perspectives on Medical Education	22	High	Scopus	China
S2076	Development and deployment of an adaptive national elementary reading screening test	Walgermo B.R.; Foldnes N.; Uppstad P.H.; Bakken A.M.; Lundetræ K.	2024	Frontiers in Education	23	High	Scopus	Norway
S2097	Development of adaptive formative assessment system using computerized adaptive testing and dynamic bayesian networks	Choi Y.; McClenen C.	2020	Applied Sciences (Switzerland)	23	High	Scopus	Seoul
S2154	Differential Performance of Computerized Adaptive Testing in Students With and Without Disabilities – A Simulation Study	Ebenbeck N.; Gebhardt M.	2022	Frontiers in Education	23	High	Scopus	Germany
S2242	Duration versus accuracy—what matters for computerised adaptive testing in schools?	Ebenbeck N.; Bastian M.; Mühling A.; Gebhardt M.	2024	Journal of Computer Assisted Learning	21	High	Scopus	Germany
S2847	FIRST RESULTS OF COMPUTERIZED ADAPTIVE TESTING FOR AN ONLINE PHYSICS TEST	Müller U.C.; Huelmann T.; Haustermann M.; Hamann F.; Bender E.; Sitzmann D.	2022	SEFI 2022 - 50th Annual Conference of the European Society for Engineering Education, Proceedings	16	High	Scopus	Germany
S3242	Implementation of cat in indonesia school: Current challenges and strategies	Pramono A.J.B.; Retnawati H.	2020	Universal Journal of Educational Research	24	High	Scopus	Indonesia
S3326	Incorporating test-taking engagement into the item selection algorithm in low-stakes	Gorgun G.; Bulut O.	2023	Large-Scale Assessments in Education	19	High	Scopus	USA

Paper ID	Title	Author	Year	Journal/Conference	Total Score	Quality Rating	Datasource	Study Location
	computerized adaptive tests							
S340	A novel computerized adaptive testing framework with decoupled learning selector	Ma H.; Zeng Y.; Yang S.; Qin C.; Zhang X.; Zhang L.	2023	Complex and Intelligent Systems	16	High	Scopus	China
S4538	Preliminary Development of an Item Bank and an Adaptive Test in Mathematical Knowledge for University Students	Ghio F.B.; Rojas-Torres L.; Bruzzone M.; Cupani M.	2022	European Journal of Science and Mathematics Education	19	High	Scopus	Argentina
S5041	Simulated evidence of computer adaptive test length: Implications for high stakes assessment in Nigeria	Ogunjimi M.O.; Ayanwale M.A.; Oladele J.I.; Daramola D.S.; Jimoh I.M.; Owolabi H.O.	2021	Journal of Higher Education Theory and Practice	19	High	Scopus	Nigeria
S5181	Student attitude to adaptive testing	Lilley M.; Barker T.	2020	Proceedings of the 20th BCS HCI Group Conference: Engage, HCI 2006	23	High	Scopus	United Kingdom
S5182	Students' and lecturers' perceptions of computerised adaptive testing as the future of assessing students	Pramjeeth S.; Ramgovind P.	2024	Journal of Education (South Africa)	21	High	Scopus	South Africa
S5422	The effect of computerized-adaptive test on reducing anxiety towards math test for polytechnic students	Mohd Ali S.; Norfarah N.; Ilya Syazwani J.I.; Mohd Erfy I.	2019	Journal of Technical Education and Training	22	High	Scopus	Malaysia
S5759	Transition from computer-based testing of national benchmark tests to adaptive testing: Robust application of fourth industrial revolution tools	Ayanwale M.A.; Ndlovu M.	2022	Cypriot Journal of Educational Sciences	19	High	Scopus	South Africa
S6046	Word Discriminations for Vocabulary Inventory Prediction	Robertson F.	2021	International Conference Recent Advances in Natural Language Processing, RANLP	20	High	Scopus	Japan
S647	ALICAT: a customized approach to item selection process in computerized adaptive testing	G. Jatobá V.M.; Farias J.S.; Freire V.; Ruela A.S.; Delgado K.V.	2020	Journal of the Brazilian Computer Society	16	High	Scopus	Brazil
S88	A Bounded Ability Estimation for	Zhuang Y.; Liu Q.; Zhao G.; Huang Z.;	2023	Advances in Neural Information Processing Systems	16	High	Scopus	China

Paper ID	Title	Author	Year	Journal/Conference	Total Score	Quality Rating	Datasource	Study Location
	Computerized Adaptive Testing	Huang W.; Pardos Z.A.; Chen E.; Wu J.; Li X.						
S909	Applicability and Efficiency of a Polytomous IRT-Based Computerized Adaptive Test for Measuring Psychological Traits	Şimşek A.S.; Tavşancil E.	2022	Journal of Measurement and Evaluation in Education and Psychology	19	High	Scopus	Turkey

Exploring the Dynamics of Flipped Classroom: Analyzing Its Influence on SHS Students' Engagement and Motivation towards Vocabulary Learning

Grace Pimentel and Mary Louise Pimentel

ABSTRACT

This study examined the effects of a flipped classroom strategy on Senior High School students' motivation and engagement with vocabulary learning. The flipped classroom paradigm involves flipping traditional teaching methods such that in-class time is used for interactive activities and concept application, with educational information being given online outside of class. This study looked into the relationship between pedagogical changes and student motivation and involvement, particularly when it comes to vocabulary development. The constructivist and self-determination theories served as the foundation for this study. Constructivist is an educational method that places a strong emphasis on students actively creating their own knowledge. The study employed a mixed-methods approach, combining quantitative surveys and qualitative interviews to gather comprehensive data. The study was conducted at Maputi Senior High School, a public institution in Naawan, Misamis Oriental, Philippines. Purposive sampling was employed to focus on the limited sample size in specific areas and gathered comprehensive data. A total of 73 Grade 12 participants were randomly assigned to two groups: the control group (n = 37) and the experimental group (n = 36). These findings contributed to the body of evidence currently available on vocabulary learning and flipped classrooms, as well as offering empirical support for the effects of flipped classrooms on SHS students. Through an examination of motivation and engagement as critical components, this study clarifies how the flipped classroom paradigm improves vocabulary acquisition in SHS contexts. Discussions are held regarding the findings' implications for student-centered learning methodologies, teacher pedagogy, and instructional design. Furthermore, recommendations for teachers and policymakers are offered to facilitate the successful application of flipped classroom techniques to improve vocabulary learning results in Maputi Senior High School.

Keywords: Flipped Classroom, motivation, vocabulary learning, instructional design, student-centered learning

INTRODUCTION

Given the current circumstances, teachers must serve as facilitators to help and provide details to their students. A teacher needs to be an expert in the subject matter of his teaching profession, a standard and great teacher, and well-versed in the latest innovations and trends to address the needs of his students. Domangcas (2019) asserts that in addition to adapting to the 21st century, teachers must embrace a paradigm shift from the traditional teacher-centered to student-centered learning approach, bringing together not only the delivery of instruction but also the facilitation of learning. Indeed, technology in education is an ever-evolving process and demands the students and teachers always update the emerging technology in education. According to the Horizon Report which focuses on exploring and reporting emerging technology in education, the flipped classroom has been highlighted as an emerging technology for higher education which is very important to use at college level (Johnson, Adams Becker, Estrada, & Freeman, 2014).

In recent years, the flipped classroom has become one of emerging technologies in education and it can be a standard of teaching-learning practice to foster students' active learning in higher education (Hamdan, McKnight, McKnight, & Arfstrom, 2013).

The flipped classroom strategy is an instructional approach where traditional lecture and homework elements are reversed. In this model, direct instruction is delivered outside the classroom, typically through video lectures, and in-class time is dedicated to exercises, projects, and discussions that promote deeper understanding and application of the material, Bergmann, J., & Sams, A. (2012). In this case, the teacher acts as a facilitator to motivate, guide, and give feedback on students' performance (Sams & Bergmann, 2012). Thus, by flipping the class, the students will not spend so much time listening to long lectures in the classroom, but will have more time to solve problems individually or collaboratively through distance learning with peers. Applying flipped classroom approach also contributes to better understanding of technology use in teaching and learning activities; students will use various technology media in learning activities independently, while the lecturer will use various technology media in their teaching practices (Zainuddin & Attaran, 2015).

The gap in research on the flipped classroom's impact on vocabulary learning includes the need for studies on specific instructional techniques, comparative effectiveness with traditional methods, and effects on student engagement. Additional gaps involve the role of technology, differentiated instruction, and teacher perceptions to improve vocabulary outcomes. Therefore, by this reason the authors believe that it is very significant to examined the effects of a flipped classroom strategy on Senior High School students' motivation and engagement with vocabulary learning.

METHODOLOGY

This study employed a mixed-methods approach to investigate the effects of a flipped classroom strategy on the motivation and engagement of Senior High School students in vocabulary learning. The research was conducted at Maputi Senior High School, a public institution in Naawan, Misamis Oriental, Philippines.

A mixed-methods approach was utilized, combining both quantitative and qualitative data collection methods. This approach allowed for a comprehensive analysis of the research questions, providing both statistical evidence and in-depth insights into students' experiences.

The study involved 73 Grade 12 students who were randomly assigned to either the control group (n = 37) or the experimental group (n = 36). Purposive sampling was employed to select participants who were representative of the Grade 12 population at the school, ensuring a valid and reliable sample for the study.

The flipped classroom strategy was implemented in the experimental group. Educational content, including vocabulary lessons, was provided online for students to study outside of class. In-class time was dedicated to interactive activities, such as discussions, exercises, and applications of vocabulary in context. The control group continued with traditional classroom instruction, where vocabulary lessons were delivered during class time, followed by related activities.

Surveys using the Academic Motivation Scale (AMS) and the Student Engagement Instrument (SEI) measured students' intrinsic and extrinsic motivation, as well as behavioral, emotional, and cognitive engagement. Structured interviews with students from both control and experimental groups provided qualitative insights into their experiences with the flipped classroom. Descriptive statistics summarized survey data, while t-tests, ANOVA, and regression analysis evaluated differences and relationships in motivation and engagement. Thematic analysis of interview responses identified key themes, and triangulation of quantitative and qualitative findings ensured a comprehensive understanding of the study's outcomes.

FINDINGS

The study's findings, summarized in the table, reveal that the flipped classroom approach significantly enhanced students' motivation and engagement in vocabulary learning. Students in the experimental group, who used online content and engaged in interactive in-class activities, exhibited higher levels of both intrinsic and extrinsic motivation compared to their peers in the control group. This improvement is consistent with self-determination theory, which highlights that intrinsic motivation is fostered by autonomy and active learning (Ryan & Deci, 2000). Additionally, the experimental group showed increased engagement, aligning with constructivist educational principles that advocate for active participation and hands-on experiences to deepen understanding (Piaget, 1976). The effectiveness of the flipped classroom for vocabulary acquisition is supported by research suggesting that interactive and practical application methods enhance learning outcomes (Bergmann & Sams, 2012). These findings validate the flipped classroom model as a promising educational strategy, advocating for its broader adoption to boost student engagement and motivation in vocabulary instruction (Educause, 2012).

Findings	Description
Improved Motivation	Students in the experimental group showed higher levels of intrinsic and extrinsic motivation compared to the control group.
Enhanced Engagement	The flipped classroom approach led to greater student involvement and interest in vocabulary learning.
Effective Vocabulary Acquisition	The use of online content and interactive in-class activities proved more effective for vocabulary acquisition than traditional methods.
Recommendations for Educators and Policymakers	Adopting flipped classroom techniques is recommended to boost student engagement and motivation in vocabulary instruction.

CONCLUSIONS

In conclusion, the study underscores the substantial benefits of the flipped classroom strategy in enhancing vocabulary learning among Senior High School students. By shifting the delivery of educational content online and dedicating in-class time to interactive activities, the flipped classroom approach significantly improved students' motivation and engagement compared to traditional teaching methods. This finding is consistent with self-determination theory, which asserts that providing students with autonomy and opportunities for active learning boosts intrinsic motivation and engagement (Ryan & Deci, 2000). Furthermore, the increased engagement observed aligns with constructivist theories, which advocate for active participation and hands-on learning experiences as essential for deeper understanding and retention (Piaget, 1976). The study also supports previous research indicating that interactive and practical methods are more effective for vocabulary acquisition than passive learning approaches (Bergmann & Sams, 2012). The positive outcomes associated with the flipped classroom

model highlight its potential as an effective educational strategy, offering a more engaging and responsive learning environment. Consequently, it is advisable for educators and policymakers to consider incorporating flipped classroom techniques into their teaching practices to enhance student engagement and motivation, ultimately leading to improved learning outcomes. This approach not only addresses the limitations of traditional methods but also aligns with modern educational goals of fostering active and independent learners.

RECOMMENDATIONS

To optimize the effectiveness of the flipped classroom model, educators should integrate this approach by delivering content online and using class time for interactive activities. Developing high-quality, engaging online materials and designing dynamic in-class exercises will enhance student motivation and vocabulary acquisition. Professional development for teachers is crucial to equip them with the skills needed for this transition, including effective technology use and activity design. Regularly assessing the impact of the flipped classroom on student outcomes will help refine the approach, while fostering collaboration among educators can facilitate the sharing of successful practices. Ensuring students have access to necessary technological resources and promoting their autonomy in learning will further support the model's success. Implementing these strategies will create a more engaging and effective learning environment, benefiting both students and educators.

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Language, Culture, and Mind: Investigating the Role of Sociocultural Awareness in Developing Empathy and Interpersonal Sensitivity in Language Learners

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ABSTRACT

This study examined the role of sociocultural awareness in fostering empathy and interpersonal sensitivity among college-level language learners. Rooted in Vygotsky's sociocultural theory and supported by key principles in psycholinguistics, the research explored how language instruction that incorporates cultural norms, pragmatic cues, and contextual appropriateness contributes to students' emotional intelligence and communicative competence. The study involved 80 Bachelor of Arts in English Language students from a state university in Northern Mindanao, Philippines, alongside four language instructors who integrate culturally responsive pedagogy in their teaching. Utilizing a qualitative-psychological approach, specifically ethnographic case study design, data were gathered through classroom observations, semi-structured interviews, empathy self-assessment surveys, and reflective journals. Results revealed that explicit instruction on sociocultural and pragmatic elements—such as turn-taking, politeness strategies, and culturally appropriate expressions—significantly influenced learners' ability to interpret emotions, adjust their communicative behavior, and develop deeper intercultural understanding. Teachers also observed a positive shift in learners' openness, empathy, and sensitivity toward culturally diverse perspectives. Findings suggest that sociocultural awareness in language education transcends linguistic competence; it fosters emotional intelligence and psychological attunement in social interactions. The study recommends integrating sociocultural elements into language curricula and providing language educators with training on affective dimensions of communication. This research underscores the interdisciplinary potential of language education, linking it to cognitive-emotional development, and offers valuable insights for enhancing the holistic growth of learners in culturally diverse academic settings.

Keywords: Sociocultural awareness, empathy, interpersonal sensitivity, language learners, psycholinguistics, intercultural communication, pragmatic competence

INTRODUCTION

In an increasingly globalized world, the ability to communicate effectively across cultural boundaries is becoming a fundamental aspect of language learning. The development of sociocultural awareness—defined as the understanding of culturally embedded communication norms, behaviors, and values—has become vital in the acquisition of language and the formation of meaningful interpersonal relationships (Taguchi & Roever, 2021). More than linguistic accuracy, communicative competence today requires learners to engage with the nuances of pragmatic meaning, such as turn-taking, politeness, and emotional sensitivity. Scholars argue that language education must move beyond grammar and vocabulary to foster empathy, cultural openness, and interpersonal understanding among students (Rose & Ghanem, 2019).

Research in applied linguistics and psycholinguistics supports the idea that language learning is deeply embedded in social and emotional contexts. Vygotsky's Sociocultural Theory posits that learning is a socially mediated process shaped by interaction and cultural tools (Vygotsky, 1978). In this context, language instruction becomes a platform not only for cognitive development but also for cultivating affective traits such as empathy and sensitivity—qualities essential in fostering mutual understanding across diverse communities (Mercer & Kostoulas, 2018). When learners are explicitly taught to consider cultural norms and pragmatic appropriateness in communication, they develop the ability to interpret nonverbal cues, adapt language use to context, and respond with greater emotional intelligence.

Despite growing interest in this area, few studies in the Philippine context have explored how sociocultural instruction impacts students' emotional and interpersonal development in language classrooms. This study addresses this gap by investigating how integrating sociocultural awareness into English language instruction can enhance empathy and interpersonal sensitivity among college students in Northern Mindanao. Specifically, it examines classroom practices, learner reflections, and teacher insights to understand how cultural knowledge, when taught alongside linguistic structures, transforms language learning into a holistic, humanizing experience. By aligning pedagogical approaches with cultural and emotional learning, the study aims to support both theoretical advancement and practical application in language education.

Statement of the Problem

This study investigated how sociocultural awareness instruction influenced empathy and interpersonal sensitivity among Bachelor of Arts in English Language students in a culturally diverse academic setting. While traditional language instruction often prioritizes grammar and vocabulary, there remained limited focus on how learners navigate the affective and intercultural dimensions of communication. The researchers sought to examine how the integration of cultural norms, pragmatic strategies, and emotional cues into language education could promote more sensitive and effective interpersonal interactions. The study further explored the role of culturally responsive teaching in enhancing students' ability to interpret and respond to diverse communicative contexts.

Specifically, the study answered the following questions:

1. How did the integration of sociocultural awareness in language instruction influence students' empathy and interpersonal sensitivity?
2. What sociocultural and pragmatic elements were most significant in shaping students' communicative behaviors?
3. How did students and teachers perceive the impact of culturally responsive instruction on language learning and emotional development?

This study was grounded in Vygotsky's Sociocultural Theory (1978), which emphasizes that cognitive development is a socially mediated process. Learning, particularly language acquisition, occurs through meaningful interaction with others within a cultural context. From this perspective, language is not only a cognitive tool but also a medium through which individuals internalize cultural norms, values, and communicative practices. In the classroom setting, this theory supports the use of collaborative and contextualized activities where learners engage in authentic exchanges that foster both linguistic and interpersonal growth.

In addition, the study was informed by the concept of Pragmatic Competence, which refers to a speaker's ability to use language appropriately in social situations. Pragmatic competence encompasses awareness of politeness strategies, turn-taking, speech acts, and culturally bound norms of interaction (Taguchi, 2017). It aligns with the goals of sociocultural instruction, as it promotes the learner's capacity to interpret meaning beyond literal words—taking into account tone, setting, cultural cues, and speaker intent. As students develop pragmatic skills, they also become more attuned to others' perspectives and more capable of navigating intercultural dialogue.

Finally, the framework drew from Positive Psychology in Second Language Acquisition (SLA), which highlights the importance of emotional and psychological dimensions in learning a new language (MacIntyre, Gregersen, & Mercer, 2019). Concepts such as empathy, motivation, and interpersonal sensitivity are viewed as essential to learner success, particularly in culturally diverse settings. This perspective reinforces the idea that language instruction must go beyond grammar and vocabulary to cultivate learners' affective abilities, allowing them to build deeper connections through language.

Together, these theoretical underpinnings informed the design and implementation of the study, guiding the investigation into how culturally responsive instruction can enhance both linguistic competence and interpersonal growth among students in multicultural academic settings.

METHODOLOGY

This study employed a qualitative ethnographic case study design to explore how sociocultural awareness instruction influenced empathy and interpersonal sensitivity among language learners. The ethnographic approach was chosen for its strength in uncovering the nuanced, lived experiences of participants within their natural academic contexts, allowing the researchers to investigate how cultural and emotional dimensions are embedded in classroom language practices (Creswell & Poth, 2018). The case study component enabled an in-depth analysis of a specific group of learners and their instructors within a bounded educational setting, providing insights into their unique perceptions and behaviors.

Participants and Sampling

The study involved 80 third-year Bachelor of Arts in English Language students from a state university in Northern Mindanao, Philippines. These students were purposively selected based on their active enrollment in language subjects that integrated sociocultural and pragmatic content. In addition, four language instructors who were known to employ culturally responsive teaching strategies in their pedagogy were included. The purposive sampling technique was used to ensure that participants had direct experience with the instructional interventions being studied and could provide meaningful reflections on their impact (Palinkas et al., 2015).

Data Collection Procedures

Multiple qualitative data collection methods were employed to ensure triangulation and depth of analysis. These included:

1. **Classroom Observations** – A series of 12 non-participant observations were conducted across different classes to document teaching strategies, classroom discourse, and student participation. Observational field notes focused on how sociocultural and affective elements were embedded in language instruction.

2. **Semi-Structured Interviews** – Interviews were conducted with all four instructors and a subset of 20 students. The interviews explored participants' perceptions of sociocultural instruction, its influence on their communication behaviors, and any observed changes in interpersonal dynamics.

3. **Empathy Self-Assessment Surveys** – Adapted from the Interpersonal Reactivity Index (Davis, 1980), the survey was administered pre- and post-intervention to measure changes in students' empathy levels. The tool assessed cognitive and affective components of empathy, including perspective-taking and empathic concern.

4. **Reflective Journals** – Students were asked to maintain weekly journals over a five-week period, reflecting on their learning experiences, interactions with peers, and instances where cultural awareness influenced their communication.

Data Analysis

The data were analyzed using thematic analysis following the guidelines of Braun and Clarke (2006). Interview transcripts, observation notes, and journal entries were coded to identify recurring patterns, insights, and themes related to sociocultural learning and affective development. Themes were refined through iterative coding cycles and validated through member checking with selected participants to ensure the credibility of interpretations. Meanwhile, results from the empathy surveys were descriptively analyzed to support qualitative findings with observable trends in affective growth.

Ethical clearance was secured from the university's Research Ethics Committee, and all participants signed informed consent forms. Confidentiality was maintained through the use of pseudonyms and secured data storage.

This methodological framework ensured a holistic and rigorous exploration of how sociocultural awareness, when meaningfully integrated into language instruction, contributed to learners' emotional and interpersonal growth.

FINDINGS

The study explored how integrating sociocultural awareness into language instruction shaped students' empathy and interpersonal sensitivity. Thematic analysis of classroom observations, interviews, empathy surveys, and student reflections yielded three major themes: (1) Heightened Empathic Communication, (2) Cultural Nuance in Language Use, and (3) Affective Growth through Reflective Practice.

1. Heightened Empathic Communication

One of the most prominent outcomes observed across data sources was a noticeable improvement in students' ability to listen actively and respond with empathy in both oral and written communication. Teachers noted a shift in classroom discourse, with students demonstrating greater sensitivity to tone, body language, and word choice when engaging in peer interactions. This was supported by post-intervention interviews where students described learning to "read between the lines" and "listen to understand rather than respond." These behavioral changes corresponded with a modest but consistent

increase in the post-survey empathy scores, particularly in the "perspective-taking" and "empathic concern" subscales (Davis, 1980), indicating a growth in affective engagement.

2. Cultural Nuance in Language Use

Students became more aware of how cultural contexts influenced the appropriateness of certain expressions. For example, they reflected on how directness in English could sometimes be perceived as impolite in Filipino contexts, and vice versa. Reflective journals often highlighted moments when learners rephrased their statements to avoid potential misinterpretations. Classroom observations revealed that learners who initially defaulted to literal translations became more adept at choosing culturally sensitive phrasing after targeted instruction in pragmatics and sociocultural variation. Teachers also incorporated culturally contextualized role-play activities that helped learners navigate culturally complex scenarios such as apologizing, disagreeing politely, or expressing sympathy.

3. Affective Growth through Reflective Practice

Weekly reflective journals served as both a tool for student introspection and a data source on learners' evolving interpersonal awareness. Students wrote about their growth in understanding others' emotions and motivations, often tying these insights to real-life situations outside the classroom. Several entries discussed how they applied lessons from class to improve communication with family members or resolve interpersonal misunderstandings with friends. The act of journaling itself appeared to reinforce empathy and self-awareness, suggesting that sustained reflective practice supports emotional development alongside language acquisition.

Across the findings, both teachers and students acknowledged that the intentional integration of sociocultural elements in instruction not only enhanced linguistic skills but also fostered an environment of mutual respect, cultural understanding, and interpersonal connection.

These findings highlight the transformative potential of sociocultural awareness instruction in promoting not only linguistic competence but also empathy and interpersonal sensitivity among language learners. These results align with Vygotsky's Sociocultural Theory (1978), which emphasizes the social nature of learning and the role of cultural tools in shaping cognitive and affective development. When language instruction is embedded within culturally meaningful contexts, learners are more likely to develop an awareness of others' perspectives, fostering emotional resonance and communicative sensitivity (Gkonou, Tatzl, & Mercer, 2021).

The emergence of heightened empathic communication among students confirms recent research suggesting that affective dimensions, such as empathy, can be intentionally nurtured through classroom interaction (Oxford, 2017). As observed in this study, students demonstrated increased perspective-taking and a more collaborative approach to classroom discourse following the integration of reflective activities and role-play scenarios. This supports the view that emotionally intelligent language education enhances not only academic success but also social cohesion (Mercer, MacIntyre, & Gregersen, 2022).

The theme of cultural nuance in language use further underscores the importance of pragmatic competence in language learning. Learners became more attentive to contextually appropriate expressions and the cultural norms that influence communication. This finding echoes Taguchi's (2017) argument that pragmatic awareness is essential for effective intercultural communication, especially in multicultural or multilingual learning environments. The students' improved ability to rephrase or adjust their language according to cultural expectations indicates a deeper understanding of linguistic diversity and a reduction in ethnocentric communication patterns.

Equally significant is the impact of affective reflection, as students engaged in journaling to document their communicative behaviors and emotional responses. This process of introspection helped reinforce empathetic dispositions, supporting the work of MacIntyre and Gregersen (2021), who argue that

reflective tasks increase learners' emotional self-regulation and intercultural readiness. The sustained use of reflective journals provided a safe space for students to examine their growth and challenges, promoting both linguistic and emotional intelligence.

In sum, the results demonstrate that when sociocultural elements are integrated intentionally into language education, students develop not only linguistic fluency but also the ability to engage with others respectfully and empathetically. This finding contributes to the broader conversation on humanizing language pedagogy—an approach that values learners' emotions, identities, and cultural backgrounds (Johnson & Golombek, 2020). As globalized communication becomes increasingly complex, the ability to navigate affective and intercultural dimensions of language use is no longer supplementary—it is essential.

CONCLUSION

This study concluded that integrating sociocultural awareness in language instruction significantly enhanced students' empathy, pragmatic competence, and interpersonal sensitivity. Through classroom observations, interviews, surveys, and reflective journals, it became evident that learners who were exposed to culturally responsive pedagogy exhibited greater emotional awareness and communicative adaptability. The development of perspective-taking skills, sensitivity to cultural nuances in expression, and improved interpersonal engagement were consistent across various instructional interventions.

The findings affirm that language education, when designed to include emotional and cultural dimensions, has the potential to shape learners into not just proficient speakers but also empathetic and culturally attuned communicators. This supports the shift from traditional grammar-focused instruction to a more holistic, humanizing approach that values both linguistic accuracy and interpersonal connection. As global classrooms become more diverse, embedding sociocultural competence in language curricula is not only beneficial but necessary for fostering inclusive and respectful communication.

RECOMMENDATIONS

Based on the study's findings, the following recommendations are proposed to enhance language instruction through sociocultural and affective dimensions:

1. **Integrate Sociocultural Content into Language Curricula**
   Language programs should embed culturally rich materials, such as authentic dialogues, case studies, and role-plays, that expose students to diverse communication styles and cultural expectations. Lessons must move beyond grammar and vocabulary to include themes of empathy, politeness, and intercultural respect.

2. **Implement Reflective Practices as Regular Classroom Tools**
   Encouraging students to maintain journals or learning diaries allows them to monitor their emotional and communicative development. This fosters self-awareness, empathy, and a deeper understanding of how culture and language intersect.

3. **Provide Professional Development for Language Educators**
   Teachers should be trained in culturally responsive pedagogy and pragmatic instruction. Seminars and workshops on intercultural communication, emotional intelligence, and inclusive teaching can equip educators with the tools to foster affective learning outcomes.

4. **Develop Contextualized Assessment Tools**
   Language assessment should include indicators of pragmatic awareness and affective engagement. Rubrics can be designed to evaluate how students adapt their communication based on context, cultural sensitivity, and tone—skills essential in multicultural interactions.

5. **Encourage Intercultural and Peer Interaction**
   Creating opportunities for students to engage with peers from diverse linguistic and cultural backgrounds—through collaborative projects, virtual exchanges, or group discussions—can strengthen empathy and broaden intercultural understanding.

6. **Further Research on Affective Language Learning**
   Future studies may explore long-term impacts of sociocultural instruction on learners' communication strategies, confidence, and emotional regulation. Research in other educational contexts and among diverse learner groups can deepen the understanding of these dynamics.

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Does Off-Campus Internship Experience Benefit Career of College Graduates? An Analysis Based on Alumni Career Development Survey

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ABSTRACT

Off-campus internship programs in universities integrate learning with practice, aiming to enhance students' practical skills and workplace competitiveness. Previous research has often used improvement of skill or knowledge and satisfaction of employers or students as internship effectiveness, without an assessment of future career outcomes. This study aims to explore whether off-campus internships improve students' employment and outcomes of career exploratory one year after graduation. The study uses data from the 2023 Alumni Career Development Survey (tracking students one year after graduation from the 2022 academic year), with a total of 913 undergraduate respondents. The results show that graduates who took internship or full-time internship courses, were significantly more likely to hold full-time job one year after graduation. Those who took full-time internship courses also spent significantly less time getting their first job. Additionally, among those who interned, a higher number of internship credits correlated with a shorter duration in finding their first job. This study demonstrates the positive impact of off-campus internships on graduates' future careers, especially in terms of getting full-time employment.

Keywords: Off-Campus Internship, Alumni Career Development Survey, Full-time Internship, Career Exploration

INTRODUCTION

Technical and vocational education provides the technical talents essential for national and economic development. Through practical teaching and hands-on learning, technical and vocational education enables students to quickly connect with industry after graduation (Executive Yuan, 2021). Internship courses effectively realize this "learning by doing" approach, allowing theory and practice to be mutually verified. Internship programs are more aligned with industry needs, cultivating students' professional practical skills and preparing them for future employment (Ministry of Education, 2015). The primary purpose of off-campus internships is to bridge theoretical and practical courses, develop skills required by the industry, build professional networks, and ultimately help students seamlessly transition to the workforce after graduation.

In recent years, the Ministry of Education in Taiwan has gradually implemented related policies to guide schools to emphasize the tracking of graduate outcomes, aiming to understand the employment situation of college and university graduates. Through Alumni Career Development Survey, schools can gain insights into the current employment status of their alumni and receive feedback on academic programs, which can be used for future institutional planning and curriculum improvement (Ministry of Education, n.d.). Since students' learning at school has the greatest impact during the early stages of their career, this study uses only the one-year post-graduation tracking data from Alumni Career Development Survey to understand the employment status of students who participated in internships.

The learning outcomes of off-campus internship courses can be assessed through feedback on student performance satisfaction from internship organizations. Previous studies mostly focused on improvements in students' knowledge or abilities as indicators of internship effectiveness (Cai et al., 2015; Yeh et al., 2021). However, the evaluation of internship effectiveness should also include the employment status of students after graduation (Wu, 2015). Minghsin University of Science and Technology is located in Hsinchu County, with a developmental vision of becoming a top-tier industrial university. It emphasizes practical and applicable goals with a focus on hands-on and practical education. Internship courses provide real-world work field experience, enhancing students' professional competencies. Therefore, this study aims to examine the learning outcomes of Minghsin University students who have participated in internships by investigating their employment status one year after graduation, to understand whether there are differences in employment between students who participated in internships and those who did not.

Literature Review

Super, Savickas, and Super (1996) proposed a theory of career development that conceptualizes it as a continuous, lifelong process. They delineated five distinct stages of career development: the growth stage (ages 4–14), the exploration stage (ages 15–24), the establishment stage (ages 25–44), the maintenance stage (ages 45–64), and the decline stage (age 65 and beyond). The university years typically fall within the exploration stage, during which individuals engage in academic learning, extracurricular activities, and early work experiences to reflect on their personal attributes and explore potential career paths. In this context, internship programs serve as an initial platform for career exploration, allowing students to acquire practical knowledge and skills while developing the professional competencies required for their transition into the workforce.

Employment

Internships serve as a valuable means for students to accumulate hands-on experience and gain insight into the operation of companies (Chen & Hsueh, 2021). Prior research has indicated that internship experience contributes to the development of career-related skills and increases the likelihood of securing full-time employment (Matusovich et al., 2019). Furthermore, internships provide students with the opportunity to expand their professional networks within industry settings (Dailey, 2016). Through these connections, individuals can explore various occupational roles and professional

practices, which may open doors to both immediate and future career opportunities. Empirical evidence suggests that students who complete corporate internships are at a lower risk of unemployment during the first year after graduation (Margaryan et al., 2022). Additionally, students with internship experience are statistically more likely to obtain full-time job offers (Gault et al., 2010). Moreover, graduates who have participated in internships tend to receive higher initial salaries, with a documented increase of approximately 9.2% compared to their non-internship counterparts (Gault et al., 2000).

A successful internship experience facilitates students' transition into the workforce (Liu et al., 2011). Internships provide undergraduate students with the opportunity to engage in experiential learning within their chosen fields, thereby preparing them for full-time employment and reducing or eliminating the need for post-graduation training periods (Dailey, 2016). In many cases, companies retain high-performing interns, allowing them to transition directly into the workforce upon graduation. This practice not only streamlines the onboarding process but also significantly reduces the time it takes for graduates to secure their first job.

Outcome of Career Exploratory

According to Super, the exploratory stage involves forming a vocational preference, refining that preference, and putting a vocational choice into action (Brooks et al., 1995). Super believes that making a choice means expressing one's self-concept, so having a clear self-concept is linked to recognizing a vocational preference. Prior to making formal career decisions, internships offer students the opportunity to engage in simulated work experiences that can inform and support their career choices (Kuo & Chuang, 2005). Through internships, students are able to acquire industry-specific knowledge, confirm their job-related preferences, and develop deeper vocational interests (Maertz et al., 2014). In addition to gaining technical knowledge and practical skills, internships also help cultivate core competencies such as teamwork, workplace ethics, time management, and problem-solving abilities. These experiences enhance students' readiness for the labor market and increase the likelihood of securing jobs that align with their professional capabilities. Research further indicates that participation in programs such as Federal Work-Study contributes to a better understanding of career pathways (Akors et al., 2021). Students with internship experience tend to have a clearer understanding of job expectations compared to those without work experience. Moreover, internship participation fosters greater self-awareness regarding one's strengths and weaknesses, leading to improved person–job fit and, consequently, higher job satisfaction upon employment.

METHODOLOGY

Research Framework

This study primarily aims to examine the impact of internship participation on employment and outcomes of career exploration one year after college graduation.

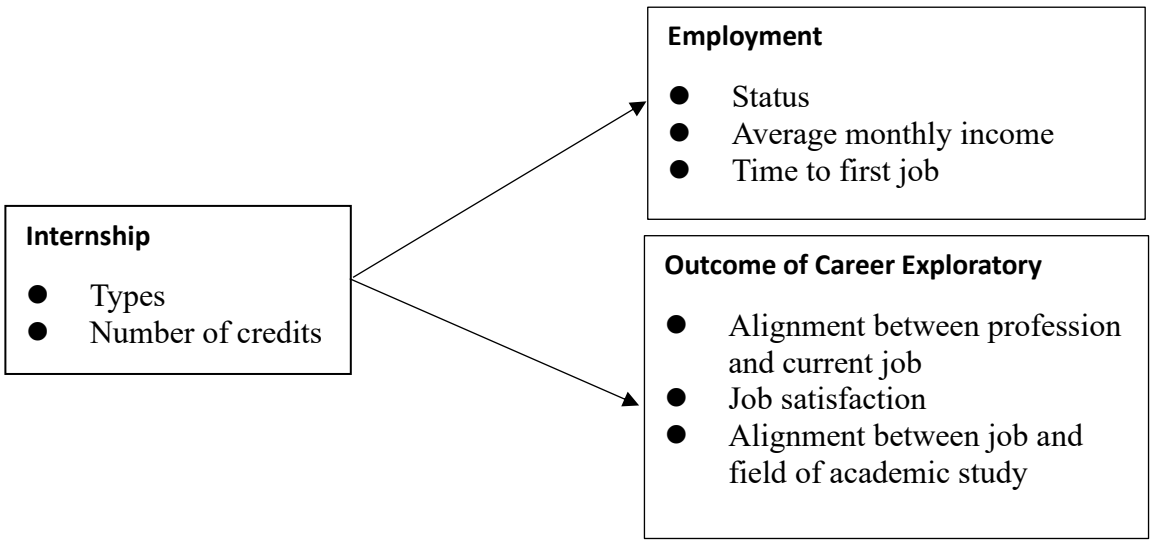

Figure 1 Research Framework

Procedure

This study employed a secondary data analysis approach, utilizing existing graduate tracking survey data alongside on-campus student course enrollment records. Data were drawn from the Minghsin University of Science and Technology's 2023 academic year graduate tracking survey, which followed graduates from the 2022 academic year (one year post-graduation). The sample comprised 913 daytime four-year university students who completed the survey. These survey data were merged with students' internship course enrollment records, including the semester and credits of the internship courses taken. SPSS 19 statistical software was used to analyze the data.

Measures

Using four years of course enrollment data, students' participation in off-campus internship courses and corresponding credits were identified. Participation in off-campus internships was defined by whether students had earned any off-campus internship credits. Internship types were further classified based on the number of credits earned: full-time internships were defined as those with nine or more credits (≥9 credits), while part-time internships were defined as those with fewer than nine credits (<9 credits).

The current employment status as a full-time worker was measured by the item: "What is your current employment status? (Excluding leaves of absence without pay and parental leave; please answer based on your primary source of income)." *Time to first job* was measured by the item: "How long did it take you to find your first job after graduation? (If you are an entrepreneur, please answer with the time from graduation to the start of your business; if you are a freelancer, please provide the time to your first stable job)." *Average monthly income* was measured by the item: "What is your current average monthly income? (Please report your fixed, pre-tax regular income, including fixed allowances, transportation fees, meal allowances, utility fees, monthly bonuses related to work performance, attendance bonuses, etc.)," which was then recoded as a continuous variable. The degree of *alignment between profession and current job* was measured by the item: "To what extent do your current professional skills correspond to the requirements of your job?" using a five-point Likert scale, assessing two sub-items of alignment. *Job satisfaction* was measured by the item: "How satisfied are you with your overall current job?" also using a five-point Likert scale to assess satisfaction level. *Alignment between job and field of academic study* was measured by the item: "To what extent does your current job content correspond to the professional training courses in your department or program?" using a five-point Likert scale.

RESULTS

Sample

A total of 77.2% of graduates reported having full-time employment. The majority of employed graduates worked in enterprises (81.3%). The top three occupational categories were manufacturing (17.9%), science, technology, engineering, and mathematics (STEM) fields (15.4%), and marketing and sales (14.2%). Before graduation, 16.6% of graduates already held full-time jobs. Regarding job search duration after graduation, 24.0% took between one and two months, 23.9% found a job within one month, and 16.0% took between two and three months. Regarding income, 23.3% earned an average monthly salary between NT$34,001 and NT$37,000, while 20.7% earned between NT$31,001 and NT$34,000. Furthermore, 43.2% of the graduates had completed the internship course, while 37.9% of the graduates had completed the full-time internship course.

Getting a Full-time Employment One Year after Graduation

Table 1 presents the cross-tabulation between full-time employment status and internship participation, including both internships and full-time internships. The results of the chi-square test indicate that there is a statistically significant association between internship experience and full-time employment status, with a Pearson chi-square value of 9.911 (P< .05). Similarly, a significant association was found between full-time internships and full-time employment, with a Pearson chi-square value of 5.057 (P < .05). As shown in Table 1, among students without off-campus internship experience, the ratio of those with full-time jobs to those without is approximately 2.76:1. In contrast, among those with off-campus internship experience, this ratio increases to 4.6:1. Furthermore, for students without full-time off-campus internships, the ratio of those with full-time jobs to those without is 3:1, while for students who participated in full-time off-campus internships, the ratio rises to 4.3:1. These findings suggest that students who engage in internships and full-time internships are more likely to secure full-time employment within one year after graduation compared to those without such experiences.

Table 1. Cross-tabulation of Full-Time Employment Status and Internship Participation

	Without Internship Experience	With Internship Experience	Without full-time Internship Experience	With Full-Time Internship Experience
Without Full-Time Employment	138	70	143	65
With Full-Time Employment	381	324	424	281

The Impact of Internship on One-Year Employment Situation of Graduates

Table 2 reports the results of a one-way ANOVA conducted to examine whether internship and full-time internship participation are associated with differences in employment outcomes. No statistically significant differences were found between students with and without internship experience in terms of average monthly income ($F = 2.04$, $p > .05$), time to first job ($F = 1.87$, $p > .05$), alignment between profession and current job ($F = 2.07$, $p > .05$), job satisfaction ($F = 0.42$, $p > .05$), or alignment between job and field of academic study ($F = 1.17$, $p > .05$). However, significant differences emerged when comparing students with and without full-time off-campus internship experience. Specifically, there was a significant difference in average monthly income ($F = 4.11$, $p < .05$), with students without full-time internships reporting higher average monthly income than those with full-time internships. In contrast, students with full-time internship experience significantly secured their first full-time job more quickly ($F = 5.33$, $p < .05$), with a shorter job search duration ($M = 1.71$) compared to those without such experience ($M = 1.97$). No significant differences were found between the two groups in perceived

alignment between profession and current job (F = 2.13, $p > .05$), job satisfaction (F = 0.11, $p > .05$), or alignment between job and field of academic study (F = 3.82, $p > .05$).

Table 2. ANOVA Analysis of Internship Types

	Internship Experience	Mean	F Value	Full-time Internship Experience	Mean	F Value
Average Monthly Income	Without	37334	2.04	without	37454	4.11*
	With	36318		with	35991	
Time to First Job	Without	1.93	1.87	without	1.97	5.33*
	With	1.78		with	1.71	
Alignment between Profession and Current Job	Without	3.70	2.07	without	3.71	2.13
	With	3.79		with	3.80	
Job Satisfaction	Without	3.85	0.42	without	3.84	0.11
	With	3.82		with	3.83	
Alignment between Job and Field of Academic Study	Without	3.53	1.17	without	3.51	3.82
	With	3.61		with	3.65	

*P<0.05; **P<0.01; P<0.00

The Impact of Internship Credits on One-Year Employment Situation of Graduates

Table 3 presents the results of the regression analysis conducted to examine whether the number of internship credits (i.e., the duration of internship participation) influences employment outcomes one year after graduation. The analysis revealed that internship credits had a significant negative effect on the time taken to secure the first full-time job (β = –.088, $p < .05$). The more internship credits students earned, the shorter the time required to obtain their first job. However, internship credits did not have significant effects on other employment outcomes, including average monthly income (β = –.051, $p > .05$), alignment between profession and current job (β = .038, $p > .05$), job satisfaction (β = –.015, $p > .05$), and alignment between job and field of academic study (β = .048, $p > .05$).

Table 3. Regression Analysis of Number of Credits

	Dependent Variables				
Independent Variable	Average Monthly Income β Value	Time to First Job β Value	Alignment between Profession and Current Job β Value	Job Satisfaction β Value	Alignment between Job and Field of Academic Study β Value
Internship Credits	-.051	-.088*	.038	-.015	.048
R^2	.003	.008	.001	.000	.002
F Value	1.907	5.746*	1.045	.162	1.697

*P<0.05; **P<0.01; P<0.00

DISCUSSION

This study found that graduates who participated in internships and full-time internships were significantly more likely to secure full-time employment compared to those who did not participate. Based on these findings, it is recommended that universities actively encourage students to engage in off-campus internships. Participation in any form of internship experience appears to contribute positively to students' employability and can serve as an effective strategy to enhance graduate employment outcomes.

Furthermore, graduates who participated in full-time internships spent significantly less time securing their first full-time job compared to those who did not engage in such internships. Among students with internship experience, those who completed a greater number of internship credits were also found to obtain their first job more quickly. This may be attributed to the increase in career adaptability that accompanies extended periods of off-campus internship experience (Ocampo et al., 2020). Full-time internships resemble full-time employment more closely than part-time internships, allowing students to focus entirely on practical training without the competing demands of academic coursework. Employers can also provide more extensive training during full-time internships, which in turn enhances the acquisition of job-related knowledge and skills. As a result, students accumulate greater professional capital through such experiences, giving them a competitive advantage in the labor market.

No significant differences were found in average monthly income between graduates who had internship experience (including full-time internships) and those who did not. One possible explanation is that while many employers are willing to hire interns, they may not necessarily offer higher starting salaries to them. Prior research suggests that interns who perform well during their internship may be rewarded with higher initial salaries (Gault et al., 2010), but this is not uniformly applied across all cases. Similarly, there were no significant differences between intern and non-intern graduates in terms of the perceived alignment between their academic training and their current job, or the match between their field of study and the nature of their work. A likely explanation lies in the career exploration stage, typically occurring between the ages of 15 and 24, during which individuals are still navigating potential career paths. While internship participation may contribute to career development, many students may still be in the exploratory phase, which may explain the absence of significant differences in alignment between job and field of academic study.

No significant differences were found in job satisfaction between graduates who had participated in internships (including full-time internships) and those who had not. While internship experiences may help students gain greater self-awareness regarding their career preferences, job satisfaction is influenced by a multitude of factors, such as salary, work environment, organizational culture, and job stability—not solely by the alignment between one's interests and job choice.

Limitations and Suggestions for Future Research

Survey data collected one year after graduation is the first limitation of this study. While this timeframe allows for an initial assessment of the employment status following internship participation, it may be insufficient to fully capture long-term career outcomes. Many graduates are likely still in the early stages of career exploration, and as a result, the effects of internships on employment may not yet be fully realized. Future research should consider adopting longitudinal designs to track graduates' employment development over an extended period.

Second, the study relied on secondary data drawn from Alumni Career Development Survey, conducted by the university. The outcome variables of internship were based on a single survey item, preventing any assessment of the instrument's internal reliability. However, the study still provided relevant insights into graduate employment. Future research is suggested to design more comprehensive and validated survey instruments to enhance the reliability and validity of findings.

Third, this study examined only the length of time of internship. However, internships can vary considerably in their characteristics, including whether the position was paid, the nature of the job tasks, and the degree of alignment with students' academic training. These variations could significantly influence the educational and professional outcomes of internships. Future studies are encouraged to distinguish among different types of internships to better assess their differential impacts on student learning and career development.

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Harnessing Sentiment Analysis for Predictive Modeling of Faculty Evaluations Using Random Forest and XGBoost

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ABSTRACT

This study presents a data-driven framework for evaluating faculty effectiveness by integrating sentiment analysis of student feedback with traditional quantitative metrics from student evaluation of teaching instruments. A multi-year dataset of 189,931 records (2019–2024) underwent cleaning, stratification by academic year, and feature engineering to combine sentiment features derived from BERT and VADER with contextual and demographic attributes. Balanced datasets were generated using SMOTE, and two ensemble models, Random Forest and XGBoost, were optimized through hyperparameter tuning and evaluated for accuracy, interpretability, and fairness. Both models achieved perfect predictive performance, with Random Forest offering broader feature utilization and XGBoost providing department-specific insights. Correlation analysis revealed that sentiment metrics and evaluation scores capture complementary aspects of instructional quality, underscoring the value of integrating heterogeneous signals. Fairness audits indicated negligible demographic bias, and error analysis identified linguistic and contextual patterns behind misclassifications. Findings highlight the potential of combining sentiment-informed analytics with machine learning for robust, equitable, and interpretable faculty performance assessment.

Keywords: Faculty Performance Evaluation, Sentiment Analysis, Predictive Analytics, Educational Data Mining

INTRODUCTION

In today's digitally driven landscape, Higher Education Institutions (HEIs) face increasing pressure to align academic practices, administrative processes, and pedagogical strategies with ongoing digital transformation. Evaluating instructional quality and faculty performance remains central to maintaining academic standards and improving teaching effectiveness. Within this context, Student Evaluations of Teaching (SET), particularly qualitative narrative feedback, provide valuable insights but are often underutilized due to the labor-intensive nature of manual analysis and the absence of scalable, automated text analytics (Shaik et al., 2023; Pacol & Palaoag, 2021).

Advances in Natural Language Processing (NLP) and Machine Learning (ML) now enable systematic extraction of evaluative content and emotional tone from narrative feedback, enhancing its interpretive value in faculty performance systems. Sentiment Analysis (SA), or opinion mining, has emerged as an effective method for processing large volumes of qualitative SET data, producing sentiment polarity and intensity scores that reveal patterns in student perceptions and support data-driven decision-making (Marrapu et al., 2024; Shaik et al., 2023).

Among SA tools, Bidirectional Encoder Representations from Transformers (BERT) leverages a deep bidirectional transformer architecture to capture complex semantic patterns and excels in contextual sentiment classification. Valence Aware Dictionary for Sentiment Reasoning (VADER), a lexicon and rule-based approach, offers interpretability, simplicity, and adaptability to informal language, making it popular in educational research (Green et al., 2024; Shaik et al., 2023).

Python's open-source ecosystem, including NLTK, Hugging Face Transformers, and scikit-learn, supports scalable SA and predictive modeling pipelines (Mantrala, 2025; Castro et al., 2023). For outcome prediction, ensemble learning models such as Random Forest (RF) and eXtreme Gradient Boosting (XGBoost) are widely used in educational analytics. RF aggregates predictions from multiple decision trees to reduce overfitting and improve stability, while XGBoost applies regularized gradient boosting to achieve high accuracy and handle complex, structured data efficiently (Lalata et al., 2019; Shabnam et al., 2025). Integrating SA outputs into these models creates a robust, data-driven framework for enhancing faculty evaluation practices and institutional decision-making.

Research Background. This study utilizes Python to automate the extraction, execution, and analysis of sentiment from unstructured student feedback in SET results from XYZ College, Philippines. SA libraries, specifically VADER and BERT, were integrated in a unified Google Colab environment to capture both lexical and contextual emotional tone. The workflow included data preprocessing, feature extraction, classification, and visualization, providing a scalable and reproducible framework for analyzing qualitative feedback. By combining SA outputs with ensemble ML algorithms, the study operationalizes sentiment-informed predictive models to enhance faculty evaluation, inform institutional policies, and improve instructional quality.

Statement of the Problem. Conventional faculty evaluation systems rely heavily on numerical ratings, overlooking the nuanced insights within qualitative student feedback. The emotional tone and context-specific content in narrative responses remain underutilized, while manual interpretation is prone to subjectivity and inconsistency. Existing approaches lack scalable methods to systematically transform unstructured text into actionable metrics for predictive analysis. This study addresses this gap by integrating advanced SA techniques with supervised ensemble models to quantify sentiment and accurately predict faculty performance, thereby improving fairness, consistency, and the actionable value of evaluations in higher education.

This study addresses the following research questions:

- RQ1. How accurately can SA tools (BERT and VADER) classify the polarity and intensity of student feedback in predicting faculty evaluation ratings?
- RQ2. Which ML algorithm (RF or XGBoost) provides superior predictive performance in classifying faculty evaluation ratings based on sentiment-informed features?

- RQ3. Which sentiment, demographic, and contextual variables most significantly influence the prediction of faculty effectiveness ratings?

Objective. The objective of this study is to develop a predictive framework that enhances the accuracy, interpretability, and operational relevance of faculty performance evaluation in higher education. Leveraging sentiment polarity from student feedback, derived through both BERT and VADER, the framework integrates lexicon- and transformer-based SA with ensemble ML models specifically, RF and XGBoost, to forecast faculty effectiveness ratings, thereby supporting data-driven academic quality assurance and performance management.

Scope. This study applied SA and ML techniques to predict faculty evaluation results using qualitative feedback from SET data collected at XYZ College from 2019 to 2024. It combined VADER and BERT models with RF and XGBoost classifiers, using both textual and contextual features, particularly department code, gender, foreigner status, academic year, and mean rating.

Limitations. Despite encouraging results, several limitations warrant acknowledgment:

1. Overfitting Risk: While class imbalance was mitigated using Synthetic Minority Over-sampling Technique or SMOTE and model tuning was performed, ensemble methods are inherently susceptible to overfitting. Additional regularization and validation on external datasets are recommended for robust generalization.
2. Limited Scalability: As the dataset originates from a single institution within a specific cultural context, generalizability to other educational settings may be constrained. Institutional differences in pedagogy, language, and evaluation frameworks may affect model transferability.
3. Computational Demands of BERT: BERT required approximately 200 minutes to process almost 200,000 records, making it less feasible for real-time or large-scale deployment without GPU acceleration. In contrast, VADER provided a highly efficient baseline, processing the data significantly faster than BERT, though the final predictive performance was highest with the more complex ensemble models.
4. Scope of Performance Indicators: The model relies solely on SET-derived data, excluding peer evaluations, research productivity, or service contributions. Thus, findings reflect perceived rather than holistic instructional effectiveness.

Related Works

Prior research has demonstrated the effectiveness of computational tools such as VADER and BERT in educational SA. Initially developed for social media, VADER has since been applied to classify student feedback in physics education and broader higher education contexts (Green et al., 2024; Shaik et al., 2023). Its simplicity, transparency, and reliability in lexicon-based sentiment classification make it particularly useful for rapidly processing qualitative student feedback.

Similarly, BERT has gained prominence in educational analytics for its capacity to capture deep linguistic context and detect sentiment cues embedded within complex sentence structures. Shaik et al. (2023) demonstrated its utility in identifying positive and negative polarity terms within student evaluations, with performance advantages over traditional models due to its bidirectional transformer architecture.

On the predictive modeling side, RF has consistently shown strong performance in classifying educational text data and predicting faculty effectiveness. Gil-Madrona et al. (2025) reported its superiority over Logistic Regression (LR), Naïve Bayes (NB), and Support Vector Machine (SVM) in predicting sentiment-based faculty evaluation scores, with the added benefit of interpretable feature importance rankings to explain prediction outcomes. XGBoost has likewise been adopted in student feedback analysis and performance prediction tasks within blended learning and higher education settings (Shabnam et al., 2025). While slightly underperforming compared to LR in one SA study of

course materials (Shaik et al., 2023), XGBoost remains valued for its predictive accuracy, efficiency, and flexibility across diverse data structures in educational analytics.

Of particular relevance, the study by Lalata et al. (2019) addressed the challenge of extracting actionable insights from unstructured student feedback through a predictive pipeline comparable to the framework proposed in this research. The authors employed SA using N-gram and TF-IDF vectorization techniques, followed by ensemble modeling that combined NB, LR, SVM, Decision Tree (DT), and RF classifiers. This ensemble strategy capitalized on the strengths of multiple models while reducing prediction variance and bias.

Collectively, these studies provide a foundation for this research, which integrates VADER, BERT, RF and XGBoost techniques to predict faculty performance ratings from qualitative student feedback. This framework aims to improve the accuracy, interpretability, and operational value of faculty assessment systems, contributing to data-informed academic quality assurance in higher education.

While prior literature (e.g., Shaik et al., 2023; Pacol & Palaoag, 2021) has utilized VADER and BERT for opinion mining, the construct of faculty effectiveness remains loosely defined across studies. This paper advances the discourse by formalizing faculty effectiveness as a multi-dimensional perception, combining structured Likert-based ratings with unstructured sentiment indicators.

Similarly, sentiment intensity, though often referenced implicitly in NLP studies, is explicitly quantified here to reflect the affective magnitude in student feedback, a critical dimension for evaluating nuanced teaching impact. Prior research (Gil-Madrona et al., 2025; Green et al., 2024) lacks such dual operationalization, combining human-centric evaluation with ML-centric feature engineering.

Unlike prior studies (e.g., Shaik et al., 2023; Lalata et al., 2019), this research integrates demographic and temporal variables, applies fairness-aware preprocessing, and shows that both BERT and VADER can achieve perfect predictive accuracy, with VADER offering greater efficiency in execution time. The inclusion of fairness assessment across gender and foreigner status adds an underexplored dimension to faculty analytics literature.

METHODS

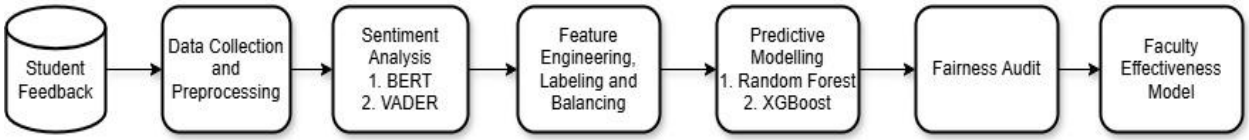

Figure 1**:** Conceptual Framework

Source: Lalata et al. (2019)

This study implements a 4-stage pipeline for predicting faculty effectiveness, adapted from the work of Lalata et al. (2019), which demonstrated the feasibility of combining SA with ensemble learning. The framework, illustrated in Figure 1, integrates structured ratings and unstructured narrative feedback to create a holistic evaluation model.

In this framework, *faculty effectiveness* is defined as the perceived instructional quality assessed by students. It is primarily operationalized through the Overall Mean Rating from the institution's SET instruments. To enrich this metric, the model incorporates *sentiment polarity* (the positive, neutral, or negative direction of emotion) and *sentiment intensity* (the magnitude of the emotion) extracted from students' narrative comments. These sentiment features or constructs transform qualitative feedback

into structured, interpretable data points, enabling a more multidimensional perspective on instructional performance (Cristescu et al., 2023; Heath et al., 2023).

The conceptual pipeline begins with data preprocessing and moves to sentiment feature extraction. These features are then integrated with structured data to train ensemble classifiers. The final stage involves a fairness audit, which evaluates model performance across demographic subgroups (gender and foreigner status) to identify potential biases and support equitable evaluation practices (Barocas et al., 2019; Gil-Madrona et al., 2025). This framework is designed to support a scalable, ethical, and evidence-based approach to instructional quality assurance in higher education.

This study consists of 4 main stages: (1) data collection and preprocessing, (2) sentiment feature extraction, (3) model training and tuning, and (4) evaluation and fairness auditing.

Data Collection and Preprocessing. A total of 189,931 SET records from academic years 2019-2024 were obtained from the XYZ College, encompassing both numeric ratings (1-4 scale) and narrative comments. Records with missing values in either component were excluded. Official approval was obtained from the Office of the Vice Chancellor for Academics for the use of archived SET data. The study was non-interventional, posed minimal risk, and adhered to stringent anonymization protocols, fully removing personal identifiers before researchers accessed it (Green et al., 2024). As per institutional policy, students were informed during SET completion that their responses could be used for research, establishing passive informed consent. Numeric ratings were aggregated into an overall mean per faculty member per term, then binarized into High (>3.0) and Low (≤3.0) effectiveness classes. Text preprocessing included lowercasing, punctuation removal, tokenization, and stopword removal using NLTK. Class imbalance was addressed using SMOTE with stratification by academic year and department.

Sentiment Feature Extraction. BERT and VADER were employed. The former produced polarity scores (positive and negative only) and a confidence score for multi-class sentiment classification while the latter produced polarity scores (positive, neutral, negative) and a compound score. In addition to sentiment polarity and intensity, the length of each comment (tokens) was included as a contextual feature.

Model Training and Tuning. RF (Breiman, 2001) and XGBoost (Chen & Guestrin, 2016) were evaluated. Hyperparameters were optimized using GridSearchCV with 5-fold cross-validation. The best configurations were selected based on ROC-AUC scores from the validation set. Complete hyperparameter search ranges and code implementations are provided in the supplementary materials.

Evaluation Metrics and Fairness Audit. Model performance was assessed using accuracy, precision, recall, F1-score, and ROC-AUC. Statistical robustness was verified with McNemar's test and 95% confidence intervals. Error analysis included confusion matrices and manual inspection of misclassified cases. Performance metrics were computed across faculty subgroups defined by gender and foreigner status (local/foreign). Subgroup sizes were noted to assess representation adequacy.

Reproducibility. All scripts for preprocessing, sentiment analysis, data balancing, parameter configuration, model training workflows, fairness auditing, and statistical testing, along with preprocessed datasets, are openly accessible via the project's GitHub repository (https://github.com/jeffatendido/paper-P25173) to facilitate independent replication. The raw narrative feedback comments are not shared, as they may contain information that could directly or indirectly identify faculty members.

RESULTS

Sampling and Dataset Summary. During data preparation, records with missing ratings, blank comments, malformed identifiers, consisting solely of stop words and comments written in non-English or mixed-language formats were excluded. A total of 161,606 records were removed through this cleaning process, reducing the dataset from 351,537 to 189,931 high-quality records retained for analysis. To preserve institutional variance and mitigate temporal sampling bias, the dataset was stratified by academic year 2019-2024, ensuring representation of evolving instructional conditions, student sentiment, and contextual shifts such as the COVID-19 remote learning period (Heath et al., 2023).

Table 1**:** Distribution of SET records by Academic Year

Academic Year	Records (n)	Percentage (%)
2019	25,365	12.80%
2020	15,887	8.42%
2021	46,421	24.97%
2022	26,750	14.04%
2023	46,472	24.53%
2024	29,036	15.25%
Total	189,931	100.00%

In Table 1, all years are well represented, with 2023 (24.53%) and 2021 (24.97%) contributing the largest shares, and 2020 the smallest (8.42%). This balanced distribution supports robust generalization and reduces year-specific overfitting.

Table 2: Distribution of Sentiment Polarity Count of Student Feedback by Model

Sentiment Model	Positive	Neutral	Negative
BERT	139,521 (73.46%)	0 (0.0%)	50,410 (26.54%)
VADER	130,979 (68.96%)	45,117 (23.75%)	13,835 (7.28%)

Sentiment Polarity. In Table 2, BERT classified 73.46% of comments as Positive and 26.54% as Negative, lacking a Neutral category and thus interpreting mixed feedback as either positive or negative, potentially inflating dissatisfaction rates. VADER offered greater nuance of 68.96% Positive, 23.75% Neutral, and 7.28% Negative, enabling clearer distinction between genuine discontent and ambivalence. While BERT's broader negativity may aid early risk detection, VADER's finer sentiment separation supports targeted responses and monitoring of uncertain attitudes. In both models, Positive sentiment dominates, making shifts in minority classes crucial for detecting emerging concerns.

Table 3: Feature Matrix Composition

Feature	Type	Description	Source
bert_sentiment	Categorical	Sentiment polarity (positive, negative)	BERT
bert_confidence	Continuous	BERT model confidence (0 to 1)	BERT
vader_sentiment	Categorical	Sentiment polarity (positive, neutral, negative)	VADER
vader_compound	Continuous	Sentiment strength score (-1 to +1)	VADER
gender	Binary	Gender of faculty (male/female)	Institutional
foreigner	Binary	Local or foreign faculty	Institutional
deptcode	Nominal	Department numeric ID	Institutional
year	Ordinal	Year of record (2019-2024)	Institutional
overallmean	Continuous	Mean SET score (Likert scale 1-4)	SET Feedback Form
label	Binary	High (score >3.0), Low (≤3.0)	Derived

Feature Matrix Composition. The final feature matrix comprised 10 variables drawn from SA tools, institutional records, and derived labels, as shown in Table 3. Sentiment features included bert_sentiment and bert_confidence and vader_sentiment and vader_compound, representing polarity and sentiment strength, respectively. Contextual and demographic attributes included gender (male/female), foreigner (local/foreign), deptcode (department code), and year. The overall mean score, derived from the SET instrument, captured the average Likert-based student evaluation. Finally, the binary label variable indicated faculty effectiveness, with values classified as High or Low (1/0). This integrated structure enabled supervised model training using interpretable and diverse predictors.

Table 4: Descriptive Summary of Continuous Features

Metric	Mean	SD	Min	Max
BERT Confidence	0.97199	0.075035457	0.500005424	0.999892
VADER Compound	0.385311	0.379862622	-0.9975	0.9981
Overall Mean	3.550236	0.298248	1	4

Sentiment Intensity and Continuous Features. Table 4 presents the distribution of continuous predictors, BERT confidence, VADER compound score, and Overall Mean that were used in the predictive models. BERT confidence was notably high (Mean=0.972, SD=0.075), with scores tightly clustered near 1.0, indicating strong certainty in polarity assignments and minimal ambiguity. In contrast, VADER's compound scores were more dispersed (Mean=0.385, SD=0.380), spanning from -0.9975 to 0.9981 and capturing the full sentiment spectrum from strong negatives to strong positives. This graded output offers greater nuance for detecting subtle sentiment shifts and mixed emotional tones. The Overall Mean SET score, derived from the 39-item Likert-scale instrument, was tightly clustered (Mean=3.55, SD=0.298) across its 1-4 range, confirming a generally positive evaluation bias common in SET responses and supporting the binary label classification applied in subsequent modeling.

After preprocessing and integration of sentiment, contextual, and demographic features, the final dataset consisted of 189,931 complete records. All variables were validated for consistency, and no missing values were detected. The dataset was fully encoded using fixed preprocessing rules and random seeds to ensure reproducibility.

Table 5: Correlation Matrix

	vader_compound	bert_confidence	overallmean
vader_compound	1.00	0.07 (Very Weak)	0.19 (Very Weak)
bert_confidence	0.07 (Very Weak)	1.00	0.05 (Very Weak)
overallmean	0.19 (Very Weak)	0.05 (Very Weak)	1.00

Table 5 shows that BERT confidence, VADER compound, and overall mean rating are largely independent. BERT confidence has negligible correlation with VADER ($r \approx 0.07$) and overall mean ($r \approx 0.05$), while VADER shows only a weak positive link to overall mean ($r \approx 0.19$). This indicates each capture distinct aspects of feedback. VADER reflects emotional tone, BERT provides polarity with confidence, and ratings measure perceived effectiveness. Their low overlap supports combining them for broader, more nuanced faculty performance insights.

Binary Label Definition. Faculty effectiveness was operationalized as a binary classification task using the overall mean score from the SET instrument. Records with scores>3.0 were labeled as High effectiveness, while those with scores≤3.0 were labeled as Low. This threshold reflects institutional performance standards and aligns with prior studies in educational analytics (Cristescu et al., 2023; Lalata et al., 2019).

Table 6: Descriptive Summary by Label

Class	Records (n)	Percentage(%)
High	179,091	94.29%
Low	10,840	5.71%

Class Distribution before Balancing. In Table 6, before balancing, the dataset exhibited significant class imbalance, with 94.29% of records labeled as High and only 5.71% as Low. This is consistent with documented trends in student evaluations, which are often positively skewed. To address this imbalance, SMOTE (Chawla et al., 2002) was applied to the training set. Resampling was performed independently by academic year and department to preserve subgroup structure and prevent temporal or institutional distortion (Castro et al., 2023). Following resampling, both classes were equally represented in the training data, supporting fair model learning and increased sensitivity to underrepresented cases as shown in Table 7.

Table 7: Descriptive Summary of Labels by Year and by Department Before and After SMOTE

	Before		After	
Academic Year	High	Low	High	Low
2019	22,917	2,448	22,917	22,917
2020	15,080	807	15,080	14,174
2021	44,716	1,705	44,716	43,377
2022	25,143	1,607	25,143	22,800
2023	43,926	2,546	35,399	34,320
2024	27,309	1,727	-	-

	Before		After	
Department Code	High	Low	High	Low
1	1,600	115	1,039	944
2	1,071	31	697	47
3	5,142	436	3,011	2,889
4	5,283	136	4,023	2,231
5	59,298	3,950	47,772	47,772
6	5,574	57	4,977	1,969
7	8,980	577	7,688	7,688
8	17,018	870	14,275	14,275
9	20,239	1,373	15,782	15,782
10	54,886	3,295	43,991	43,991

All resampling operations were executed using the imbalanced-learn package with fixed random seeds to ensure reproducibility. No missing or malformed labels were encountered during preprocessing.

Ground-Truth Reliability Results. To evaluate the reliability of the assigned binary labels (High vs. Low faculty effectiveness), a stratified random sample of 500 student feedback comments was independently reviewed by 3 expert raters. Each rater manually classified the sentiment as positive or negative, and majority voting was used to consolidate judgments. The sentiment-label agreement rate was 80.9%, indicating strong semantic alignment between student narrative tone and numeric ratings, consistent with prior findings (Cristescu et al., 2023; Heath et al., 2023). A confusion matrix (Table 8) compared expert sentiment with the assigned labels, showing 216 correctly labeled "High" instances and 51 disagreements. No "Low" sentiment cases were present, raising concerns about class sparsity or labeling inflation.

Table 8: Confusion Matrix of Ground-Truth

		Predicted Label		
		High	Low	Sum
True Label	High	216	51	267
	Low	0	0	0

These results support the reliability of the "High" class but highlight the need for improved balance in label assignment, especially for underrepresented outcomes. The analysis strengthens the study's internal validity and supports the integration of sentiment features in faculty evaluation models (Castro et al., 2023; Barocas et al., 2019).

Hyperparameter Tuning. Hyperparameter optimization was performed using Python-based grid search and cross-validation techniques on the training dataset (80% of the dataset after SMOTE) to identify the optimal configurations for the RF and XGBoost models. For RF, the best parameters included: max_depth=20, max_features=0.817, min_samples_leaf=3, min_samples_split=4, and n_estimators=121. For XGBoost, the optimal configuration comprised: max_depth=7, n_estimators=121, colsample_bytree=0.750, learning_rate=0.286 and subsample=0.839. These tuned

hyperparameters were subsequently used for final model training and evaluation to ensure improved generalization and reduce overfitting risk (Shabnam et al., 2025).

Table 9. Model Performance Matrix

Model	Accuracy	Precision	Recall	F1-Score	ROC-AUC
Random Forest	1.00	1.00	1.00	1.00	1.00
XGBoost	1.00	1.00	1.00	1.00	1.00

Model Performance Comparison. Table 9 presents the classification results of the XGBoost and Random Forest (RF) models applied to the sentiment-enhanced faculty evaluation test set (20% of the dataset after SMOTE). Both models achieved perfect scores (1.00) across accuracy, precision, recall, F1-score, and ROC-AUC, indicating complete agreement between predicted and actual labels. While this confirms the strong capacity of ensemble algorithms to leverage sentiment and contextual features for classification, the flawless performance may indicate overfitting, particularly given the use of SMOTE-based oversampling (Chawla et al., 2002; Fernández et al., 2018).

Table 10: Model Performance Matrix by Label

Model	Label	Precision	Recall	F1-Score	Support
Random Forest	High (1)	1.00	1.00	1.00	35,836
	Low (0)	1.00	1.00	1.00	2,150
XGBoost	High (1)	1.00	1.00	1.00	35,836
	Low (0)	1.00	1.00	1.00	2,150

Table 10 further shows that both classifiers attained perfect precision, recall, and F1-scores for both "High" (1) and "Low" (0) faculty effectiveness classes, with balanced class representation (35,836 "High" vs 2,150 "Low"). This symmetry suggests that the models effectively discriminate between categories without bias toward majority classes.

Despite these encouraging results, perfect scores necessitate caution. SMOTE may have introduced synthetic patterns that the models exploited, inflating performance metrics. To ensure real-world generalizability, future work should validate the models using independent datasets, adopt fairness-aware regularization, and assess the operational impact of potential misclassifications, particularly for the "Low" category, where errors could have significant implications for faculty evaluation outcomes.

Table 11: McNemar's Test Contingency by Model

Model	Both Correct	Model Wrong, Baseline Correct	Model Correct, Baseline Wrong	Both Wrong
RF vs Baseline	37986	0	0	0
XGBoost vs Baseline	37986	0	0	0

Statistical Significance Result. Table 11 displays the McNemar's test contingency result. The test was conducted to assess the statistical significance of differences in predictive performance between RF and XGBoost classifiers. Both models achieved perfect agreement on the test set (accuracy=1.0000), resulting in contingency tables with no discordant pairs and producing infinite test statistics with p-values < 0.0001. The corresponding 95% confidence intervals for accuracy were exceptionally tight: (0.9999, 1.0000) for both models. While these findings confirm consistent model behavior, the absence of disagreement makes McNemar's test less informative in this context. This result suggests the need for further generalization checks to mitigate overfitting risks or test set bias.

Table 12: Feature Importance Rank for RF and XGBoost

		Importance	
Rank	Feature	RF	XGBoost
1	overallmean	0.996743	0.994749
2	bert_sentiment	0.0023	0.004499
3	vader_compound	0.000727	0.000105
4	bert_confidence	0.000155	0.00009
5	vader_sentiment	0.000075	0.000007

Feature Importance Ranking. Table 12 shows that both models relied almost exclusively on the overall mean (RF=99.67%, XGBoost=99.47%) as the primary predictor. Secondary contributions came from bert_sentiment (RF=0.23%, XGBoost=0.45%), with all other features, including VADER scores, demographics, and departmental codes, contributing negligibly (<0.02%). XGBoost showed slightly more use of sentiment and select departmental codes, but in both models, predictive performance was overwhelmingly driven by the numerical overall mean rating.

Table 12: Fairness Audit by Faculty Demographics

Model	Gender	Foreigner	n	Accuracy	Precision	Recall	F1-Score	ROC-AUC	False Positive Rate	False Negative Rate
XGBoost	Male	Yes	193	1.00	1.00	1.00	1.00	1.00	0.00	0.00
		No	22,178	1.00	1.00	1.00	1.00	1.00	0.00	0.00
	Female	Yes	110	-	-	-	-	-	-	-
		No	15,505	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Random Forest	Male	Yes	193	1.00	1.00	1.00	1.00	1.00	0.00	0.00
		No	22,178	1.00	1.00	1.00	1.00	1.00	0.00	0.00
	Female	Yes	110	-	-	-	-	-	-	-
		No	15,505	1.00	1.00	1.00	1.00	1.00	0.00	0.00

Fairness Audit by Faculty Demographics. Table 10 shows that both XGBoost and Random Forest achieved perfect classification performance in Accuracy, Precision, Recall, F1-score, and ROC-AUC, all equal to 1.00, across all evaluated gender and foreigner status subgroups, except for the Foreign Female category, where metrics were unavailable due to class imbalance in the test set. The models produced identical performance patterns, with zero false positives and false negatives in all measured groups.

These results indicate no observable disparity in predictive accuracy between male and female faculty or between local and foreign faculty in the available data. However, the absence of records for the Female-Foreigner subgroup prevents reliable fairness conclusions for that group. This data sparsity represents a limitation, as underrepresentation can mask potential biases; addressing this in future dataset collection or balancing efforts is critical for comprehensive fairness evaluation (Mehrabi et al., 2021).

Table 12: Patterns of Misclassification in Student Feedback Comments

Pattern	Description	Example	Frequency
Inconsistency and Contradiction	The comments are often a mix of positive and negative feedback	"course really makes use brain lot activities really push creativity sometimes stress"	25
Lack of Contextual Understanding	Deep context or sarcasm present in human language	"making us create model van gogh painting"	50
Sentiment and Rating Mismatch	Positive comments but Low rating or vis-à-vis	"exams are difficult, much harder than taught in class" Overall Mean=3.68	20
Short or Vague	Very short or unclear responses	"teaching method"	42
Constructive Criticism Bias	Statements are forms of constructive criticism	"please learn basic research basic sample lesson"	23
Good Person but Bad Teacher	Positive statement for the faculty but negative critique for the teaching style	"please learn but appreciate the effort"	4
Unconventional Grammatical Format	Unusual grammatical structure hence, lack ing of context	"good demonstrating hands activities"	36

Error Analysis of Misclassification. Due to the model's perfect classification performance on the test set, no misclassified instances of false positives or false negatives were available for quantitative error

analysis. To address this, a qualitative inspection of edge-case examples was performed. This study conducted a qualitative error analysis on a stratified random sample of 200 student comments. Each comment was independently categorized, resulting in 7 error patterns, as shown in Table 12. The analysis revealed that the most frequent sources of error included Lack of Contextual Understanding (n=50), where sarcasm or nuanced context confounded sentiment models, and Short or Vague comments (n=42), which provided insufficient information for reliable classification. Other notable patterns included Inconsistency and Contradiction (n=25), reflecting mixed positive and negative sentiments within the same comment. Sentiment and Rating Mismatch (n=20), where numeric ratings and textual sentiment diverged and Constructive Criticism Bias (n=23), in which polite or neutral phrasing concealed critical feedback. Less frequent patterns, such as Good Person but Bad Teacher (n=4) and Unconventional Grammatical Format (n=36), also contributed to classification errors.

These findings underscore the challenges inherent in automating SA of educational text and highlight the importance of incorporating richer contextual models or complementary human review for borderline cases. The counts presented in Table 12 reflect the combined totals across the misclassified comments analyzed.

DISCUSSIONS

This study introduced a sentiment-enriched ML framework for predicting faculty effectiveness from student evaluations, achieving perfect test-set performance for both RF and XGBoost models after hyperparameter tuning and class balancing (Shabnam et al., 2025; Gil-Madrona et al., 2025). While both models relied heavily on the overall mean rating, RF distributed importance more evenly across sentiment and contextual features, suggesting greater robustness to feature interactions (Cristescu et al., 2023; Heath et al., 2023). Unlike prior studies (e.g., Shaik et al., 2023; Lalata et al., 2019), this research uniquely integrates demographic and temporal variables while applying fairness-aware preprocessing during model development. It systematically evaluates trade-offs between a highly efficient rule-based sentiment model (VADER) and a computationally intensive deep contextual model (BERT), demonstrating that ensemble classifiers yield superior predictive accuracy. A fairness audit revealed no measurable disparities across most faculty subgroups, though limited representation in categories such as foreign female faculty constrained definitive bias conclusions, underscoring the need for broader data coverage (Barocas et al., 2023; Mehrabi et al., 2021). Ground-truth reliability was supported by the high internal consistency of the SET instrument with Cronbach's α=0.89 reported by the study of Magno, C. (2009) and strong agreement between manual sentiment validation and numeric ratings (Cristescu et al., 2023; Heath et al., 2023). By integrating SA into evaluation processes, the framework offers institutions richer, multidimensional insights for instructional improvement (Shaik et al., 2023; Pacol & Palaoag, 2021), while the inclusion of a formal fairness assessment across gender and foreigner status adds an underexplored and critical dimension to the faculty analytics literature. Nevertheless, deployment should be accompanied by fairness monitoring and mechanisms to address edge cases such as sarcasm or sentiment–rating mismatches, as well as limitations arising from the absence of student-level demographic data, potential overreliance on mean ratings, and the inherent difficulty of capturing nuanced expressions in narrative feedback, reinforcing the value of combining automated analysis with human oversight (Green et al., 2024; Castro et al., 2023).

CONCLUSION

This study demonstrated the feasibility of integrating SA and ensemble ML models to predict faculty effectiveness from student evaluation data. By combining BERT and VADER outputs with demographic and contextual features, the proposed framework achieved perfect classification performance on a stratified test set for both RF and XGBoost models after systematic hyperparameter

tuning and class balancing (Shabnam et al., 2025; Gil-Madrona et al., 2025). A fairness audit revealed no measurable disparities across most faculty subgroups, though small sample sizes, particularly for foreign female faculty, limited the strength of bias conclusions (*Fairness and Machine Learning*, n.d.-b; Mehrabi et al., 2021). Ground-truth validation confirmed strong semantic alignment between narrative sentiment and numeric ratings (Cristescu et al., 2023; Heath et al., 2023), supporting the use of sentiment-enriched data in predictive modeling for educational assessment. The findings underscore the potential of such frameworks to enhance institutional quality assurance and provide multidimensional insights into teaching performance (Shaik et al., 2023; Pacol & Palaoag, 2021), while also highlighting the importance of ongoing fairness monitoring, dataset diversification, and external validation to ensure robust and equitable deployment in varied academic contexts.

Future Research

Future research should expand the dataset to include student-level demographic attributes (e.g., year level, course, age) to enable more comprehensive fairness analysis, and incorporate additional linguistic features such as subjectivity, emotion, and syntactic complexity to enhance predictive performance. Additionally, expanding the linguistic scope of the dataset by incorporating both English and native language feedback is recommended. In multilingual academic settings, student comments often blend local vernacular with English; integrating multilingual SA can capture culturally nuanced and semantically rich feedback, potentially improving model accuracy and contextual relevance, particularly in regions where sentiment-laden expressions do not translate directly into English. Algorithmic exploration could extend to advanced models like LightGBM, BART, or fairness-aware approaches (e.g., equalized odds post-processing) to improve generalizability and mitigate subgroup disparities. Longitudinal and real-time applications, including integration into dashboard-driven decision-making, could support formative evaluations and early instructional interventions. Cross-institutional validation is essential to assess transferability and benchmark against diverse academic environments, while human–machine feedback loops, embedding expert verification for low-confidence predictions, could combine automated efficiency with nuanced human judgment for complex feedback cases.

Declaration on the use of AI in the writing process

During the preparation of this work, the authors used ChatGPT to enhance readability and refine the language. After using these tools or services, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

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Analyzing Characteristics of Higher Education Digitalization Policy in China

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ABSTRACT

The digital transformation of higher education has become a central driver of education governance reform in China. As key instruments for implementing strategic objectives, the configuration of policy tools plays a critical role in determining the effectiveness of this transformation. This study examines 84 national and provincial policy documents on higher education digitalization issued between 1998 and 2025. Applying Howlett's five-dimensional typology—authoritative, incentive-based, capacity-building, symbolic, and learning-based—it conducts content coding and textual analysis using NVivo 15 to explore the structural composition, coordination logic, and contextual adaptability of policy instruments across reform stages. Results show that capacity-building tools dominate (39.1%), followed by authoritative and incentive-based instruments (combined 42.8%), while symbolic and learning-based tools remain underutilized (under 20%). In the early infrastructure development phase, the synergy of "standard-setting through authority" and "capacity-building" facilitated system-wide launch. However, three tensions emerge in later stages: weak coordination among core tools (e.g., misaligned platform functions and evaluation metrics); limited functionality of auxiliary tools (e.g., lack of feedback loops in learning instruments); and insufficient adaptability at the grassroots level (e.g., rigid standardization failing to meet disciplinary diversity). By revealing the evolving alignment between reform phases and tool configurations, this study enriches policy mix theory in non-Western governance contexts. It proposes an optimization pathway centered on core instrument coordination, auxiliary tool enhancement, and participatory policy co-design at the local level. These findings provide policy insights for improving the precision and adaptability of subnational strategies, advancing digital reform from technological integration to systemic transformation.

Keywords: Higher education digitalization; policy instruments; policy mix; textual analysis; modernization of education governance

INTRODUCTION

The digital transformation of higher education has become a central driver of global educational reform. Shaped by both technological innovation and national strategy, it is reshaping instructional models, governance structures, and increasingly serving as a benchmark of national educational competitiveness (Huai, 2023). The UN Transforming Education Summit emphasized digital technology as "a powerful tool to advance equitable access to quality education" (António Guterres, 2024).

In China, this transformation carries significant institutional implications. The 20th National Congress of the Communist Party of China designated "advancing education digitalization" as a national strategic priority. Central policy documents such as the *Education Informatization 2.0 Action Plan* and *China Education Modernization 2035* have established a top-level framework for reform, while provincial-level policies have translated these strategies into executable plans. Collectively, these policies reflect the transmission of central governance rationality and a phased shift from "Education Informatization 1.0" to "Digital Transformation," providing rich empirical material for examining the institutional logic of China's education governance (Huai, 2023; Zhang & Xue, 2023).

Despite these developments, a persistent gap remains between policy design and implementation. At the local level, many universities face "tool fragmentation and limited effectiveness." In some regions, overreliance on administrative mandates has produced surface-level compliance without substantive engagement (Jiang, 2024). Poor coordination among instruments—such as between financial incentives and regulatory standards—has led to resource waste and misaligned goals. At the same time, low faculty digital literacy and technology-induced alienation reveal deeper mismatches between policy instruments and institutional needs (Peng, 2023; Zhao, 2022).

Existing scholarship has advanced the field by mapping digitalization pathways, incorporating international experiences, and assessing individual policy instruments (Williamson, 2016; Li & Wang, 2023; Ding, 2023). Nevertheless, three gaps remain. First, much of the literature is descriptive, lacking in-depth analysis of the structural logic behind instrument configurations. Second, most studies examine single instruments in isolation, overlooking the interactive mechanisms of "policy mixes" (Howlett, 2011). Third, there has been insufficient attention to the tension between centrally driven policy design and local-level implementation dynamics in the Chinese context (Yin & Qian, 2019; Zheng, 2022). This dual challenge—fragmented practice and incomplete theorization—underscores the need for a systematic analysis of how policy instruments are structured, coordinated, and mobilized in higher education digitalization.

To address these issues, this study analyzes 84 national and provincial policy documents on higher education digitalization issued between 1998 to 2025. Using Howlett's fivefold typology—authoritative, incentive-based, capacity-building, symbolic/advocative, and learning tools—we conduct a structured content analysis with NVivo software. The research is guided by two questions: 1. What are the configuration patterns and structural features of policy instruments in Chinese higher education digitalization, and what do they reveal about institutional preferences and governance strategies? 2. How do these instruments function in practice? Specifically, what forms of synergy or friction emerge in their practical application, and what structural limitations or contextual factors (e.g., regional disparities) affect their adaptability? These questions form an analytical chain linking instrument configuration, governance logic, and policy effectiveness, and directly respond to current gaps in the literature—particularly the neglect of systemic coordination and the disconnect between policy texts and practical implementation.

Theoretically, this study contributes to the literature on policy mixes by providing empirical evidence of instrument imbalances, institutional tensions (e.g., dominance of core over auxiliary instruments), and the limited embedding of learning-oriented feedback mechanisms in non-Western governance

contexts. Practically, it identifies barriers to coordination and proposes optimization pathways—such as developing nested instrument systems and strengthening learning-oriented feedback functions—to guide more refined policy design and facilitate a shift from "technical infrastructure" toward "systemic transformation."

Literature Review

The digital transformation of education has become a central theme in global education reform. Existing scholarship in this field can be broadly grouped into three strands: (1) research on transformation pathways and their core elements, (2) research on the role of policy instruments, and (3) research on comparative analyses drawing on international experiences. However, within the Chinese higher education context, an important research gap persists—the mechanisms through which policy instruments are coordinated to drive digitalization.

First, research on transformation pathways has highlighted strategic planning and data governance as critical processes (Wu, Xu, & Wang, 2023) and identified digital leadership as a key driver (Cheng, 2023). Some scholars further emphasize the importance of multi-level coordination and multi-actor engagement for achieving systemic reform (Xu & Wu, 2023). While these studies offer valuable frameworks for identifying transformation components, they fall short in explaining how such elements are operationalized through specific policy instruments. In particular, little attention has been paid to the dynamic alignment among instruments, transformation drivers, and policy objectives.

Second, research on policy instrument functions often focuses on the effects of individual tools on digital transformation outcomes (Li & Wang, 2023). These analyses tend to adopt a static perspective, overlooking the synergistic relationships between instruments—such as the interaction between authoritative and capacity-building tools—or the ways in which tool configurations evolve across different phases, from infrastructure development to the enhancement of digital literacy. This gap limits our ability to explain variations in implementation across provinces.

Third, international research has examined policy shifts in the EU (Ding, 2023) and strategic initiatives in OECD countries (Dan & Wang, 2022). Yet these works rarely explore how such international approaches could be adapted to China's distinctive governance context, which combines strong central coordination with localized experimentation. The interplay between global policy models and China's "central coordination–local innovation" dynamic remains underexplored.

As key instruments linking policy goals to governance practice, policy tools shape the effectiveness of educational digitalization initiatives (Yin & Hao, 2019). Among the various typologies, Howlett's (2005, 2011) fivefold classification—encompassing authoritative, incentive-based, capacity-building, symbolic/advocative, and learning tools—provides a particularly useful lens for complex governance contexts. By integrating institutional and functional dimensions, and emphasizing the co-evolution of policy mixes, this framework has been widely applied in the education sector (Yin & Qian, 2019; Kettunen, 2021). Its multi-dimensional perspective is especially suited to analyzing the multi-stage, multi-actor characteristics of education digitalization.

Despite these theoretical advances, research on policy instruments in China's higher education digitalization remains limited in three respects. First, most studies focus on identifying tool types and counting their frequency (Peng, 2023), without probing the coordination mechanisms that determine how instruments support or constrain one another. Second, the provincial level—where national strategies are translated into institutional practice—has received insufficient scholarly attention. The processes through which provincial authorities transmit, adapt, and integrate policy instruments remain underexamined. Third, China-specific governance features, such as Party-state integration and policy piloting, are rarely treated as analytical variables. Consequently, the interaction between policy instruments and state governance capacity remains undertheorized (Zheng, 2022).

To address these gaps, this study applies Howlett's (2005, 2011) fivefold policy instrument framework to a content analysis of 84 national and provincial policy documents on higher education digitalization issued between 1998 and June 2025. The dataset includes strategic plans, policy notices, and other directives explicitly referencing "digital education" and "smart campuses." By examining the structural composition, coordination logic, and governance embedding of policy instruments, this study explores how policy mixes contribute to institutional resilience and the modernization of education governance. The findings seek to extend policy instrument theory's applicability to non-Western governance contexts and offer practical guidance for advancing digital transformation in China's higher education.

RESEARCH DESIGN AND METHODOLOGY

This study analyzed policy documents issued between January 1998 to January 2025, identified using the keywords "education digitalization," "education informatization," "smart education," "digital education," and "digital literacy." The corpus covered strategic plans, implementation schemes, governance guidelines, and regulatory frameworks released by the National People's Congress, the State Council, the Ministry of Education, and provincial-level education authorities. An initial search yielded 90 documents; after removing duplicates and excluding documents lacking legal validity or direct relevance to education digitalization, a final set of 84 representative texts was retained. These documents reflect key milestones in the evolution of digital education at both national and subnational levels.

Content analysis was conducted using NVivo 15, with a theory-informed coding approach adopted rather than fully open coding, as the former ensures stronger alignment with established practices in policy research (Yang & Zhang, 2024).

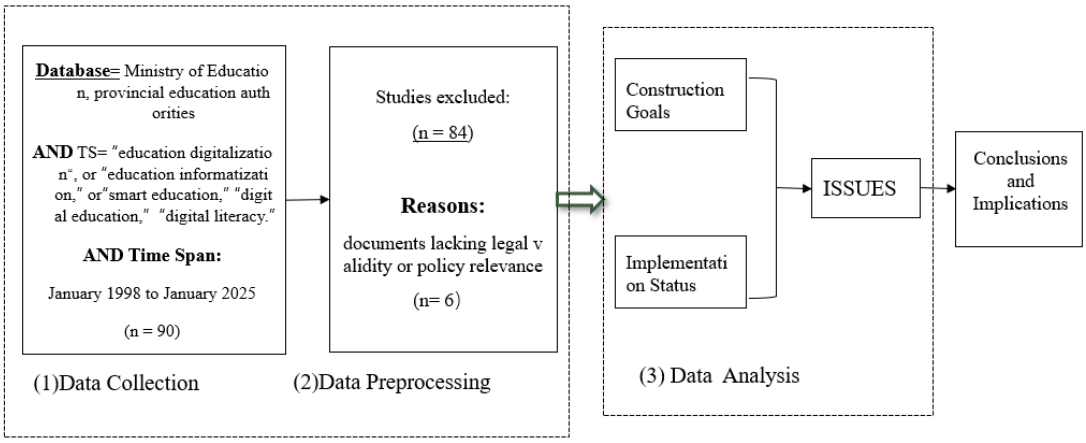

Figure 1. The Flowchart of Data Collection, Preprocessing and Analysis

The analytical framework was based on Howlett's typology of policy instruments, which includes five primary categories: authoritative (regulatory) tools, incentive-based tools, capacity-building tools, symbolic/advocative tools, and learning-oriented tools. Within each category, subcategories were refined iteratively through a combination of word frequency analysis and in-depth examination of policy content. Guided by grounded theory procedures, all documents were reviewed line by line, producing 165 initial nodes and 2,664 references, which were subsequently consolidated into 49 conceptual categories covering areas such as resource development, equity, platform construction, regulatory standards, and teacher capacity-building. To enhance coding completeness, a follow-up keyword search was conducted across the dataset to capture any references that may have been missed

in the initial coding process, and examples of the coding structure and thematic categorization are provided in Table 1.

Table 1 coding structure and thematic categorization.

Primary Category	Secondary Category	Description or Examples
Policy Instruments	**Authoritative Instruments** (Command-and-control tools)	Typically involve strong directive language such as "prohibit," "regulate," or "must," or refer to relevant laws, regulations, institutional authority, penalties, institutional rules, and procedural requirements.
	Incentive-based Instruments	Target individuals or organizations through financial or non-financial benefits, including fiscal subsidies, tax incentives, identity recognition, performance evaluations, and benefit-based awards.
	Capacity-building Instruments	Provide support in terms of resources, personnel, or institutional arrangements to individuals or organizations, including fiscal guarantees, infrastructure investment, administrative support, and professional training.
	Symbolic/Advocative Instruments	Designed to promote certain values or norms, often aiming to shape group behavior through guidance or persuasion. Includes value promotion, public narratives, and role modeling.
	Learning-oriented Instruments	Offer flexible, pilot-oriented or consultative mechanisms to guide the implementation of policies. Include policy experimentation, feedback mechanisms, stakeholder participation, and policy learning processes.

RESULT

In China's higher education digitalization policy system, the classification and use of policy instruments not only reflect the state's governance philosophy but also function as a bridge between national strategic goals and local implementation (Hood, 1986; Howlett, 2005). Drawing on Hood and Howlett's typology, this study classifies policy instruments into five categories: authoritative (regulatory), incentive-based, capacity-building, symbolic (advocative), and learning-oriented. These tools do not work in isolation; instead, they form a five-part configuration where capacity-building is the core, supported by authoritative and incentive tools, and supplemented by symbolic and learning tools. This arrangement follows a progressive logic—capacity as the foundation, regulation as a safeguard, resources as a driver, consensus as reinforcement, and feedback as refinement—which aligns with China's governance structure of top-level design, provincial adaptation, and grassroots execution.

Keyword frequency and coding analysis show that terms such as "infrastructure," "platform," "training," and "capacity" appear in 39.1% of the 84 policy documents (i.e., in at least 33 texts), confirming that capacity-building tools dominate. These tools focus mainly on: (1) building provincial-level digital infrastructure, such as data centers and cloud-based teaching platforms (Wang, 2023; Kettunen, 2021); (2) improving faculty digital literacy through large-scale training and teaching software integration; and (3) strengthening university digital governance with data-driven decision-making (Kettunen, 2021). This reflects a step-by-step logic of "infrastructure first, quality improvement later." However, issues are embedded in the policies themselves. Some call for "targeted training" but ignore disciplinary differences (e.g., digital humanities for arts, virtual simulation for engineering). Others promote "full-function coverage" of platforms without considering institutional customization. This mismatch between standardized provision and diverse needs risks reducing effectiveness. In some universities, platform usage remains below 30% because functions do not match teaching requirements (Zhou & Li, 2021), suggesting that capacity-building should shift focus from hardware provision to performance outcomes.

Authoritative tools, explicitly included in 22.6% of the 84 documents, operate through regulations such as standards, evaluation indicators, and accountability rules (Schneider & Ingram, 1990). They align provincial policies with national strategies and define minimum requirements for infrastructure. Early in the reform, these tools helped maintain a consistent direction and prevented policy fragmentation. However, their rigidity can limit local flexibility. For example, among 28 provincial evaluation documents, 19 set quantitative targets (e.g., proportion of digital teaching) but omit exemptions for practice-intensive disciplines. Field reports indicate that, under compliance pressure, some institutions prioritize formal requirements over substantive improvement (Chen et al., 2023). This highlights the need to combine fixed national standards with adaptable, institution-specific criteria—possibly through a dual-track evaluation system.

Incentive-based tools account for 20.2% of policy content, mainly in the form of funding, project grants, and public recognition (Howlett & Ramesh, 1995). They can quickly mobilize universities to act, particularly through demonstration projects. However, most incentives are tied to short-term projects without sustainable funding. Of the 17 policies offering incentives, 15 use time-limited projects, and only five mention long-term mechanisms. Many also fail to link rewards to performance metrics, leading some institutions to focus on quick, visible results (e.g., hardware purchases) rather than lasting capacity (e.g., teacher training). This often results in stagnation once projects end (Zhao et al., 2024), underscoring the need for a closed-loop system that links funding, evaluation, and reinvestment.

Symbolic or advocative tools appear in 10.7% of the documents. They aim to influence values and set agendas (Selwyn, 2016), often through statements such as "digitalization is an inevitable trend." However, most lack concrete actions for fostering a digital culture among educators. Only nine documents mention ways to share best practices, and few outline how to turn awareness into actual change in teaching behavior (Wang, 2023). Without stronger symbolic tools, formal compliance may not translate into genuine engagement.

Learning-oriented tools, present in just 7.4% of the 84 documents, include pilot projects, feedback collection, and knowledge sharing (Borrás & Edler, 2020). While initiatives such as "digital campus pilots" are mentioned, most policies do not require evaluation reports or integration of lessons learned into subsequent policy design. This weakens the system's ability to learn from experimentation and improve at scale (Zheng et al., 2023).

Overall, the policy system is centered on capacity-building, supported by regulation and incentives, with symbolic and learning tools playing smaller roles. This reflects a governance logic of "foundation–regulation–activation–refinement" and aligns with China's tradition of combining top-down design with local experimentation. To improve effectiveness, three changes are recommended. First, strengthen coordination among core tools—for example, by linking platform compliance and training results directly to funding allocation (Schneider & Ingram, 1990). Second, expand the role of symbolic and learning tools: turn symbolic tools into active culture-building measures (e.g., discipline-specific case banks) and make learning tools mandatory feedback mechanisms integrated into policy revisions (Borrás & Edler, 2020). Third, balance national consistency with local flexibility by adding participatory design processes (e.g., regular needs assessments across institution types) and including "innovation indicators" that allow tailored paths—such as discipline-specific training frameworks for digital humanities in arts and virtual simulation in engineering (Howlett & Ramesh, 1995). These improvements would not replace the current framework but shift it toward performance-oriented governance, enabling higher education digitalization to progress from technical adoption to systemic reform.

CONCLUSIONS

This study examines 84 policy documents on the digitalization of China's higher education system and identifies a structurally imbalanced configuration of policy instruments alongside notable implementation challenges. The current policy mix is dominated by capacity-building tools, supported by authoritative instruments, with incentive-based and symbolic instruments serving supplementary roles and learning-oriented instruments remaining marginal. This configuration reflects China's governance tradition of centralized planning and rapid rollout (Huang, 2021). In the initial phase of digital transformation—particularly during infrastructure development—this combination proved effective, as authoritative instruments ensured standardization while capacity-building instruments established the institutional foundations.

As policy objectives have shifted toward restructuring the broader educational ecosystem, several limitations have become evident. First, weak coordination among instruments has created a disconnect between platform construction and actual utilization. For example, standardized provincial platforms often fail to address the specific requirements of different academic disciplines, resulting in low adoption rates. Second, the marginalization of learning-oriented instruments has constrained the scaling-up of pilot initiatives; successful national-level experiments have rarely been translated into provincial-level policies (Borrás & Edler, 2020). Third, the project-based nature of incentive mechanisms—such as one-off grants—has limited their capacity to sustain long-term faculty engagement. Finally, the hierarchical structure of policy transmission, in which national directives cascade through provincial administrations to institutions, has reduced responsiveness to the diverse contexts of different institution types, particularly between vocational and research-oriented universities (Howlett & Ramesh, 1995). Collectively, these issues reveal a core misalignment between administratively designed instruments and the practical demands of implementation, a misfit that contributes to faculty resistance to digital technologies in non-STEM fields, often manifesting as "technological alienation" and "cognitive overload" (Selwyn, 2016).

This study offers two key theoretical contributions. First, it extends Howlett's (2005) concept of *policy mix adaptability* by demonstrating that the authoritative–capacity-building configuration is effective in early-stage reforms (e.g., infrastructure rollout) but requires the integration of learning-oriented and incentive-based instruments in later phases of systemic restructuring. This highlights a stage-specific matching logic between transformation phases and instrument configurations, addressing a gap in policy design theory, which often overlooks the need for adaptive instrument combinations over the course of reforms. Second, it refines Selwyn's (2016) framework on technological alienation by showing that, in the Chinese context, faculty resistance to digital tools is shaped not only by the nature of the technology but also by governance structures and the design of policy instruments. This adds a governance-oriented dimension to the study of technology acceptance in non-Western contexts.

Based on these findings, policy optimization should prioritize strengthening coordination across governance levels and improving the alignment between instruments and frontline practice. At the national level, policies should explicitly differentiate between transformation phases—such as infrastructure development and ecosystem restructuring—and guide provinces in adjusting their instrument configurations accordingly (e.g., "authoritative + capacity-building" in early phases, "learning-oriented + incentive-based" in later phases). Provincial governments should institutionalize feedback loops between pilot programs and policy revision, integrating reported challenges and recommendations into policy design, and tailoring the dissemination of best practices to different institutional types. Incentive mechanisms should transition from short-term project funding to sustained support, such as dynamic funding linked to faculty engagement levels and platform utilization rates, while also providing differentiated training aligned with faculty needs. Furthermore, national policies should allocate a proportion (e.g., 30%) of evaluation indicators for provincial-level

customization, and provincial authorities should embed participatory design processes involving universities and frontline educators to enhance contextual adaptability.

This study has certain limitations. The analysis is based solely on policy documents and does not directly assess the implementation and operational outcomes of these instruments. Future research could adopt a mixed-methods approach, incorporating institutional interviews and faculty surveys to identify gaps between policy design and practice. Additionally, the study does not examine regional differences among eastern, central, and western provinces. Comparative research could explore how variations in economic and educational development influence provincial instrument selection and governance capacity.

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An Investigation of Undergraduate Students' Learning Performance in Information Literacy Courses

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ABSTRACT

This study investigates whether undergraduate students' learning performance in information literacy courses varies significantly based on gender, academic year, field of study, and admission pathway. The sample included 1,502 students enrolled at an university during the 2023–2024 academic year. A quantitative research design was used, incorporating descriptive statistics, independent samples t-tests, one-way ANOVA, and Scheffé's post hoc tests to analyze the impact of various background variables on course performance.

Results revealed that female students outperformed male students. Upper-year students, particularly those in their fourth year, demonstrated better academic performance than lower-year peers. Students from the Colleges of Management and Information and Electrical Engineering achieved significantly higher scores compared to other colleges. In terms of admission pathways, those admitted through the Star Plan and application-based routes outperformed students admitted via the exam-based system. These findings suggest that background characteristics, such as gender, academic standing, and admission type, may influence students' motivation, engagement, and academic outcomes.

The study highlights the importance of recognizing student diversity when designing courses and instructional strategies. To promote academic success and educational equity, institutions should consider implementing differentiated instruction, remedial programs, interdisciplinary learning models, and targeted support systems. Given the rapid growth of digital teaching and ongoing changes in higher education, information literacy education should also emphasize real-world application, digital competency, and personalized learning to strengthen students' problem-solving and critical thinking abilities.

As the study was conducted at a single institution, its generalizability is limited. Future research should include universities across different types and regions to enable cross-institutional comparisons and broader evaluations of instructional effectiveness, contributing to a stronger empirical foundation for advancing information literacy education.

Keywords: Information Literacy, Curriculum Design, Learning Performance, Higher Education

RESEARCH BACKGROUND AND MOTIVATION

With the rapid development of digital technologies and the advent of the information society, information literacy has become an essential core competency for students in higher education. Whether in academic research, professional practice, or daily life, the ability to search for, analyze, evaluate, and apply information has a profound impact on students' learning processes and future development (Lloyd, 2005). Consequently, many universities around the world have integrated information literacy into their general education curricula to enhance students' capacity for critical information judgment and usage in digital environments (Association of College and Research Libraries, 2016). It's also regarded as one of the key competencies for cultivating citizens.

However, students' learning performance in information literacy courses may be influenced by various background factors such as gender, academic year, field of study, and admission pathway. Previous studies have indicated that gender may affect students' acceptance of technology-related courses and their academic performance (Ong & Lai, 2006). Female students often demonstrate higher learning motivation and a greater willingness to participate. In contrast, academic standing is closely related to factors such as learning strategies, time management, and cognitive maturity (Biggs, 1999). Moreover, the frequency and necessity with which students engage with information technologies may vary by college or discipline (Margaryan, Littlejohn, & Vojt, 2011); for instance, students from management or information-related fields tend to use technological tools and data more frequently. Admission pathways may also reflect differences in students' academic preparedness, self-regulation, and learning attitudes (Allen & Sconing, 2005), which in turn can affect their course engagement and academic outcomes.

In light of the above, this study examines the performance of students enrolled in an information literacy course offered at a university during the 2023–2024 academic year. A total of 1,502 students meeting the course standards were included in the analysis. By investigating differences in learning performance based on background variables such as gender, academic year, college affiliation, and admission pathway, this study seeks to uncover the underlying learning factors and pedagogical implications. The goal is to provide a basis for course design, instructional strategies, and support systems that respond to student diversity, enabling teachers to develop more inclusive and responsive curricula, thereby promoting educational equity, reducing learning gaps, and enhancing the overall quality of teaching and learning in higher education.

Research Questions

1. Do male and female undergraduate students differ significantly in their learning performance in information literacy courses?
2. Do students of different academic years differ significantly in their learning performance in information literacy courses?
3. Do students from different fields of study (colleges) differ significantly in their learning performance in information literacy courses?
4. Do students admitted through different admission pathways differ significantly in their learning performance in information literacy courses?

Literature Review

Information Literacy

Information literacy refers to an individual's ability to effectively recognize the need for information and possess the skills to search for, evaluate, and utilize information to solve problems. It is widely recognized as an indispensable core competency in the 21st century. In a society characterized by rapid information change and high levels of digitization, the ability to access and interpret information directly influences the quality of decision-making in learning, professional contexts, and everyday life. Proficiency in information literacy not only enhances academic performance and strengthens skills in

data processing and knowledge integration but also lays a critical foundation for career development, social participation, and lifelong learning (Lloyd, 2005).

Most universities have integrated information literacy into their general education curricula, aiming to cultivate students' fundamental information competencies and awareness of information ethics during their freshman or sophomore years. These courses typically cover a range of topics including information retrieval techniques, data evaluation and judgment, information integration and presentation, citation standards, copyright awareness, and the application of digital tools.

A study by Head (2013) on American college students found that many freshmen encounter significant challenges in conducting academic research and writing papers due to a lack of systematic skills in searching, filtering, and organizing information. This highlights a gap in information literacy education between secondary and higher education. As such, higher education institutions should intervene early by providing structured, scaffolded, and interdisciplinary training programs that help students progress from foundational skills to critical thinking and problem-solving competencies.

In summary, fostering information literacy involves more than teaching technical skills; it requires supporting cognitive development, ethical reasoning, and strategic learning processes. Effective outcomes can only be achieved through well-designed curricula, practice-oriented instructional activities, and differentiated support tailored to student diversity—preparing students to adapt and thrive in an increasingly information-driven society.

Curriculum Design

Effective curriculum design is a key factor influencing students' learning motivation and performance. According to Biggs (1999), the concept of "constructive alignment" emphasizes that learning objectives, teaching activities, and assessment methods should be coherently aligned to promote deep learning and knowledge internalization. In information literacy courses, students come from diverse academic backgrounds, often with varying degrees of prior experience in using information technologies. Thus, course design must be flexible and diversified to meet the needs of learners at different levels (Grafstein, 2002), and to avoid exacerbating learning gaps through a one-size-fits-all approach.

Research has shown that implementing strategies such as Problem-Based Learning (PBL) or Task-Based Learning can effectively enhance students' hands-on abilities in information collection, data analysis, and problem-solving. These approaches also foster critical thinking and self-directed learning (Julien, 2005). By centering learning around real or simulated problems, students are encouraged to actively seek and apply information resources, thereby deepening their understanding and application of information skills. Furthermore, integrating interdisciplinary case studies and collaborative learning activities can enhance knowledge integration and transfer, helping students develop communication, coordination, and teamwork skills essential for future workplace scenarios (Chu, Tse, & Chow, 2011).

Information literacy courses can also benefit from digital learning platforms and learning analytics tools, which allow instructors to track students' learning progress and provide personalized feedback and diagnostic teaching. This not only helps teachers monitor student performance and challenges but also improves students' awareness of and engagement in their own learning. In general, a curriculum that emphasizes learner-centeredness, flexible adaptation, and technology integration is better suited to address student diversity and fulfill the goals of both effective learning and competency development in higher education.

Learning Performance

Learning performance is typically evaluated through academic grades, skill mastery, or a sense of learning achievement (Zimmerman, 2002), reflecting the degree to which students have understood and internalized knowledge and skills presented in the course. In information literacy courses, learning

performance encompasses multifaceted competencies such as information retrieval, evaluation, integration, and application. These are often assessed through practical assignments and performance-based tools to provide a comprehensive picture of students' proficiency in information literacy. Individual performance is influenced not only by course content and instructional methods but also by personal background, learning style, and contextual factors.

Studies have found that gender can play a role in technology-related courses. Ong and Lai (2006) noted that female students often demonstrate greater learning motivation and willingness to participate in information courses. They also tend to excel in collaborative and reflective tasks, which may be linked to their stronger self-monitoring and planning abilities. While male students may express higher technical confidence, they may underperform in systematic data processing and information ethics issues, indicating differing strengths and learning strategies between genders. In addition, factors such as academic year, field of study, and admission pathway have also been found to influence students' academic adaptation and course performance (Margaryan, Littlejohn, & Vojt, 2011; Allen & Sconing, 2005). Therefore, empirical analysis of students' learning performance across different backgrounds is crucial to uncover potential learning disparities and provide a basis for equitable distribution of educational resources and differentiated instruction.

In sum, analyzing variations in learning performance among diverse student groups not only helps identify hidden learning gaps and at-risk populations but also informs the development of personalized and responsive instructional support measures. Such measures can contribute to fairer resource allocation and enhanced overall learning effectiveness.

RESEARCH METHODOLOGY

This study targeted students enrolled in the "Information Literacy" course offered by a university during the 2023–2024 academic year, aiming to investigate the impact of students' background variables on their learning performance. Students' basic background information and final course grades were collected through the course system. After excluding incomplete data, a total of 1,502 valid samples were retained. The independent variables included gender (male, female), academic year (first to fourth year), field of study (categorized by the students affiliated colleges), and admission pathway (application-based admission, Star Plan, and exam-based admission). The dependent variable was the students' final grade in the information literacy course, which served as the indicator of learning performance. A quantitative research method was adopted, and multiple statistical techniques were used for data analysis. First, descriptive statistical methods—including frequency distribution, relative percentage, mean, and standard deviation—were employed to understand the basic demographic characteristics of the participants and the overall distribution of learning performance. Second, to examine the effects of various background variables on learning outcomes, inferential statistical methods were applied according to the type of variable: For gender, independent samples t-tests were conducted to examine performance differences between male and female students. For academic year, field of study, and admission pathway, each was treated as an independent variable, and students' course grades as the dependent variable. One-way analysis of variance (ANOVA) was applied to determine whether statistically significant differences existed among the groups. If the ANOVA results showed a statistically significant F-value ($p < .05$), the Scheffé post hoc test was further used to analyze specific group differences in detail.

RESULTS AND DISCUSSION

Gender Differences

This study used an independent samples t-test to analyze differences in learning performance between genders in the information literacy course, aiming to determine whether gender serves as a significant factor influencing academic outcomes. According to the results shown in Table 1, the average score for female students ($M = 83.78$) was significantly higher than that of male students ($M = 79.93$). The

difference reached statistical significance ($p < .05$), indicating that gender had a significant impact on learning performance in the information literacy course.

This finding suggests that female students outperformed their male counterparts in the course, which may be attributed to superior learning attitudes, higher levels of classroom engagement, or more effective use of learning strategies. Meece, Glienke, and Burg (2006) noted that when the learning environment provides sufficient support and clear learning goals, female students are more likely to demonstrate their academic potential. It is important to emphasize that such gender differences may not stem from differences in innate ability but may instead be influenced by a combination of factors, including educational socialization, gender role expectations, learning style differences, and teacher-student interactions. Therefore, in future curriculum design and instructional implementation, educators should pay attention to the potential impact of gender on the learning process and outcomes. Instructional strategies should be adjusted to accommodate the needs of learners of different genders, there by promoting both learning equity and instructional effectiveness.

Table 1: Gender Differences in Learning Performance

Dependent Variable	Group	Mean	t-value	p-value
Gender	（1）Male	79.93	-6.54	< .01
	（2）Female	83.78		

*p< .05

Academic Year Differences

This variable was analyzed using a one-way analysis of variance (ANOVA) to examine whether students of different academic years showed differences in their performance in the information literacy course. As shown in Table 2, academic year had a statistically significant effect on students' final course grades ($p < .05$), indicating significant differences in learning performance across grade levels. A subsequent Scheffé post hoc test revealed that fourth-year students ($M = 82.50$) performed significantly better than third-year students ($M = 80.42$) and second-year students ($M = 78.09$), and that third-year students also outperformed second-year students.

These findings indicate a general trend of improved learning performance as students progress through higher academic years. This may be related to the accumulation of learning experience, better time management, and more developed learning strategies among upper-year students, as well as greater familiarity with information technologies. Fourth-year students, in particular, may demonstrate stronger self-regulation and problem-solving abilities when engaging with course content, thereby achieving higher academic outcomes.

The results also suggest that educators should pay particular attention to the learning adjustment process of lower-year students. Strategies such as preparatory instruction, diagnostic assessment, and foundational skills training can help these students bridge the gap in information literacy competencies early on. These support measures can reduce their cognitive load and frustration, increase their engagement in the course, and improve overall learning effectiveness.

Table 2: Academic Year Differences in Learning Performance

Dependent Variable	Group	Mean	F-value	p-value	Scheffé Post Hoc
Academic Year	（1）Sophomore	78.09	19.397	< .01	3>2>1
	（2）Junior	80.42			
	（3）Senior	82.50			

*p< .05

Field of Study Differences

A one-way analysis of variance (ANOVA) was conducted to investigate whether students from different academic fields demonstrated significant differences in their performance in the information literacy course. As shown in Table 3, the differences in final course grades among students from various colleges were statistically significant ($p < .05$), suggesting that students' field of study had a measurable impact on their academic performance in the course. A Scheffé post hoc test further revealed that students from the College of Management ($M = 83.30$) performed significantly better than those from the College of Engineering ($M = 79.45$), the College of Earth Sciences ($M = 77.02$), and the College of Science ($M = 77.72$). Similarly, students from the College of Information and Electrical Engineering ($M = 83.40$) also outperformed students from the same three colleges.

These results suggest that students from the Colleges of Management and Information and Electrical Engineering had comparatively stronger performance in the information literacy course. This may be attributed to their frequent exposure to technological tools and applications as part of their academic training. For instance, management students may be accustomed to using digital tools for data analysis or report writing, while students in information and electrical engineering fields are often immersed in information technology throughout their coursework, which enhances their information literacy and application skills.

Academic background clearly influences students' performance in courses that involve practical application and interdisciplinary integration, such as information literacy. Differences in disciplinary training and academic needs are directly reflected in students' learning outcomes. Therefore, instructors should take into account the learning disparities and disciplinary characteristics of students from various colleges. A diversified approach to teaching—through varied instructional materials, differentiated assignments, and interdisciplinary case-based learning—can help students across fields develop core competencies in information literacy, increase engagement, and improve academic achievement.

Table 3: Field of Study Differences in Learning Performance

Dependent Variable	Group	Mean	F-value	p-value	Scheffé Post Hoc
Field of Study	（1）College of Management	83.30	12.33	< .01	1>4, 1>7, 1>8 2>4, 2>7, 2>8
	（2）College of Info & EE	83.40			
	（3）College of Biomed & Eng.	79.55			
	（4）College of Engineering	79.45			
	（5）College of Liberal Arts	83.55			
	（6）College of Hakka Studies	86.67			
	（7）College of Earth Sciences	77.02			
	（8）College of Science	77.72			

*p< .05

Admission Pathway Differences

A one-way analysis of variance (ANOVA) was conducted to examine differences in learning performance among students admitted through different admission pathways. As shown in Table 4, students' course grades varied significantly depending on their mode of admission ($p < .05$), indicating that admission pathway influenced students' learning outcomes in the information literacy course. Scheffé post hoc analysis revealed that students admitted through the Star Plan ($M = 83.86$) performed significantly better than those admitted through application-based admission ($M = 81.58$) and exam-

based admission (M = 79.57). Additionally, students admitted through application-based pathways also significantly outperformed those admitted through the exam-based system.

These findings suggest that students admitted via the Star Plan and application-based pathways tended to perform better overall in the information literacy course. This may be related to their academic preparation, learning motivation, or personal characteristics. Star Plan students are typically characterized by strong academic performance and self-discipline, while applicants admitted through application-based pathways may possess more goal-oriented traits and experience preparing for interviews or portfolios—factors that may contribute to greater engagement and performance in subsequent coursework. These results indicate that institutions should take students' admission backgrounds into account when designing curricula and implementing instructional support. Tailored and flexible learning support measures should be provided to accommodate the varying needs of students across admission types. This can help unlock students' potential, narrow achievement gaps, and enhance overall course effectiveness.

Admission pathway not only influences students' initial academic readiness, but may also affect their subsequent performance and adjustment in university-level coursework. As such, differentiated instructional support and equitable resource allocation should be implemented to promote educational fairness and improve student learning outcomes.

Table 4: Admission Pathway Differences in Learning Performance

Dependent Variable	Group	Mean	F-value	p-value	Scheffé Post Hoc
Admission Pathway	(1) Star Plan	83.86	15.01	< .01	1>2>3
	(2) Application-Based	81.58			
	(3) Exam-Based	79.57			

*p < .05

CONCLUSION AND RECOMMENDATIONS

This study conducted an empirical analysis of 1,502 students enrolled in an information literacy course at a university, aiming to explore the influence of various background variables on their learning performance. The results revealed statistically significant differences across several variables. First, female students achieved significantly higher average scores than male students, indicating that gender is one of the factors affecting learning outcomes. Second, senior students—particularly those in their fourth year—outperformed their junior counterparts, suggesting that students' performance in information literacy improves progressively throughout their academic journey. Third, students from different fields of study also showed significant performance differences, with those from the Colleges of Management and Information and Electrical Engineering achieving higher results than others, highlighting the impact of disciplinary background on information literacy. Finally, admission pathway was also associated with performance: students admitted through the Star Plan performed best, followed by those from application-based admissions, and then exam-based admissions. This suggests that students' characteristics and prior academic preparation play a key role in their subsequent learning success. To address the diversity in students' foundational abilities and learning needs, this study recommends the use of differentiated course design and instructional strategies to enhance responsiveness and effectiveness.

Curriculum Design

Course design should emphasize practical orientation and interdisciplinary integration. For example, incorporating simulation tasks, group projects, problem-based learning (PBL), and case studies rooted

in real-world contexts can help students apply information skills to solve problems in authentic or near-authentic learning environments. These strategies can boost both motivation and transferability of learning. Instructors should also conduct regular course diagnostics and outcome evaluations, using data from students' learning processes and assessments to refine instructional content and strategies. This ensures that the curriculum remains aligned with students' evolving needs and promotes continuous improvement in teaching quality.

Institutional and Policy Implications

It is recommended that universities leverage learning performance analysis as a basis for course enhancement, faculty development, and resource allocation. Institutions should also establish longitudinal learning data systems to support risk detection, progress tracking, and personalized learning assistance. Furthermore, cross-unit collaboration should be encouraged to embed information literacy into various disciplinary curricula, thereby expanding students' capacity to apply information skills across a wider range of domains.

Research Implications

Future research could explore the impact of different teaching models (e.g., flipped classrooms), digital tool integration, and psychological variables such as learning motivation and self-efficacy on students' performance in information literacy courses. In addition, qualitative research is encouraged to gain a deeper understanding of students' learning experiences, challenges, and needs across diverse backgrounds and contexts. These efforts could contribute to the development of more inclusive, adaptive, and outcome-driven learning environments and advance the practice of information literacy education in higher education.

Instructional Practice and Future Directions

In response to the growing trend of online and hybrid courses in higher education, information literacy instruction must adapt to changes in delivery formats and interaction modes. When designing online or blended information literacy courses, instructors should take into account the performance differences revealed in this study. Support strategies such as remedial instruction, peer mentoring, and the use of learning navigators can help lower participation barriers and increase student engagement. For example, foundational modules and diagnostic tests could be developed for lower-year or non-IT-background students to identify learning risks early. Institutions could also implement peer mentorship programs, learning communities, or team-based assignments to create opportunities for interaction and collaboration, which in turn enhance motivation.

This study was based on students from a single university. Although the sample size was sufficient, the specific curriculum structure, instructional resources, student composition, and cultural context of the institution may limit the external validity of the findings. Therefore, the conclusions should be interpreted with caution when applied to other higher education institutions. Future research is encouraged to expand the scope to include multiple universities of various types, conduct cross-institutional comparative studies, and examine how different instructional designs and campus environments affect learning outcomes in information literacy courses. Such research could enhance the generalizability and representativeness of the findings and contribute to building a broader empirical foundation for information literacy education.

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Transforming Teaching Practices in Taiwanese Higher Education: Comparative Insights from International Academic Profession Surveys

Sophia Shi-Huei Ho and Ying-Yan Lu

ABSTRACT

This study investigates the evolving relationship between academics' teaching cognition and their teaching engagement, with a focus on how instructional focus, individual background, and policy contexts influence faculty teaching behavior and job satisfaction over time. Drawing on data from the 2012 Academic Profession in Asia (APA) survey and the 2018 Academic Profession in the Knowledge Society (APIKS) survey in Taiwan, we conducted regression and path analyses to examine how teaching-related cognition shaped faculty teaching hours and satisfaction. Findings from the 2012 APA data indicate that teaching engagement was significantly associated with time spent addressing students' learning deficiencies, reflecting a remedial and student-deficit orientation. In contrast, 2018 APIKS data reveal a shift toward a practice-oriented pedagogy, with teaching engagement more closely linked to the transmission of practically relevant knowledge and skills. Moderation analyses further show that in 2012, junior academics and those emphasizing student deficiencies were more likely to spend greater time lecturing and instructing. By 2018, teaching engagement was characterized by individualized instruction, practice-based learning, and increased face-to-face interaction, with no significant variation by academic background. Importantly, while teaching hours had no significant effect on job satisfaction in 2012, the 2018 data reveal a positive relationship, suggesting an increasing alignment between teaching effort and professional fulfillment. This shift is interpreted in light of Taiwan's Teaching Excellence Project (TEP), which promoted student-centered learning, professional development, and structural support for instructional work. The study highlights how policy interventions and changing pedagogical paradigms influence faculty engagement and satisfaction. It underscores the importance of aligning institutional incentives with teaching values to foster sustainable engagement among academics in evolving higher education systems.

Keywords: Academic Profession in Asia (APA), Academic Profession in the Knowledge-Based Society (APIKS), Taiwan, Teaching Excellence Project

INTRODUCTION

In recent decades, Taiwan's higher education system has undergone rapid transformation, evolving from elite education to universal access (Chiang, 2013). This shift has been accompanied by significant changes in educational governance, with the government moving from a model of centralized control to one characterized by institutional autonomy and deregulation. Rather than allocating resources through top-down directives, the Ministry of Education (MOE) now encourages universities to compete for project-based funding. While this competitive funding model has stimulated institutional development, it has also led many universities to prioritize research output in an effort to gain prestige and secure financial support. As a result, Taiwan's higher education landscape has experienced institutional isomorphism, with institutions converging toward similar goals, often at the expense of teaching quality and mission differentiation (Chou, 2015).

To address the imbalance between research and teaching, the MOE launched the Teaching Excellence Program (TEP) in 2004, implemented between 2005 and 2017. The TEP was the first large-scale national initiative aimed explicitly at improving teaching quality in higher education. It employed a competitive funding mechanism that required universities to propose comprehensive, campus-wide teaching improvement plans for four-year funding cycles. By emphasizing student-centered pedagogy, outcome-based education, and institutional accountability, the TEP represented a strategic effort to elevate the status of teaching within academic culture and realign institutional priorities (Dian-Fu & Yeh, 2012). Against this policy backdrop, this study adopts a multidimensional model of teaching engagement, grounded in cognitive-behavioral and contextual theories of academic work (Meichenbaum, 2017), to investigate how faculty beliefs, teaching practices, and personal attributes contribute to instructional commitment and professional fulfillment in Taiwan's higher education sector. The framework comprises three main components—teaching cognition, teaching action, and individual background characteristics—as predictors of teaching engagement, with job satisfaction as a downstream outcome (Figure 1). This study draws on nationally representative faculty data from two international comparative surveys: the 2012 Academic Profession in Asia (APA) and the 2018 Academic Profession in the Knowledge-Based Society (APIKS). These datasets allow for a longitudinal analysis of faculty experiences and practices in Taiwan, providing a valuable lens through which to assess the evolving impact of national teaching reform policies.

Teaching cognition—faculty members' beliefs, assumptions, and values about teaching—has long been recognized as a key determinant of instructional behavior (Hora, 2014). In this study, teaching cognition is operationalized through three belief dimensions: ***Addressing Student Deficiencies***: This reflects a remedial, deficit-oriented mindset in which faculty spend more time helping students catch up on foundational knowledge. This traditional view may lead to more time-intensive teaching, particularly in lecture formats (Flake & Gabriel, 2023). ***Emphasizing Practically Oriented Knowledge and Skills***: Faculty who value the application of knowledge in real-world contexts often engage more in practice-based and project-based teaching approaches. These beliefs align with constructivist and experiential learning theories (Molderez & Fonseca, 2018). ***Emphasizing International Perspectives in Teaching***: Faculty with global outlooks may incorporate cross-cultural content, bilingual resources, or international case studies, leading to more diverse teaching engagements (Ma, 2024). Prior research has shown that faculty who adopt a learning-centered conception of teaching are more likely to use interactive and student-centered pedagogies (Wang et al., 2024). However, few studies have explored how the relationship between teaching cognition and engagement evolves over time in response to external policy interventions. This study aims to fill that gap by comparing data in 2012 and in 2018 through Taiwan's implementation of the Teaching Excellence Project (TEP). Recent scholarship has suggested that large-scale reforms can influence faculty teaching beliefs by institutionalizing new pedagogical norms. Thus, this question investigates whether Taiwan's shift from a remedial model of teaching to a competency-based, outcome-oriented approach is reflected in faculty engagement patterns

over time. These beliefs are hypothesized to shape how faculty allocate time and resources to teaching, thereby influencing teaching engagement (Figure 2).

H1: The relationship between teaching cognition and teaching engagement change from 2012 to 2018.

While teaching cognition serves as a cognitive driver of engagement, faculty engagement is also shaped by contextual factors such as teaching action and individual characteristics. Teaching action captures the pedagogical strategies and instructional modes that faculty employ. Based on the cognitive-affective-behavioral model of teaching (Meichenbaum, 2017), it is expected that faculty beliefs translate into observable practices that vary in intensity and time demand. Eight types of teaching actions are examined: ***Classroom Instruction/Lecturing*** – Typically associated with a teacher-centered, content-delivery model. ***Individualized Instruction*** – Includes mentoring and one-on-one tutoring. ***Project-Based Learning*** – Reflects a constructivist, student-centered pedagogy aligned with problem-solving. ***Practice Instruction/Laboratory Work*** – Common in applied fields; promotes skill acquisition and hands-on learning. ***ICT-Based/Computer-Assisted Learning*** – Reflects modern digital integration in teaching. ***Distance Education*** – Asynchronous or synchronous online teaching. ***Development of Course Materials*** – Indicative of engagement in curriculum design. ***Face-to-Face Interaction Outside Class*** – Includes office hours, informal advising, strongly associated with affective engagement and student development.

Faculty behavior and engagement are also influenced by personal and professional attributes, consistent with theories of role strain, career stage, and sociocultural expectations (Cheng et al., 2022). Four key demographic and structural variables are considered: ***Gender*** (male/ female), ***Academic Field*** (natural science/ social science), ***Academic Rank*** (Senior/ Junior), ***Marital Status*** (Married/ Single). At the same time, pedagogical actions are increasingly associated with deeper student learning and more meaningful faculty-student engagement (Chou, 2019). This question aims to examine whether such teaching actions or background factors reinforce or weaken the link between teaching cognition and engagement (Figure 3).

H2: Teaching actions and academic background characteristics moderate the relationship between teaching cognition and teaching engagement.

Faculty job satisfaction has been linked to multiple dimensions of academic work, including autonomy, recognition, and alignment between personal values and institutional goals (McNaughtan et al., 2022). However, the relationship between teaching engagement and job satisfaction remains ambiguous, particularly in systems where research output is privileged over teaching contributions. Previous studies in East Asia have noted that faculty often experience a tension between teaching and research roles, with teaching sometimes perceived as a burden rather than a source of fulfillment (Lin, & Huang, 2021). Yet, as institutions begin to recognize and reward high-quality teaching—through initiatives like the TEP—this relationship may change. Teaching, when institutionally supported and professionally valued, can become a key driver of faculty satisfaction and professional identity (Hou, & Hill, 2020; Hou et al., 2022). This question seeks to determine whether such a shift occurred in Taiwan between 2012 and 2018, offering insights into how policy reforms can influence the affective dimensions of academic work (Figure 4).

H3: The relationship between teaching engagement and job satisfaction evolve across the two survey waves.

Together, these three research questions address a critical gap in the literature by linking cognitive, behavioral, and affective dimensions of academic engagement within a longitudinal and policy-sensitive framework. By examining changes across two time points in the context of Taiwan's national teaching reform, this study contributes not only to scholarship on teaching engagement but also to broader conversations on how institutional and policy environments shape the evolving nature of academic professionalism.

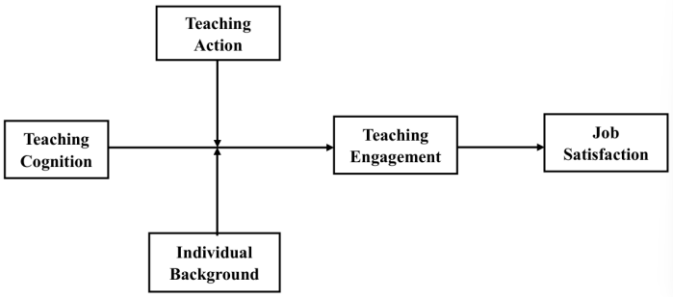

Figure 1: Conceptual framework-modeling teaching engagement and job satisfaction in higher education

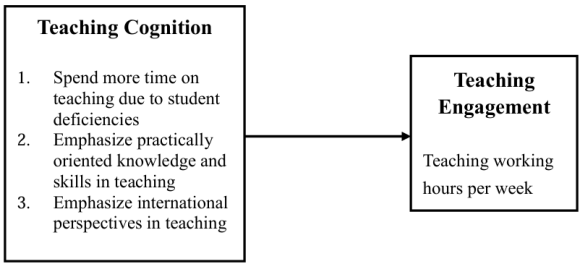

Figure 2: Conceptual framework- the relationship between teaching cognition and teaching engagement

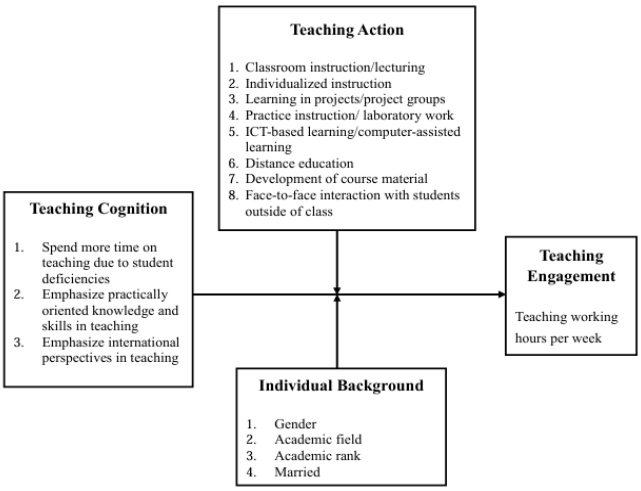

Figure 3: Conceptual framework- the moderation effect of teaching action and individual background on the relationship between teaching cognition and teaching engagement

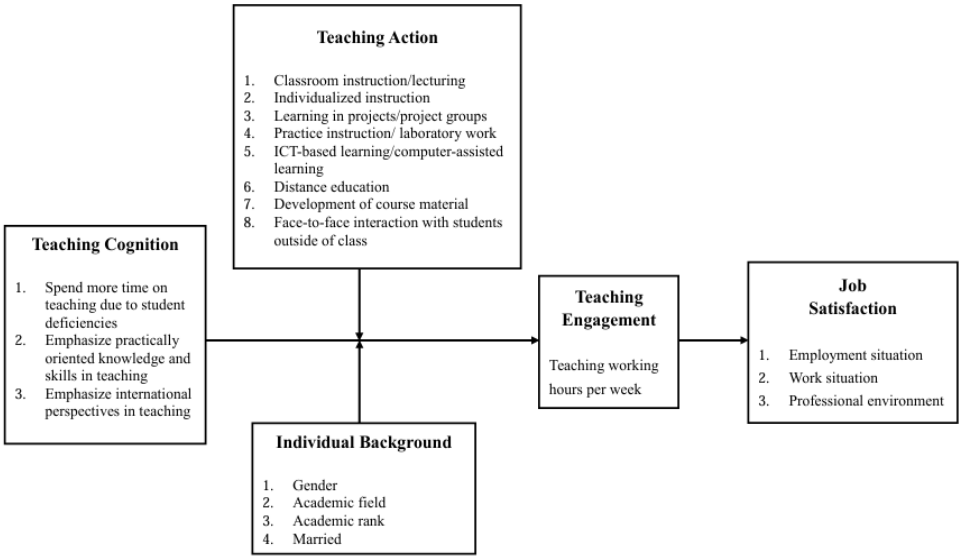

Figure 4: Conceptual framework- the relationship between teaching engagement and job satisfaction

METHODOLOGY

Research Design

This study adopts a quantitative, comparative research design to examine how Taiwanese academics' teaching cognition, teaching action, and individual background relate to teaching engagement and job satisfaction over time. Drawing on two waves of nationally representative survey data—collected in 2012 and 2018—the study explores longitudinal changes and institutional policy impacts in the context of Taiwan's Teaching Excellence Project (TEP).

Data Collection

Full-time academic staff of public and private universities in Taiwan were included in this study. Publicly available contact information was obtained from university websites to compile a comprehensive list of potential participants' email addresses. Eligible faculty members were then invited to participate via email and provided a detailed explanation of the research purpose, assurances of confidentiality, and instructions for participation. This study drew upon two waves of nationally representative survey data from the Academic Profession in Asia (APA) survey conducted in 2012 and the Academic Profession in the Knowledge-Based Society (APIKS) survey conducted in 2018. These surveys were part of larger international comparative research initiatives designed to examine the working conditions, roles, and perceptions of university faculty across different countries.

The 2012 APA dataset included responses from 412 academic staff, while the 2018 APIKS dataset comprised 1,224 participants. Table 1 presents the demographic breakdown of both cohorts. In terms of gender, male respondents constituted a majority in both surveys—63.59% in 2012 and 64.79% in 2018—while female respondents made up 36.41% and 35.21%, respectively. Regarding academic field, faculty in the natural sciences dominated the 2012 sample (75.49%), though their proportion decreased in 2018 (61.19%), reflecting an increase in participation from social science faculty (24.51% in 2012 vs. 38.81% in 2018). With respect to academic rank, the 2012 sample included a larger proportion of senior faculty (associate and full professors), comprising 62.14%, while junior faculty (assistant professors and lecturers) made up 37.86%. In 2018, the distribution shifted slightly, with 57.35% senior faculty and 42.65% junior faculty. Finally, marital status data indicated that the majority of respondents in both waves were married—86.89% in 2012 and 84.72% in 2018—while 13.11% and 15.28% were

single, respectively. These demographic profiles provide a foundational context for examining temporal changes in teaching cognition, teaching engagement, and job satisfaction among Taiwanese academics, particularly in relation to institutional and policy developments such as the Teaching Excellence Project (TEP). The quantitative variables listed in Table 2 were used to address the research questions.

Table 1. Respondent Demographic Characteristics

Individual Factors	Demographics	APA (N = 412)		APIKS (N = 1,224)	
		Frequency	%	Frequency	%
Gender	Male	262	63.59%	793	64.79%
	Female	150	36.41%	431	35.21%
Academic field	Natural science	311	75.49%	749	61.19%
	Social science	101	24.51%	475	38.81%
Academic rank	Senior	256	62.14%	702	57.35%
	Junior	156	37.86%	522	42.65%
Married	Married	358	86.89%	1,037	84.72%
	Single	54	13.11%	187	15.28%

Table 2. Variables and Measures

Variables	Measurement
Gender	Male = 1; Female = 2
Academic filed	Natural science = 1; Social science = 2
Academic Rank	Senior = 1; Junior = 2
Married	Married = 1; Single = 2
Teaching Cognition	
1. Spend more time on teaching due to student deficiencies	5 Point Likert scale (1= strongly disagree to 5= strongly agree)
2. Emphasize practically oriented knowledge and skills in teaching	
3. Emphasize international perspectives in teaching	
Teaching Action	
1. Classroom instruction/lecturing	Yes=1; No=0
2. Individualized instruction	
3. Learning in projects/project groups	
4. Practice instruction/ laboratory work	
5. ICT-based learning/computer-assisted learning	
6. Distance education	
7. Development of course material	
8. Face-to-face interaction with students outside of class	
Teaching engagement	
Teaching (preparation of instructional materials and lesson plans, classroom instruction, advising students, reading and evaluating student work, etc.)	Write the hours of these work engagements per week

Job satisfaction	
1. I am satisfied with current employment situation.	5 Point Likert scale (1= very low to 5= very high)
2. I am satisfied with my work situation.	
3. I am satisfied with the overall professional environment.	

Data Analysis

To examine the evolving relationships between teaching cognition, teaching engagement, and job satisfaction among Taiwanese academics, this study conducted a series of statistical analyses using the 2012 APA and 2018 APIKS survey datasets. To address the first research question—how the relationship between teaching cognition and teaching engagement changed between 2012 and 2018—multiple linear regression analyses were conducted separately for each dataset. Teaching engagement, operationalized as weekly teaching working hours, was regressed on three key dimensions of teaching cognition. Standardized beta coefficients were used to assess the relative influence of each cognitive dimension on teaching engagement. To explore the second research question—how teaching actions and academic background moderate the relationship between teaching cognition and teaching engagement—a series of moderated regression models were estimated. Interaction terms were created between each cognitive variable and potential moderators. To address the third research question—how the relationship between teaching engagement and job satisfaction evolved between 2012 and 2018—a path model was constructed to test the direct effect of teaching working hours on job satisfaction, operationalized as self-reported global job satisfaction.

RESULTS

The Influence of Teaching Cognition on Academics' Teaching Engagement: Evidence from the 2012 APA and 2018 APIKS Surveys

To investigate factors associated with teaching engagement, this study employed regression analyses to explore the relationship between academics' teaching cognition and their reported teaching working hours (Figure 2). Findings from the 2012 APA survey (Figure 5) suggest that teaching engagement was significantly associated with the time faculty spent addressing students' learning deficiencies (β = .078). In contrast, data from the 2018 APIKS survey (Figure 6) indicate that teaching engagement was more strongly linked to faculty emphasis on imparting practically oriented knowledge and skills (β = .071). These findings highlight a noteworthy shift in the determinants of teaching involvement over time—from a remedial and student-deficit focus in 2012 to a more competency- and practice-oriented approach by 2018. This evolution reflects a broader pedagogical transition potentially driven by the strategic objectives of the TEP, which promoted student-centered instruction, outcome-based education, and alignment with societal and labor market needs. The study underscores the dynamic interplay between teaching cognition and instructional engagement, and how policy frameworks can shape academic work over time.

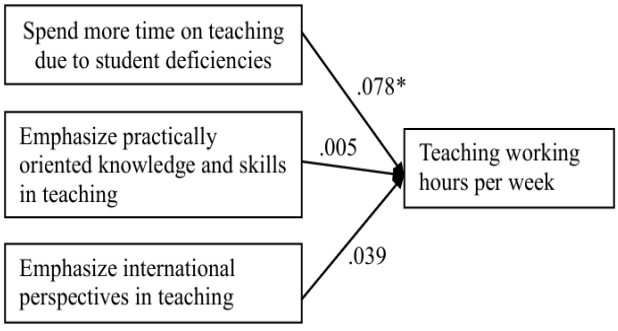

Figure 5: The influence of teaching cognition on academics' teaching engagement in 2012 APA surveys

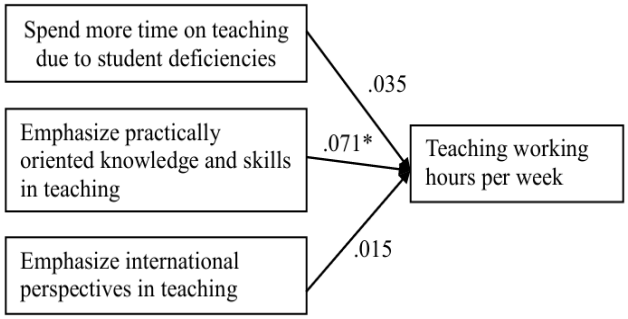

Figure 6: The influence of teaching cognition on academics' teaching engagement in 2018 APIKS surveys

Moderating Effects of Teaching Actions and Academic Background on the Relationship Between Teaching Cognition and Engagement

To empirically test the proposed research model grounded in teaching engagement theory, we employed multiple moderated regression analyses (Figure 3). These analyses examined the moderating roles of academics' teaching actions and individual background characteristics on the relationship between teaching cognition and teaching engagement.

Findings from the 2012 APA survey (Figure 7) indicate that faculty members who emphasized addressing student deficiencies tended to report higher weekly teaching hours, particularly through classroom instruction and lecturing (β = .121). Moreover, the analysis revealed that early-career (junior) academics were more likely to spend greater time on teaching-related activities compared to their senior counterparts (β = .226). In contrast, the 2018 APIKS survey results (Figure 8) suggest a shift in teaching practices. Faculty members who prioritized practically oriented knowledge and skill development reported spending more time on individualized instruction (β = .061), practice-based teaching (e.g., laboratory work) (β = .070), and face-to-face interactions with students outside of class (β = .066). However, no significant moderating effects were observed for other individual background variables, such as gender, academic field, academic rank, or marital status, in the 2018 data.

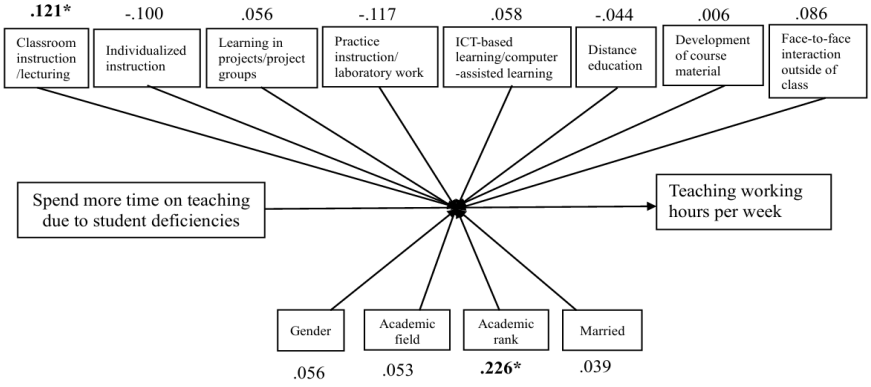

Figure 7: Moderating effects of teaching actions and academic background on the relationship between teaching cognition and engagement in 2012 APA surveys

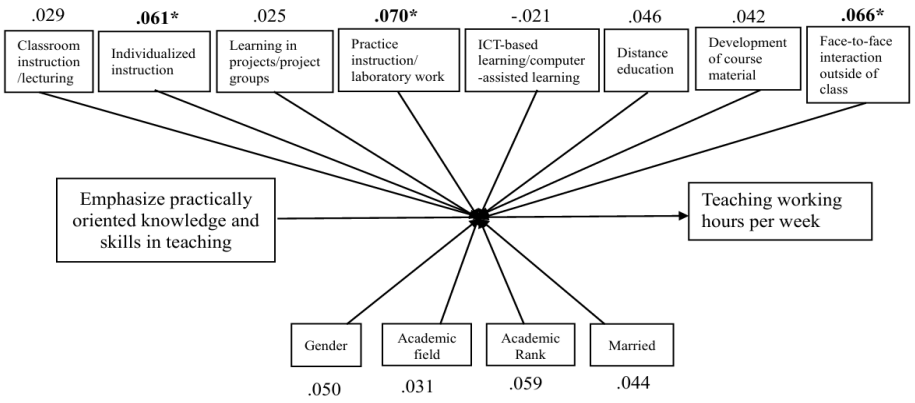

Figure 8: Moderating effects of teaching actions and academic background on the relationship between teaching cognition and engagement in 2018 APIKS surveys

Teaching Time and Job Satisfaction: Shifting Dynamics Between 2012 and 2018

Finally, this study further investigates the relationship between teaching engagement and job satisfaction among Taiwanese academics. Path analysis was conducted to assess whether the number of weekly teaching hours influenced faculty members' job satisfaction across the two survey waves (Figure 4).

Findings from the 2012 APA survey revealed no statistically significant association between teaching working hours and job satisfaction, suggesting that faculty time investment in teaching did not directly contribute to their perceived satisfaction at that time (Figure 9). In contrast, results from the 2018 APIKS survey demonstrated a significant and positive relationship between teaching hours and job satisfaction (Figure 10). This shift suggests that, by 2018, academics who devoted more time to teaching reported higher levels of job satisfaction. These results may reflect the positive influence of Taiwan's Teaching Excellence Project (TEP), which was implemented nationally to improve instructional quality, promote pedagogical innovation, and provide structural support for teaching-related work. The TEP's institutional supports—such as teaching resource centers, professional development programs, and recognition mechanisms—may have contributed to enhanced faculty motivation and satisfaction. Faculty were likely more willing to invest time in teaching when they perceived such efforts as valued and impactful, both in terms of personal fulfillment and student learning outcomes.

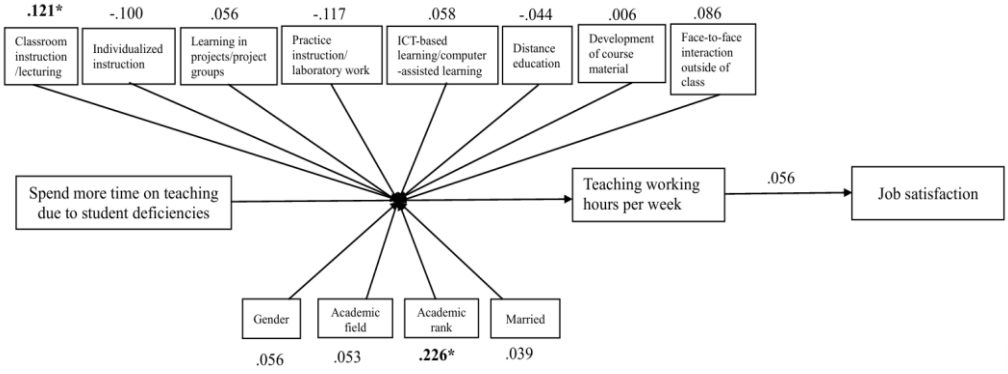

Figure 9: The influence of teaching engagement on academics' job satisfaction in 2012 APA surveys

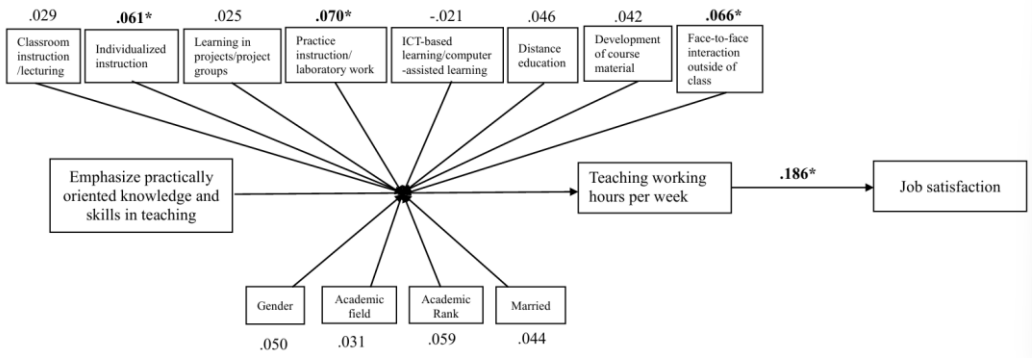

Figure 10: The influence of teaching engagement on academics' job satisfaction in 2018 APIKS surveys

DISCUSSION

Evolving Teaching Cognition and Engagement in the Context of Higher Education Reform

This study offers valuable insights into how Taiwanese academics' teaching cognition influences their teaching engagement and how this relationship has evolved between 2012 and 2018. Drawing on data from two major cross-national faculty surveys—the APA (2012) and APIKS (2018)—the findings reveal a significant shift in the cognitive drivers of teaching engagement over time. Specifically, while faculty engagement in 2012 was significantly linked to addressing students' learning deficiencies, by 2018 it was more strongly associated with an emphasis on practically oriented knowledge and skills. This transition suggests a broader pedagogical realignment in Taiwan's higher education system toward outcome-based and competency-driven teaching practices. This shift can be interpreted in the context of Taiwan's Teaching Excellence Project (TEP), a decade-long national policy initiative designed to elevate instructional quality, support innovative pedagogy, and promote student-centered learning (Hou & Hill, 2020). The cognitive evolution from a remediation-focused model to a more application-oriented instructional mindset is consistent with the core goals of the TEP, which emphasized curriculum reform, pedagogical diversification, and the alignment of teaching practices with labor market demands (Hou et al., 2022). These developments carry important implications for higher education policy and faculty development. First, they highlight the role of national initiatives in shaping academic behavior and underscore the importance of sustained institutional support for pedagogical innovation. Policies like the TEP are most effective when accompanied by structural changes—such as revised teaching evaluation systems, professional development opportunities, and institutional incentives—that enable faculty to reorient their teaching practices (Mok, 2015). Second, the findings raise questions about the sustainability and scalability of such cognitive shifts. As teaching expectations evolve, institutions must consider how to support faculty in balancing teaching, research, and service responsibilities. Continuous investment in reflective pedagogical training and the recognition of teaching excellence within academic promotion systems will be essential to maintain the momentum of reform (Lin, 2021).

Contextualizing Teaching Engagement: Moderating Effects of Instructional Practice and Faculty Demographics

This study explored the moderating effects of teaching actions and individual academic background on the relationship between teaching cognition and teaching engagement across two time points—2012 and 2018—using data from the APA and APIKS faculty surveys. The findings provide nuanced insights into how faculty members' instructional decisions and demographic characteristics interact with their beliefs about teaching to shape their engagement behaviors. The 2012 APA survey results indicated that teaching engagement was significantly associated with classroom instruction and lecturing, especially among junior faculty. This finding aligns with existing literature suggesting that early-career academics often experience heightened teaching loads and institutional expectations, particularly in contexts where

research support may still be developing (Cheng et al., 2022). Moreover, the focus on addressing student deficiencies during this period reflects a remedial pedagogical approach, likely inherited from more traditional, didactic teaching models. However, by 2018, the APIKS data revealed a clear shift in the predictors of teaching engagement. Academics who emphasized practically oriented knowledge and skill development were more likely to engage in individualized instruction, hands-on practices such as laboratory work, and face-to-face interactions outside the classroom. This transformation in teaching practices illustrates a growing alignment with student-centered and experiential pedagogies, consistent with the global trend toward outcomes-based education and 21st-century competencies (Hsieh, 2020). From a theoretical standpoint, these findings reinforce the significance of teaching cognition as a central mechanism influencing faculty behavior (Molderez & Fonseca, 2018). However, the results also suggest that this relationship is not static. It is moderated by contextual variables—including instructional strategies and career stage—and can evolve in response to systemic reforms. This echoes arguments in higher education research that faculty engagement is a dynamic and contextually sensitive construct shaped by individual beliefs and structural incentives (Wang et al., 2024).

Aligning Teaching Engagement with Job Satisfaction: Evidence of a Policy-Driven Shift in Faculty Experience

This study examined the temporal dynamics between teaching engagement—measured by teaching working hours—and job satisfaction among Taiwanese academics, revealing a marked shift between 2012 and 2018. While the 2012 APA survey found no significant relationship between the time faculty devoted to teaching and their job satisfaction, the 2018 APIKS data demonstrated a statistically significant and positive association. This evolution suggests that, over time, faculty began to perceive their teaching engagement not only as a professional obligation but increasingly as a meaningful and fulfilling component of their academic identity. In 2018, faculty members who invested more time in teaching may have been experiencing these intrinsic rewards more acutely, especially when supported by institutional recognition and developmental resources. This contrasts with the 2012 context, where teaching may have been seen more as a routine task lacking commensurate institutional value or incentives (Lin & Huang, 2021). These findings also support existing research that underscores the role of perceived organizational support in shaping faculty satisfaction (McNaughtan et al., 2022). When institutions actively foster a culture of teaching excellence—through grants, teaching awards, and promotion criteria that reward pedagogical contributions—faculty are more likely to view their teaching time as worthwhile and professionally rewarding (Njenga, 2023). The increasing alignment of faculty effort with institutional priorities likely amplified the affective and motivational aspects of teaching, leading to higher levels of job satisfaction. Moreover, this shift speaks to the broader international trend of repositioning teaching as a central pillar of academic work, especially in systems under pressure to improve student outcomes and institutional rankings. In Taiwan, the TEP served as both a policy mechanism and cultural signal that teaching matters—a shift that may explain why faculty in 2018 derived greater satisfaction from teaching engagement than their counterparts in 2012. From a policy perspective, these findings highlight the long-term value of sustained investments in teaching-related support structures. Governments and university leaders aiming to foster a committed academic workforce should consider the strategic design of teaching development policies that combine financial, symbolic, and professional incentives.

CONCLUSIONS AND RECOMMENDATIONS

This study offers a comprehensive analysis of the evolving relationship between academics' teaching cognition, teaching engagement, and job satisfaction in Taiwan's higher education context, drawing on nationally representative data from the 2012 APA and 2018 APIKS surveys. The findings reveal significant shifts in how faculty perceive and practice teaching—shifts that appear closely linked to the strategic influence of Taiwan's Teaching Excellence Project (TEP). First, the study found that teaching cognition significantly influenced teaching engagement, but the nature of that influence changed over

time. In 2012, teaching engagement was more strongly associated with remedial efforts focused on addressing student deficiencies, whereas by 2018, it was linked to the delivery of practically oriented, competency-based instruction. This indicates a shift in pedagogical orientation from deficit-focused to outcome-driven teaching, reflecting the broader movement toward student-centered learning in global higher education. Second, the moderating effects of teaching actions and academic background highlight that engagement is not uniform across faculty. In 2012, early-career faculty showed higher levels of time investment in teaching, particularly through traditional classroom instruction. By 2018, faculty engagement was more diversified, with greater time spent on individualized instruction, lab work, and mentoring, suggesting the spread of active and experiential learning models. Interestingly, demographic variables such as gender, marital status, and academic field were no longer significant moderators in 2018, implying a potential equalizing effect of institutional reforms. Third, the study found a positive association between teaching engagement and job satisfaction in 2018, a relationship that was not observed in 2012. This suggests that as teaching became more aligned with institutional goals and received more support and recognition—especially under the TEP—faculty began to view their teaching responsibilities as a source of professional fulfillment rather than obligation. In conclusion, this study demonstrates that teaching engagement is a dynamic, context-sensitive construct influenced by cognition, institutional support, and policy frameworks.

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Employer Satisfaction with the Maritime Graduates' Performance Onboard International Seagoing Vessels

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St. Therese-MTC Colleges

ABSTRACT

performance of maritime graduates serving aboard international seagoing vessels, aiming to align educational outcomes with industry expectations. Partnering with ten shipping companies and manning agencies, the survey focused on curriculum content, technical and soft skills, practical training, and overall alignment with industry demands. Key findings revealed that graduates demonstrated satisfactory performance across various competencies, including technical skills, communication abilities, adaptability, and teamwork. Employers emphasized the importance of trainability, problem-solving, and enthusiasm in acquiring new skills. The study highlighted areas for improvement, such as enhancing proficiency in mathematics, Physics, and the English language, particularly in oral and non-verbal communication. Employers suggested incorporating soft skills, MS Office proficiency, and personality development into the curriculum to better prepare graduates for the realities of the maritime profession. Additionally, recommendations included resuming face-to-face classes, promoting discipline, and keeping students informed about industry regulations. Valuable feedback emphasizes the importance of adaptability, perseverance, collaboration, and the development of both technical and soft skills through school activities. Suggestions also emphasized creating opportunities for graduates to demonstrate problem-solving and creativity, particularly in real-world scenarios. The survey findings offer actionable insights for refining the curriculum, fostering industry collaboration, and enhancing policy, ensuring continuous improvement in maritime education and training. In addressing these recommendations, St. Therese-MTC Colleges can better align program outcomes with employer expectations and foster successful careers for graduates in the dynamic maritime industry.

Keywords: Maritime graduates' performance; Employer satisfaction; Technical and soft skills; Curriculum alignment; Maritime education improvement; Industry expectations

INTRODUCTION

The global maritime industry underpins over 80% of international trade and remains indispensable to the movement of goods, energy, and raw materials across the world's oceans (Água et al., 2020). As such, the sector's efficiency, safety, and environmental stewardship are linked to a workforce equipped with robust technical capabilities, rigorous adherence to international standards, and adaptable soft skills (Sihombing et al., 2024). Maritime graduates represent the future group of qualified and trained officers and ratings tasked with navigating increasingly complex seafaring environments from high-fidelity bridge simulation exercises to real-time decision-making aboard vessels employing emerging autonomous technologies (Ala et al., 2024), (Meštrović et al., 2024). Employer satisfaction with graduate performance emerges as an indicator of both educational quality and industry relevance, reflecting how effectively academic curricula translate into operational competence onboard international vessels.

In recent years, the International Maritime Organization (IMO) and the STCW Convention have established the competencies, certifications, and language proficiencies required for seafarers (Sijabat et al., 2024). Yet, persistent discrepancies remain between the theoretical knowledge imparted in Maritime Education and Training (MET) institutions and the hands-on proficiencies that employers, ranging from major shipping lines to specialized manning agencies, expect of entry-level officers (Setiawan et al., 2021). Studies have shown that while foundational navigation and engineering concepts are well covered in universities, graduates often lack sufficient exposure to multicultural crew dynamics, real-time operational planning, and advanced simulation scenarios mirroring modern vessel systems (Simanjuntak et al., 2024), Barus et al., 2024). Such gaps can impair vessel performance, safety outcomes, and overall crew morale, underscoring the critical need to align educational outputs with rapidly evolving industry requirements.

Simulation-Based Learning (SBL) has therefore gained attention as a core pedagogical approach in MET, offering cadets a controlled yet realistic environment to develop bridge resource management, engine room troubleshooting, and cargo handling skills before embarking on their first sea term (Ala et al., 2024). High-fidelity simulators replicate bridge layouts, machinery control systems, and electronic chart display capabilities, enabling students to internalize standard operating procedures and emergency drills under expert supervision (Ala et al., 2024). Some research suggests that graduates who engage in structured simulation exercises demonstrate higher self-efficacy and reduced incident rates when transitioning to actual sea service (Renganayagalu et al., 2019). Nonetheless, the cost and logistical complexity of maintaining such facilities can limit access, particularly in emerging maritime nations, raising questions about equity and standardization across MET providers worldwide (Água et al., 2020).

Beyond technical proficiency, modern seafaring demands strong intercultural communication, English language fluency, and digital literacy to interface with multinational crews and shore-based management systems (Sijabat et al., 2024), (Setiawan et al., 2021). Employer surveys conducted by leading shipping companies reveal that deficits in maritime English—especially in radio communications and documentation, pose tangible risks to navigational safety and regulatory compliance (Sijabat et al., 2024). Similarly, the proliferation of electronic logbooks, remote machinery monitoring, and autonomous navigation tools necessitates that new officers possess not only foundational IT skills but also the capacity for continuous upskilling as technologies evolve (Meštrović et al., 2024), Chowdhury & Habib, 2024). These insights reinforce the imperative for MET curricula to integrate dedicated modules on professional communication, cross-cultural teamwork, and digital competencies alongside core maritime subjects.

Industry-academe collaboration has emerged as a promising strategy for bridging the skills gap, with shipping firms, classification societies, and manning agencies contributing to curriculum design, guest lecturing, and cadet internship placements (Bermejo et al., 2021). Such partnerships facilitate real-world exposure through structured sea-term programs, allowing cadets to apply classroom learning onboard and receive formative feedback from supervising officers (Simanjuntak et al., 2024). Manning

agencies, in particular, play a crucial role in conveying employer expectations back to MET institutions, ensuring that training benchmarks reflect current operational practices and risk management protocols (Setiawan et al., 2021). When effectively managed, these collaborations yield graduates who are not only technically competent but also socially savvy and immediately productive upon joining a vessel's complement.

Moreover, the sector's accelerating push toward autonomous shipping and digitalization—often referred to as Shipping 4.0—demands that MET providers continuously revise learning outcomes to encompass cyber-risk management, remote operations oversight, and data analytics (Meštrović et al., 2024), Marsudi, 2023). Pilot projects employing Maritime Autonomous Surface Ships (MASS) have already exposed the necessity for seafarers to function as systems integrators and data custodians, rather than solely as manual helmsmen or engineering watchkeepers (Meštrović et al., 2024). Consequently, the present study posits that capturing employer satisfaction with graduate performance onboard international vessels offers a vital feedback loop, enabling MET stakeholders to recalibrate curricula, invest in novel training technologies, and refine assessment metrics in line with real-world demands.

This research, therefore, surveys a purposive sample of partner shipping companies and manning agencies to gauge satisfaction levels across a range of graduate competencies, technical, procedural, communicative, and attitudinal. By mapping employer perceptions against existing MET standards and pedagogical practices, the study aims to identify critical skill gaps and best-practice models for curricular alignment (Sihombing et al., 2024; , Chowdhury & Habib, 2024). Ultimately, these findings will inform policy recommendations for MET institutions, accrediting bodies, and industry partners, with the shared objective of producing maritime graduates who can seamlessly integrate into the global fleet and contribute to safer, more efficient, and environmentally responsible shipping operations.

Theoretical Framework

This study is anchored on the Human Capital Theory, which posits that investments in education and training enhance the skills, knowledge, and productivity of individuals, leading to greater organizational and sectoral benefits. In the context of maritime education, the alignment between curriculum content, practical training, and soft skills development with industry needs is essential for cultivating highly capable seafarers. Employer feedback is thus invaluable in assessing whether these human capital investments yield graduates who can effectively adapt, perform, and contribute onboard international vessels.

METHODS

Research Design

This study utilized a descriptive survey research design to assess employer satisfaction with the performance of maritime graduates onboard international seagoing vessels. The design was selected to systematically collect quantitative and qualitative data from industry stakeholders regarding the competencies, skills, and preparedness of maritime graduates.

Respondents of the Study

The respondents consisted of representatives from ten (10) notable shipping companies and manning agencies, which regularly employ maritime graduates. Table 1 shows the data.

Table 1. Ten (10) shipping companies and manning agencies

Name of Shipping/Manning Agency	Contact person
1. Goldroute/Zuphyr Maritime Inc.	Ralph Macho Dinglasan/ Capt. Ribleza

2. Admiman Manning Inc.	Ryan Mergeroche
3. Hellenic Manning Overseas Inc./Stealth Maritime Corp.	C/M Jerome Romero
4. Leonis Navigation Philippines Inc.	Capt. Godfrey Ejercito
5. Britmark Maritime	C/E Angie Torres
6. Archipelago Philippines Seafarers Training Institute Inc.	Mr. Russel Baja
7. Marlow Navigation Philippines Inc.	C/M John Malagad
8. Arctic Philippines Inc.	C/E Jun C. Sionil Jr.
9. Century Maritime Agencies	Capt. Edgar Juaton
10. Foscon	Capt. Domingo Cezar C. Savarez Jr.

The respondents were typically operational managers, master mariners, chief engineers, and training heads with direct experience supervising maritime graduates onboard.

Data Gathering Procedure

The survey instrument **is a** standardized employer satisfaction survey that was developed by the researchers. The survey comprised both scaled (quantitative) and open-ended (qualitative) questions. Items assessed various aspects such as: (a) Theoretical and practical knowledge, (b) Technical and soft skills, (c) Communication skills, particularly English proficiency, (d) Teamwork, adaptability, and work attitude, and (e) Trainability and stress management. The questionnaires were distributed to partner companies and agencies via electronic mail and/or in person, with follow-up reminders to ensure high response rates. Completed survey forms were retrieved, collated, and encoded for analysis.

Data Analysis

Responses to satisfaction items were rated using a four-point Likert scale (from 1.00 – Not Satisfied to 5.00 – Highly Satisfied). Means and standard deviations were computed for each competency area to determine overall satisfaction levels. Open-ended responses and comments regarding strengths and areas for improvement were thematically analyzed to supplement numerical findings and provide actionable insights.

Ethical Considerations

Participation was voluntary and respondents were assured of the confidentiality and anonymity of their responses. Data were reported in aggregate form to protect the identities of individual participants and organizations.

FINDINGS

Table 2. Degree of Satisfaction among Graduates

	Mean	**Description**	**SD**
A. Theoretical and Practical Knowledge in Delivering Tasks and Responsibilities	3.82	Satisfied	.667
1. Possesses technical skills and knowledge needed for the job.	3.87	Satisfied	.641
2. Understand and speaks the language in which the business is conducted.	3.87	Satisfied	.641
3. Capable of communicating in speech and writing.	3.87	Satisfied	.641
4. Observes protocols in reporting using standard operating procedures.	3.75	Satisfied	.707
5. Abilities to solve work related problems	3.75	Satisfied	.707

B. Trainability of Employed Graduates/Cadets on the Skills Needed for the job	3.85	Satisfied	.678
1. Listens attentively to instructions and follows order as instructed	4.00	Satisfied	.756
2. Learns new skills and knowledge on the job.	3.87	Satisfied	.641
3. Obtains and conveys workplace information.	3.63	Satisfied	.518
4. Adapts to the existing technology relevant to the enterprise.	3.87	Satisfied	.641
5. Enthusiastic in learning skills the latest advancement related to the job.	3.87	Satisfied	.835
C. Carries Positive Work Attitude such as Teamwork, Confidence, Self-motivation, etcetera	3.75	Satisfied	.629
1. Works well in a group to achieve a goal	4.00	Satisfied	.756
2. Produces outputs on time while working with little supervision.	3.63	Satisfied	.518
3. Easily adapts to work environment.	3.63	Satisfied	.518
4. Ability to handle stress and pressure on the job.	3.87	Satisfied	.835
5. Accepts other jobs other than specified in the job description.	3.63	Satisfied	.518

Note: Use the scale for the description 4.51-5.00 Highly Satisfied 3.51-4.50 Satisfied
2.51-3.50 Moderately Satisfied 1.51-2.50 Fairly Satisfied 1.00-1.50 Not Satisfied

SUGGESTION AND VALUABLE INPUTS

1. *Suggestions to improve the quality of graduates*
   a. Competence in Math and Physics
   b. English language especially oral communication as being the medium of communication onboard.
   c. If protocols and circumstances permit, resume face-to-face class and discipline
   d. Include in the English curriculum the non-verbal communication skills (gestures which other nationalities are observing specifically Japanese shipowners
   e. Should be proficient in MS Office software
   f. To be able to provide/create venue for students to express/exercise competence in the real-world/professional setting, gives opportunities to exhibit problem solving skills and showcase creativity of students.

2. *Suggestion to improve the services of the College which relate to graduates/cadets*
   a. Able to enroll BS on time
   b. Apart from academic excellence of cadets, college must focus on soft skills, discipline, and proper actuations of cadets
   c. Better coordination in terms of the provision of documents and compliance. More collaborative effort in the improvement of activities pertaining to academe-industry bridging of gaps.
   d. Expediting requirements for cadetship training and bachelor's degree enrolment/officer ship, can cater cadets/seafarers who are ratings but licensed. Training of female cadets
   e. Graduates should be updated in recent regulations from governing bodies (MARINA/IMO)
   f. The inclusion of personality enhancement to the curriculum

3. *Most needed values for one to succeed on the job*
   a. Capacity to easily adapt to change. Ability to collaborate and establish connection with others. Proficient in both oral and written communication. Competence in one's field and problem-solving skills.
   b. hardworking, able to adapt to new things, perseverance, honesty
   c. Humility, Patience, Perseverance
   d. New generation must be taught how to have initiative and be able to follow simple instructions.

e. Vision-They should aim to be seafarers, not only to earn a living.

4. *Specific skills observed to be most useful in the industry*
   a. Being themselves and developing skills, knowledge, and attitudes.
   b. Communication skill is the most important and useful in the industry hence they should not only focus on English language but also analyzing the instruction and be able to deliver good and bad news.
   c. Computer and technological skills and communication skills
   d. Development of attitude, Emphasize discipline
   e. Digital literacy, Problem Solving Skills, Creativity, Communication Skills, Social/Interpersonal Skills, and other soft skills
   f. Technical skills
   g. Improve or more discipline activities in the school, enhance technical and soft skills

CONCLUSION

The results of the employer satisfaction survey demonstrate that shipping companies and manning agencies are, overall, satisfied with the preparation and onboard performance of maritime graduates. Across a range of competencies—including theoretical and practical knowledge, technical skills, command of the English language, teamwork, trainability, adaptability, and the ability to work independently—graduates consistently received satisfactory ratings from industry employers.

Notably, the highest levels of satisfaction were recorded for graduates' ability to listen attentively, follow instructions, and work effectively in groups, suggesting strong interpersonal and collaborative skills. Graduates were also rated highly on adaptability to technology, willingness to learn, and their capacity to handle the pressures and demands of the maritime profession.

Despite these positive results, employers identified specific areas requiring further enhancement. Suggestions included greater emphasis on soft skills such as discipline, values, and professional demeanor; improved oral communication proficiency in English; and expanded focus on computer literacy, particularly MS Office applications. The feedback indicates that alongside technical training, maritime institutions should further integrate personality development and value formation into the curriculum to better equip graduates for the varied and dynamic challenges onboard international vessels.

RECOMMENDATIONS

1. Review course content of English to include non-verbal communication.
2. Review course content of ICT.
3. To consider or to incorporate personality development course or content in the curriculum and inculcate values and discipline.
4. To incorporate the enhancement of soft skills in the General Education courses.
5. To enhance or to contextualize content of Math and Physics courses (MST 1) to address the needed content in preparation for professional maritime courses.
6. To market for female maritime entrants.
7. To create a class intended for the shipping company qualifying exam takers.
8. To create a list of female graduates for the past 10 years.

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Awareness and Social Entrepreneurial Tendencies Among Senior High School Students

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ABSTRACT

The study investigated social entrepreneurship awareness and entrepreneurial tendency among 296 senior high school students at the University of Negros Occidental-Recoletos using descriptive and correlational research designs. A researcher-made instrument based on a competency model for social entrepreneurs was employed. Results showed a high level of awareness and entrepreneurial tendency among students, regardless of sex, grade level, strand, and school of origin. The Anderson-Darling (AD) test confirmed that data on awareness levels were normally distributed (AD = -141.130, p = 1.000). A T-test revealed that awareness levels were not significantly different when grouped by sex or school of origin but showed a significant difference by grade level (p = 0.007), with Grade 12 students demonstrating higher awareness than Grade 11. Similarly, while entrepreneurial tendencies were consistent across sex and school of origin, Grade 12 students exhibited significantly higher tendencies (p = 0.000). A one-way analysis of Variance indicated significant differences in awareness and tendency levels when grouped by strand. Post hoc analysis revealed that students in the Technical-Vocational-Livelihood (TVL) strand had higher awareness and tendency levels than other strands. The study also identified a strong positive correlation (r = 0.608) between social entrepreneurship awareness and entrepreneurial tendency. This finding underscores the importance of raising awareness to foster entrepreneurial tendencies. Promoting social entrepreneurship among senior high school students is vital for nurturing socially responsible leaders. Schools, communities, and policymakers are crucial in providing opportunities, support systems, and resources to inspire students to address societal challenges through innovative and entrepreneurial solutions.

Keywords: Social Entrepreneurship, Senior High School, Entrepreneurial Tendencies, Entrepreneurial Awareness

INTRODUCTION

Social entrepreneurship was introduced in the 1970s to discuss the issue of social dilemma sustainability. Joseph Banks first mentioned the term "social entrepreneur" in 1972 in his seminal work The Sociology of Social Movements, where he used it to describe the need to use managerial skills to address social problems and business challenges (El Ebrashi, 2013).

Students surveyed did not learn of social entrepreneurship business practices or theories while enrolled in the business program or prior. Most students reported that they had not heard of social entrepreneurship and could not sufficiently define it. Students could only identify some of the characteristics associated with the social entrepreneur that are closely associated with the idea of who a social entrepreneur is. Most students did not know a social entrepreneur or someone who studied social entrepreneurship. Social entrepreneurs create complex systems that solve issues that affect society or the environment. Often, these are issues that the government or society fails to address and are left unchecked, resulting in externalizing and the ongoing effects and impact of the core problem. The survey results were expected, including those received once students were provided with the definition of social entrepreneurship. (Tishler, 2019)

According to a study by the Asian Development Bank (ADB), as of July 2019, there were 164,473 social enterprises in the Philippines. That is 17% of the total registered businesses in the country. Furthermore, 71% of the social enterprises are small and medium-sized businesses. The remaining 23% are NGOs and 6% are coops. (Yukiko & Durreen, 2019). This minimal number of social entrepreneurs in the Philippines is one of the alarming implications of a lack of knowledge on social entrepreneurship.

Social enterprises in the country are mostly micro, small, and medium-sized enterprises (MSMEs) that are limited in size and scale. Some are not financially viable. Social enterprises lack targeted support and are covered by existing MSME programs. The government's support for strategic, timely, and market-based opportunities can enable social enterprises to extend their impact to the most vulnerable populations and help address pressing social and environmental challenges in the Philippines. ("Philippines & Rsquo; Poverty Rate Declines; More Well-Paying Jobs and Opportunities Needed," 2018)

There is a lot of research regarding entrepreneurship itself, but less attention has been given to social entrepreneurship, which is the basic fundamental of this research: to see the awareness of and factors influencing social entrepreneurship given different variables. This serves as an outlook on whether social entrepreneurship is something our young businessmen consider when putting up or doing a business. This study will tackle their social awareness and environmental responsibility as well.

The study aimed to determine the social entrepreneurship awareness and tendencies of select senior high school students in a private Catholic higher education institution. The research will collect and analyze data using structured survey questions, considering variables such as sex, grade level, strand, and school of origin. The results will contribute to developing a program that will address the level of awareness and tendencies on social entrepreneurship to design school activities aligned with their needs.

METHODS

Research Design

In this study, the research design employed by the researcher is a descriptive correlational approach. A descriptive study describes the features of a population. It collects data to answer questions about what, when, and how specific demographics or groups behave (Childcare and Early Education Research Connections, 2022). In this study, the researcher primarily described the level of awareness and tendencies of senior high school students about social entrepreneurship and whether awareness is a factor of social entrepreneurial tendency. Moreover, correlational research investigates the connection between two or more variables (Bhandari, 2023). The compared variables are generally already present in the group or population. In this study, the researcher measured the relationship between the level of

awareness of social entrepreneurship and the extent of the social entrepreneurial tendencies of the participants.

Participants and Sampling Technique

Stratified sampling is a probability method in which participants are classified according to sex, strand, grade level, and school of origin. The researcher surveyed 296 participants using Cochran's formula for sample size from the University of Negros Occidental-Recoletos Senior High School, Bacolod City. The survey that was administered consisted of questionnaires, including Likert scale questions. The social entrepreneurship survey questionnaire is utilized for this descriptive and correlational research study. Due to the unavailability of standardized instruments, the researcher adhered to a researcher-made survey questionnaire and adopted the proposed competency model of social entrepreneurs by Guritno et al. (2019). The social entrepreneurship survey questionnaire comprises three parts: Part 1 is the demographic of senior high school students, Part 2 is 15 items on the level of awareness of social entrepreneurship, and Part 3 is 15 items on the social entrepreneurial tendencies.

The researcher-made questionnaire was under validation and reliability tests. The instrument was validated by three competent juries with business, entrepreneurship, and finance degrees using a validation instrument developed by Good and Scates (1972). The validity test resulted in a 4.59 mean value, verbally interpreted as "very high." After validation, a reliability test was conducted using Cronbach's alpha. This instrument is highly reliable based on a Cronbach's alpha value of 0.943, which indicates a high level of internal consistency. This suggests that the instruments or methods reliably capture the intended constructs.

The data-gathering process involves securing permission from the university administration of the basic education department to survey senior high school students. The researcher identified the sample size for every strand the survey personally distributed to the participants using stratified sampling. Ethical considerations were followed throughout the research process, ensuring informed consent, confidentiality, and proper disposal of data post-study.

The study's analysis includes descriptive statistics to measure the respondents' overall level of awareness and tendency and comparative and correlational analyses to explore differences and relationships based on variables such as sex, grade level, strand, and school of origin. Descriptive analysis, Mean and Standard Deviation (SD) for the level of awareness, and inferential analysis, T-test for the difference in level of awareness and tendencies, and one-way ANOVA for the strand. Pearson Product-Moment Correlation was utilized to determine the relationship between senior high school students' level of awareness and tendency toward social entrepreneurship.

Ethical principles such as competence, integrity, responsibility, and respect for participants' rights guide the research process. Informed consent will be obtained from participants, with assurances of confidentiality and anonymity regarding the data collected. The research also adheres to social responsibility, ensuring that findings contribute to ethical practices and societal well-being.

RESULTS

The level of awareness on social entrepreneurship of the senior high school students was assessed when taken as a whole and grouped according to sex, grade level, strand, and school of origin. Regarding sex, male students have an average score ($M = 3.84$) with a standard deviation ($SD = 0.61$), indicating a generally high level of awareness with less variation among the scores. This suggests that most male students have a consistent and relatively strong awareness of social entrepreneurship, indicating they may be more uniformly informed or engaged with the concept. Female students, with a slightly lower average score ($M = 3.71$) and a higher standard deviation ($SD = 0.71$), also display a high level of awareness but with more variability in their responses. This implies that while many female students are aware of social entrepreneurship, this group has a broader range of awareness levels. Some female students may be significantly more aware, while others may be less informed than their male counterparts.

The increase in awareness from Grade 11 to Grade 12 suggests that social entrepreneurship education is building effectively as students' progress through school. However, the lower average awareness among Grade 11 students indicates the possibility of enhancing the curriculum or introducing earlier interventions to foster higher awareness at this level, potentially leading to even better outcomes in Grade 12. This is in support of the study. According to Santana-Vega and González-Morales (2020), many schools are incorporating modules on social entrepreneurship, which cover topics like innovation, risk-taking, and market analysis. These programs aim to equip students with the skills to identify and address social issues through entrepreneurial ventures.

Regarding the strand, all groups show a high level of awareness, but there are differences in average scores and variability. TVL (M = 4.15) and ABM (M = 4.08) students demonstrate the highest level of awareness. This suggests that students in these strands, particularly those in vocational or business-oriented programs, may have more direct exposure to social entrepreneurship concepts. For ABM, the focus on business studies likely aligns closely with entrepreneurship topics, which may explain their heightened awareness. While HUMSS students (M = 3.88) also show high awareness, possibly due to their curriculum's focus on social issues and human behavior, which could foster a natural interest in entrepreneurship with a social dimension. Moreover, STEM students (M = 3.7), while also showing high awareness, have the lowest average score among the strands. This could indicate that social entrepreneurship is less directly integrated into STEM subjects, which typically emphasize technical and scientific skills over business or social-oriented topics.

The results suggest that while all strands exhibit a high awareness of social entrepreneurship, students in ABM and TVL are particularly aware, likely due to their studies' practical or business-oriented nature. STEM students, with the lowest average awareness, might benefit from more exposure to entrepreneurial concepts that connect their technical knowledge with social applications. Strengthening entrepreneurship education in STEM could be a valuable step in preparing these students for diverse career paths involving innovation and social impact.

Lastly, in terms of the school of origin, students from private schools have a slightly higher average awareness score (M = 3.81) than government school students (M = 3.73). This difference, while small, suggests that private school students may have marginally greater exposure to or engagement with social entrepreneurship concepts.

Table 1. *Level of awareness on social entrepreneurship of the senior high school students when taken as a whole and when grouped according to sex, grade level, strand, and school of origin*

Variables	n	M	SD	Interpretation
Sex				
Male	186	3.84	0.61	High
Female	110	3.71	0.71	High
Grade Level				
Grade 11	173	3.71	0.64	High
Grade 12	123	3.91	0.65	High
Strand				
ABM	45	4.08	0.7	High
HUMSS	30	3.88	0.52	High
STEM	210	3.7	0.64	High
TVL	11	4.15	0.54	High
School of Origin				
Private	221	3.81	0.66	High
Government	75	3.73	0.62	High
As a whole	296	3.79	0.65	High

Note: 4:50-5.00= VH, 3.50-4.49 = H, 2.50-3.49=L, 1.50-2.49 =L, 1.00-1.49= VL

The level of tendency on social entrepreneurship of the senior high school students was examined when taken as a whole and grouped according to sex, grade level, strand, and school of origin.

The table shows the levels of social entrepreneurship tendencies among senior high school students, categorized by sex, grade level, strand, and school of origin. In terms of sex, both male (n=186, M=3.51, SD=0.64) and female (n=110, M=3.47, SD=0.72) students showed a "Very High" (VH) tendency. While in terms of year level, Grade 11 students (n=173, M=3.37, SD=0.69) had a "Very High" tendency, while Grade 12 students (n=123, M=3.67, SD=0.60) also had a "Very High" tendency, with a higher mean score than Grade 11. In terms of the strand, students in the TVL (n=11, M=3.76, SD=0.60) had the highest mean score among strands, followed closely by the ABM strand (n=45, M=3.72, SD=0.69), indicating a "Very High" tendency across strands. Lastly, in terms of the school of origin, students from private schools (n=221, M=3.52, SD=0.64) showed a slightly higher mean than those from government schools (n=75, M=3.41, SD=0.77), with both groups falling within the "Very High" category. Overall, the average tendency score for the entire group (n=296) was 3.5 (SD=0.67), interpreted as "Very High" in social entrepreneurship tendency.

The results imply that within this age range, age itself may not be a significant factor in determining social entrepreneurial competency levels among respondents. In contrast to the study of Yergeau & Gingras (2019), the high school students have the lowest entrepreneurship competencies scores, while older adults have the highest, with no effect of gender. In coherence to the study of Ratković et al (2022), the age of respondents does not correlate with entrepreneurial competencies, but there are significant differences in competencies based on gender and career choice.

Table 2. *Level of tendency on social entrepreneurship of the senior high school students when taken as a whole and when grouped according to sex, grade level, strand, and school of origin*

Variables	n	M	SD	Interpretation
Sex				
Male	186	3.51	0.64	VH
Female	110	3.47	0.72	VH
Year Level				
Grade 11	173	3.37	0.69	VH
Grade 12	123	3.67	0.60	VH
Strand				
ABM	45	3.72	0.69	VH
HUMSS	30	3.53	0.61	VH
STEM	210	3.43	0.67	VH
TVL	11	3.76	0.60	VH
School of Origin				
Private	221	3.52	0.64	VH
Government	75	3.41	0.77	VH
As a whole	296	3.5	0.67	VH

Note: 4:50-5.00= VH, 3.50-4.49 = H, 2.50-3.49=L, 1.50-2.49 =L, 1.00-1.49= VL

The level of awareness of social entrepreneurship of senior high school students was examined when grouped according to sex, grade level, strand, and school of origin. Anderson-Darling (AD) was utilized to test the normality of the data in terms of the level of awareness. The data was normally distributed in terms of level of awareness (AD = -141.130, p = 1.000).

The independent T-test samples were utilized to determine the significant difference in the level of awareness of social entrepreneurship among senior high school students when grouped according to sex, grade level, and school of origin. The difference was not significant in terms of sex and school of

origin, as the p-values obtained exceeded 0.05. The result shows that respondents, when classified by sex and school of origin, obtained similar levels of awareness of social entrepreneurship. On the other hand, the difference was significant in terms of grade level, p = 0.007*. The result shows that Grade 12 respondents obtained a higher awareness of social entrepreneurship than Grade 11 respondents.

The findings indicate that awareness of social entrepreneurship among senior high school students is consistent across sex and school of origin but shows a significant difference between Grade 11 and Grade 12 students, with Grade 12 students having a higher level of awareness (p = 0.007).

The difference supports the idea that awareness grows as students' progress through high school, highlighting the importance of introducing social entrepreneurship concepts early in the curriculum and reinforcing them throughout the educational journey.

The finding that students, regardless of sex or school of origin, exhibit similar levels of awareness in social entrepreneurship has several implications for educators, policymakers, and program developers. The similarity in awareness levels across both sexes and school types (private and government) suggests that current social entrepreneurship education, resources, and exposure opportunities are likely to reach students broadly and equitably. This indicates that both types of schools provide comparable learning environments or access to information and that there are no significant gender-based barriers in this educational area. For awareness to be similar across sex and school origin, curriculum designers and educators may already be using inclusive approaches that cater effectively to diverse student demographics. This suggests that the materials, teaching methods, or activities resonate across different groups, fostering a shared understanding of social entrepreneurship.

Table 3. *Difference in the level of awareness of social entrepreneurship of senior high school students when grouped according to sex, grade level, and school of origin*

Awareness	Sex		t	df	p
	Male	Female			
	3.84	3.71	1.657	294	0.099
	(0.61)	(0.71)			
	Year Level		t	df	p
	Grade 11	Grade 12			
	3.71	3.91	2.712	294	0.007*
	(0.64)	(0.65)			
	School of Origin		t	df	p
	Private	Government			
	3.81	3.73	0.923	294	0.357
	(0.66)	(0.62)			

Note: The difference in the means is significant when $p<0.05$

The level of tendency on social entrepreneurship of senior high school students when grouped according to sex, grade level, strand, and school of origin. Anderson-Darling (AD) was utilized to test the data's normality in terms of the tendency level. The data was normally distributed in terms of level of awareness (AD = -139.153, p = 1.000).

The independent T-test samples were utilized to determine the significant difference in the tendency toward social entrepreneurship among senior high school students when grouped according to sex, grade level, and school of origin. The difference was not significant in terms of sex and school of origin for p-values obtained exceeded 0.05. The result shows that respondents, when classified by sex and school of origin, obtained similar levels of the tendency for social entrepreneurship. On the other hand,

the difference was significant in terms of year level, p = 0.000*. The result shows that Grade 12 respondents obtained a higher level of tendency for social entrepreneurship than Grade 11 respondents.

The finding that both sex and school of origin do not affect the level of tendency toward social entrepreneurship among senior high school students suggests several implications. Similar levels of social entrepreneurship tendencies across both sexes and school types (private and government) indicate that social entrepreneurship holds a universal appeal. This suggests that students, regardless of gender or school background, are equally motivated by creating a positive social impact. This broad appeal can be a strong foundation for programs that aim to reach and engage a diverse student population.

Since social entrepreneurship tendencies do not vary significantly by sex or school of origin, program developers can continue designing content that appeals broadly. This means avoiding gender-specific themes or focusing exclusively on one type of school context. Instead, they can create programs with themes that resonate across demographics, such as community building, sustainability, and social innovation.

Table 4. *Difference in the level of tendency on social entrepreneurship of senior high school students when grouped according to sex, grade level, and school of origin*

Tendencies	Sex		t	df	p
	Male	Female			
	3.51	3.47	0.593	294	0.554
	(0.64)	(0.72)			
	Year Level		t	df	p
	Grade 11	Grade 12			
	3.37	3.67	3.844	294	0.000*
	(0.69)	(0.60)			
	School of Origin		t	df	p
	Private	Government			
	3.52	3.41	1.227	294	0.221
	(0.64)	(0.77)			

Note: The difference in the means is significant when p<0.05

Anderson-Darling (AD) was utilized to test the normality of the data in terms of the level of awareness. The data was normally distributed in terms of level of awareness (AD = -141.130, p = 1.000).

The one-way analysis of variance was utilized to determine the significant difference in the level of awareness of social entrepreneurship among senior high school students when grouped according to strand. The difference was significant in senior high school students' awareness of social entrepreneurship when grouped according to strand [F (3, 292) = 5.739, p = 0.001*]. The post hoc test revealed that TVL respondents obtained a higher awareness of social entrepreneurship than other respondents.

The significant difference in social entrepreneurship awareness among senior high school students across strands, particularly with TVL (Technical-Vocational-Livelihood) students exhibiting a higher level of awareness than their peers, has several implications. The higher awareness among TVL students suggests that social entrepreneurship aligns closely with their strand's hands-on, applied nature. TVL

programs often involve practical skills in home economics, tourism, or the hotel and restaurant industry, where students may naturally encounter concepts relevant to social entrepreneurship, such as community needs, problem-solving, and resource management.

Hence, students manifest a low awareness level, with only 7% awareness of social entrepreneurship. In coherence to the study, a report published by Kickul & Lyins (2012), there is a growing interest and engagement of the younger population in social entrepreneurship, particularly among the youth. Students in other strands (e.g., ABM, STEM, HUMSS) with lower awareness levels may need to integrate social entrepreneurship topics more explicitly. Schools could consider embedding social impact principles in subjects that align with each strand's focus, such as ethics in STEM or sustainability in ABM (Accountancy, Business, and Management).

Table 5. *Difference in the level of awareness of social entrepreneurship of senior high school students when taken as a whole and when grouped according to the strand*

Strand	M	F	df	p
ABM	4.08ab	5.739	3	0.001*
	(0.70)		292	
HUMSS	3.88ab			
	(0.52)			
STEM	3.70a			
	(0.64)			
TVL	4.15b			
	(0.54)			

Note: The difference in the means is significant when $p \leq 0.05$, which means that sharing a letter was not significantly different

Anderson-Darling (AD) was utilized to test the data's normality in terms of tendency level. The data was normally distributed in terms of level of awareness (AD = -139.153, p = 1.000).

The one-way analysis of variance was utilized to determine the significant difference in the level of tendency toward social entrepreneurship among senior high school students when grouped according to strand. The difference was significant in the level of tendency on social entrepreneurship of senior high school students when grouped according to strand [F (3, 292) = 3.078, p = 0.028*]. The post hoc test revealed that TVL respondents obtained a higher tendency for social entrepreneurship than other respondents.

The finding that TVL (Technical-Vocational-Livelihood) students demonstrate a significantly higher tendency toward social entrepreneurship than other strands implies that the TVL curriculum typically involves practical, hands-on learning experiences closely tied to community needs, such as technical skills in agriculture, technology, and trade. These experiences may cultivate a stronger inclination toward social entrepreneurship by emphasizing the impact of one's skills on community well-being and social issues.

Table 6. *Difference in the level of tendency on social entrepreneurship of senior high school students when taken as a whole and when grouped according to strand*

Strand	M	F	df	p
ABM	3.72b	3.078	3	0.028*
	(0.69)		292	
HUMSS	3.53ab			
	(0.61)			
STEM	3.43a			
	(0.67)			
TVL	3.76ab			
	(0.60)			

Note: The difference in the means is significant when $p \leq 0.05$, which means that sharing a letter was not significantly different

The Pearson Product-Moment Correlation was utilized to determine the relationship between senior high school student's level of awareness and tendency toward social entrepreneurship. The relationship was significant between the level of awareness and level of tendency on social entrepreneurship of senior high school students, $p = 0.000$*. There was a strong positive relationship ($r = 0.608$) between senior high school students' level of awareness and tendency toward social entrepreneurship.

The strong positive correlation ($r = 0.608$) between the level of awareness and tendency toward social entrepreneurship among senior high school students suggests that as students become more aware of social entrepreneurship, their inclination or tendency to engage in it increases.

The strong positive relationship indicates that increasing students' awareness of social entrepreneurship will likely foster a greater tendency or motivation to participate in social impact initiatives. This suggests that awareness-building efforts, such as introducing foundational knowledge on social entrepreneurship and showcasing real-life examples, are critical for encouraging students to pursue social entrepreneurship.

Since awareness directly impacts tendency, introducing social entrepreneurship topics at earlier stages in the curriculum could have a long-term positive effect. By building awareness gradually, students may develop a natural inclination toward social entrepreneurship by reaching senior high school. According to Liu eSocial, entrepreneurial education is recognized as important for fostering entrepreneurial intention and equipping students with the necessary competencies (Liu et al., 2018).

Table 7. *Relationship between the level of awareness and level of tendency on social entrepreneurship of senior high school students*

Variable			r	df	p
Level of Awareness	x	Level of Tendency	0.608	294	0.000*

Note: The relationship is significant when $p \leq 0.05$

CONCLUSION

The study highlights that students generally exhibit a high level of awareness of social entrepreneurship and a very high level of social entrepreneurship tendency. These findings suggest that the students understand social entrepreneurship concepts relevant to their demographics and effectively apply this knowledge in their daily lives.

The level of awareness of social entrepreneurship among senior high school students shows a statistically significant difference when grouped according to grade level but not when grouped

according to sex or school of origin. These findings suggest that exposure or experience gained over time in the senior high school program may enhance students' awareness of social entrepreneurship, while sex and school background are not influential factors. Grade level, possibly linked to maturity or increased academic exposure, plays a significant role in shaping students' entrepreneurial tendencies, while sex and type of school do not.

The awareness levels of ABM and HUMSS students did not significantly differ from each other, as denoted by the shared superscript "ab." However, both strands had significantly higher awareness than STEM, and the TVL strand showed significantly higher awareness than STEM and a unique position relative to ABM. These findings suggest that students' academic focus influences their exposure to or understanding of social entrepreneurship, with practical or business-oriented strands like TVL and ABM showing greater awareness. ABM students significantly differed from STEM students, as indicated by the distinct superscripts (a and b). In contrast, the tendencies of HUMSS and TVL students were not significantly different from the other strands. These results suggest that students in strands with a stronger emphasis on business, entrepreneurship, or applied skills—such as ABM and TVL—tend to be more inclined toward engaging in social entrepreneurship than those in more academic or theoretical fields like STEM.

The level of awareness and the level of tendency toward social entrepreneurship among senior high school students have a moderate to strong positive correlation. This suggests that as students' awareness of social entrepreneurship increases, their tendency to engage in or show interest in social entrepreneurial activities also increases. This highlights the critical role that awareness plays in shaping students' inclinations toward social entrepreneurship, emphasizing the importance of educational efforts that enhance awareness to foster greater entrepreneurial involvement.

In conclusion, the study underscores the positive outcomes associated with students who demonstrate a high level of awareness and a very high level of social entrepreneurship tendency. These findings emphasize the importance of continued research into students' social entrepreneurship to inform better entrepreneurial education programs aimed at fostering social and responsible student entrepreneurs.

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The Role of Social Media in College Decision-Making Process: The Divine Word College of Legazpi Experience

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ABSTRACT

This study was conducted to understand how students use social media to make college decisions. The findings of the study are vital to intensify DWCL's social media marketing, making it more persuasive to attract enrollees. This study will offer better understanding of the social media landscape to connect with prospective clientele. A survey in Google form was administered at the end of the first semester, school year 2024-2025. From 921 first year students, 698 participated, recording 75.80 % retrieval rate. Results showed that Facebook emerged as the topmost social media platform used by the respondents (94.3%) while "*photos and videos of campus life"* and *"information about academic programs, extracurricular activities, and campus culture"* were the top factors that influenced the students' choice of college to enroll in. Majority of the respondents (66.76%) cited various social media factors that influenced them to choose DWCL while 14.47% revealed non-social media factors, such as quality education. Essentially, social media platforms are dominant media-sources used by the students in determining which institution to enroll in. Thus, vigorous social media marketing strategies need to be implemented alongside sustaining the institution's good public image. Personal interviews from the alumni members and staff are recommended to be added in Divine Word College of Legazpi (DWCL) social media page. The DWCL social media platforms empower prospective students to make informed choices about their higher education journey.

Keywords: College Decision-Making, Social Media, Student Recruitment

INTRODUCTION

The explosive growth of social media causes changes in so many ways, for individuals and society. Various agencies mostly rely now on digital promotion and raise concerns about the decreasing popularity of in person interaction. Social media platforms facilitate the creation and sharing of user-generated content online.

A television company successfully used an integrated digital marketing strategy to promote its products. The study, based on a review of relevant literature, found the strategy's planning, implementation, and evaluation were well-executed and effective (Cristina et al, 2019). As such, a successful digital marketing strategy is crucial for organizational success. The process for reaching out to clients through various digital channels and organizations can generate more revenue and achieve higher conversion rates (Labausa et al, 2023).

Social media platforms have gained immense popularity among college students as avenues for connecting with peers, businesses, and their interests (Ternes, 2013). The digital landscape has likewise transformed how prospective students navigate the college search process. From the customary brochures and guides, students now rely heavily on social media to search and research, presenting tremendous opportunities and challenges for colleges and universities. Another revealed a 700% increase in social media usage among young American adults aged 18-29 since 2005, fueled by smartphone technology (Perrin, 2018). This trend extends to prospective students, creating fertile ground for colleges to engage and connect. Studies have highlighted the social media's ability to attract and enroll students, build brand loyalty, and inform decision-making (Kuzma and Wright, 2013, Constantinides and Stagno, 2012).

These studies underscore the potential of social media marketing in attracting enrollment for higher education. Barnett & Das (2013) and Fishbein (2022) reinforced the importance of social media as a key tool in the students' college search process, to gather information, connect with current students and alumni, and ultimately make informed choices in regard to course programs and higher education institution to enroll in.

Sandvig (2016) explored the potential benefits and drawbacks of social media in higher education. The findings of the online survey completed by 2,844 incoming freshmen at a medium-sized public university in the US showed that majority of respondents (56%) found social media to be helpful in their college decision-making process. Yilmaz's (2016) study revealed that there were five key motivating factors driving customers to follow brands: conversation, brand affiliation, seeking opportunities, entertainment, and investigation. Brand affiliation and the potential for gaining information about course programs in college, cost, discounts among others, emerged as the most significant motivators. Another study emphasized the need for integrating customer reviews in social media to develop a differentiated service and marketing model. This model suggests that value creation for customers be prioritized, thereby fostering loyalty (Ramanathan, et al., 2017).

Social media platforms therefore can present a powerful tool for academic institutions to engage communication with prospective students, current students and with the community. By effectively utilizing social media platforms, academic institutions can achieve various goals such as increase in awareness and visibility of the page.

The Office of External Relation (OER) Marketing and Communication unit is responsible for communicating regularly and effectively with the DWCL's major constituents. One of the OER's initiatives is to conduct social marketing to aggressively promote the institution's services and impact programs (OER Manual of Operations, 2018-2022).

To improve the marketing scheme of the DWCL, the OER benchmarked various digital marketing programs to identify practices that DWCL could adopt to improve the digital marketing strategies. The

good practice that emerged was *"intensification of school campaign through social media."* The reliance on social media underscores the need for DWCL to develop a robust online presence.

Theoretical Background

The Uses and Gratifications Theory (UGT) is a communication theory that suggests that people use media to satisfy their needs and wants. The theory was developed in the 1940s by Katz, Blumler, and Gurevitch, and it has been used to study a variety of media, including television, radio, and the internet. In the context of this study, prospective students may use social media to satisfy a variety of needs and wants, including *information, personal identity, social interaction, entertainment and personal control.* These varieties of wants, from connecting with other prospective students and current students who share their interests and goals, to relax and escape from stresses, and even following their favorite celebrities and influencers, searching for what and who can help them to stay motivated and positive during challenging times, are considered motivators to rely on social media. Moreover, students typically use social media to search for different colleges, compare their options, and get feedback from others. This can help them to feel more confident about their college decision and to make the best choice for themselves.

Overall, the Uses and Gratifications Theory provided a useful framework for understanding how prospective students use social media in the college decision-making process.

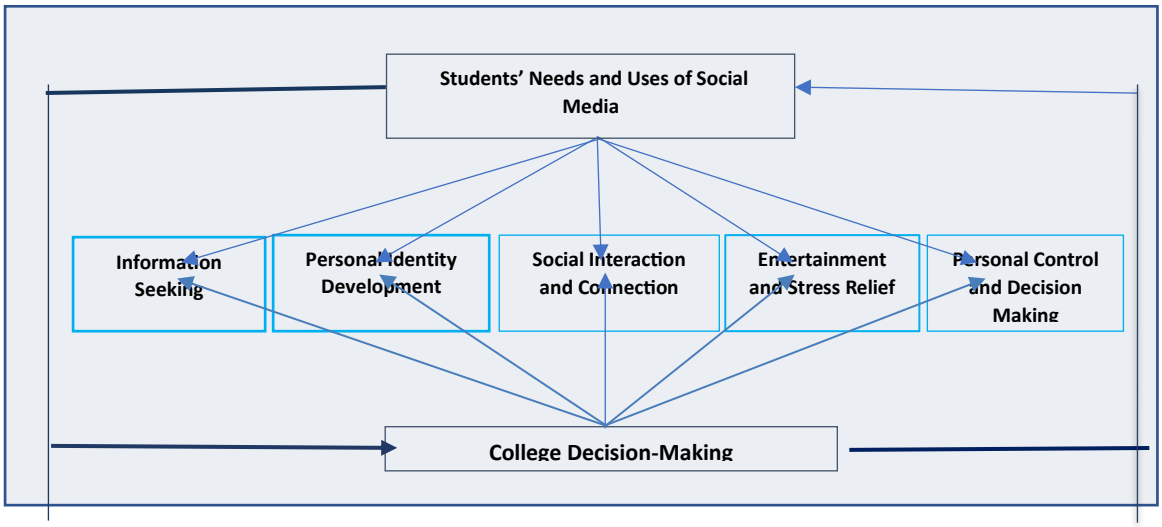

Figure 1. Theoretical Framework

Statement of the Problem

This study sought answers to following research questions:

1. What social media information sources had the DWCL first year students used to gather information on a college to enroll in?
2. What type of social media content had the students found most helpful when choosing a college to attend?
3. How had social media influence the way prospective students evaluate colleges?
4. How has visual content shared in DWCL's social media platforms influence students' decision to choose DWCL?
5. What recommendations can be made for a more effective social media management at DWCL?

METHODS

Research Design

Employing a quantitative approach in this study allowed for the collection of numerical data and the statistical analysis of frequencies percentage and rankings, which provided a clear and objective overview of the findings.

Research Instrument
A five-part self-made survey questionnaire with pre-determined indicators was utilized in this study. The first part gathered the sources of information students frequently used. The subsequent parts gathered the type of social media content most helpful to the students when choosing a college to attend; how social media influenced prospective students' evaluation of colleges; how visual content shared on DWCL's social media platforms influenced decision to choose DWCL; and what recommendations could be made for a more effective DWCLs' social media platform. The survey instrument was validated by experts and pilot-tested on 10 student assistants from various offices. A dry run of the Google Form was conducted to ensure data would be collected efficiently.

Respondents of the Study
The respondents of the study were the officially enrolled first year students of the college department for SY 2024-2025. The Registrars' Office recorded a total of 921 enrollees distributed across the various schools of the institution: School of Business, Management and Accountancy (SBMA), School of Education, Arts and Sciences (SEAS), School of Engineering and Computer Studies (SOECS), School of Hospitality Management (SHOM) and School of Nursing (SON).

Table 1. Number of student respondents

Department	Population	Frequency	Percentage	Percentage of survey population
SBMA	235	207	88.0	30
SEAS	113	74	65.5	11
SOECS	291	162	55.7	23
SHOM	101	79	78.2	11
SON	181	176	97.2	25
TOTAL	921	698	75.80	100%

Data shows the proportion of the respondents who participated in the online survey. The highest number of participants came from SON (176) while the least numbers of participants came from SEAS (74) and SHOM (79). Of the 921enrollees, 698 participated in the survey recording 75.80 % retrieval rate. The non-participation of some 1st year students in the survey is due to the delayed completion of their clearance procedure since some students had their clearance signing in the early week of January.

Data Collection
The data were collected through an online survey using Google Forms, administered through the Student Affairs Office during the clearance signing process at the end of the first semester, SY 2024-2025. Those clearances signed early in January instead at the end of the semester in December, were excluded.

Data analysis
To draw meaningful conclusions, the researchers utilized frequency distributions, percentage and ranking. These techniques determined which social media platforms used in the information gathering, college selection criteria, and how the social media platforms influenced their decision to choose DWCL.

RESULTS AND DISCUSSION

This section presents the results, in chronological organization of the objectives, followed immediately by the discussion. The quantitative data are presented in tables to facilitate interpretation while collected data from the open-ended question are presented verbatim, that is, directly quoted from the respondents.

1. Social Media Information Sources Used by DWCL First Year Students

Table 2. Active Social Media Account Used

Media Information sources	Frequency	Rank
Facebook	658	1st
Instagram	444	2nd
Others		
Telegram	148	3rd
Tiktok	391	1st
x/twitter	80	5th
Discord, Reddit	37	6th
Tumblr	3	7th
Youtube	113	4th
Messenger	165	2nd

Table 2 shows the multiple platforms students used to source information. Result shows that Facebook emerged as the most used platform. This means that the high majority of the respondents (658) rely on Facebook (rank 1) as their source of information. Instagram was the second platform most used (444) while more than half of the respondents (391) used Tiktok.

Other platforms mentioned by the students are listed under "Others" in Table 2. Presumably, these less frequently used platforms were used for specific and specialized purposes. Data revealed that about 391 respondents used Tiktok. This finding aligned with a February 2022 to January 2024 survey, which reported a significant increase in TikTok users in the Philippines, reaching 49 million (Balita, 2024).

The result shows that students actively utilize it to gather information, connect with current students and alumni, and ultimately make informed choices. The findings conform to Sandvig's (2016) study of 2,844 U.S. freshmen, where Facebook also emerged as the dominant platform. The prior study found that social media played a significant role in the college decision-making process for 56% of respondents, and 76.5% were connected to the university's Facebook groups.

Frequency of social media engagement by students.

The students were asked how frequently they check and visit their social media account. Interestingly, nearly half of the respondents who answered claimed that they do so constantly (336 or 48.1%), while some101 (14.5%) visit their account a few times a day.

Table 3. Social Media Engagement

Indicators	Frequency	Percentage
Once a day	101	14
Few times a day	284	41
Constantly	313	45
TOTAL	698	100

The results suggest that frequent-user visits indicate strong platform engagement. For targeted marketing scheme, this could translate to active data user base. However, while acknowledging the engaging aspects of social media, this may suggest the need to equip the DWCL community to be more creative in sharing schools' information and visual content. With the approval of the social media Policy for the DWCL (Memo # 09, 2024) the institution is moving towards an effective and responsible utilization of social media.

2. Social Media Content Found Most Useful

Students were to select multiple answers from a list of predetermined indicators that influenced their decision-making. Table 4 presents the identified engaging and influential social media content that informs college choice.

According to the majority of respondents, 70.49%, *"photos and videos of campus life"* is the top influencing and most engaging factors when searching for college/universities.

Table 4. Most Engaging/Influencing Content on Social Media

Indicators	Frequency	Rank
Photos and videos of campus life.	492	1st
Testimonials from current students and alumni.	141	5th
Information about academic programs, extracurricular activities, and campus culture.	459	2nd
Events and happenings on campus.	419	3rd
Discounts and special offers.	154	4th
6. Others. Please specify	53	6th

multiple responses

Indicators "information about academic programs, extracurricular activities, and campus culture" ranked 2nd chosen by 65.69% respondents. These denotes that aside from photos and videos, students can make more informed decisions which institution to attend by examining the academic offerings, extracurricular opportunities, and campus culture of an institution featured in Higher Education Institution's (HEIs) social media account. This result corresponds to the findings of Jacobs' study (2013). His paper contends that social media can positively influence student engagement within the college setting. The study reiterated that social media can be engaging and can gain the highest level of interaction by incorporating images and videos into the content.

Meanwhile, *"events and happenings on the campus"* ranked 3rd. This suggests that various content in the social media are considered influencing factor by more than half (60.03%) of the respondents. Visibility of the schools' activities in social media page is also a great influencing factor for school decision making. Study of Tenres (2013) proposed that HEIs can utilize these platforms to explore innovative approaches for engaging students in campus activities. In terms of marketing scheme, this implies that the presence of a strong social media can attract prospective students and increase enrollment rates.

III. Social Media and Students' Evaluation of College to Enroll In

How social media contributes to a more realistic understanding of college life is crucial for both prospective students and higher education institutions. This sub-section explores the key ways in which social media platforms contribute to student respondents' evaluation of college to enroll in.

The data shows that from among the indicators, 464 (1st) and 351 respondents (2nd) identified that "*the different colleges and their programs* and "*a more realistic view of college life"* contributes most in students' evaluation of college to enroll in. Emphasizing these top indicators in school's social media platform implies that featuring these valuable insights could reduce uncertainty among students, and could foster prospective enrollees to make informed choices about their higher education journey.

Table 5. Students' Evaluation of College to Enroll In

N=698

Indicators	Frequency	Rank
The different colleges and their programs.	464	1st
more realistic view of college life.	351	2nd
Connections with current students and alumni.	221	4th

Updated news and events.	327	3rd
Video presentation and quality of its content.	138	5th
Others. Please specify	29	6th

multiple responses

The study of Labausa et al. (2023) suggested that universities should maintain a positive social media presence by utilizing social media platforms and retargeting campaigns to increase students' awareness of university programs and services.

IV. Visual Content's Influence on College Choice

This section presents responses on the open-ended question "*How does visual content shared on DWCL's social media platforms influence decision to choose DWCL".* To generate valuable findings responses were analyzed thematically. The responses were grouped into two themes; social media and non-social media, since some of the respondents said social media played no role in choosing DWCL for their college, while numbers of them claimed that social media does.
Under social media medium, the respondents (66.76%) shared their opinions on how visual content influenced their decision to choose DWCL. The generated sub-themes are the following; (1) through engaging visual content (251); (2) general feedback (197); (3) through the showcased school events and programs; and (4) the featured facilities and resources (7).

Social Media Medium

Under sub-theme *"through engaging visual content"* these insights emerged:

1) "Though it was not the sole deciding factor, the way they showcased student life caught my attention. The diversity of the student body was really apparent. Seeing that kind of vibrancy made me feel it would be a welcoming and engaging environment."
2) "Visual content gave better sense of the campus atmosphere than just reading the brochure ever could."
3) "The visual of the DWCL's campuses, along with the activities and vibrant student life shared on social media, made me feel connected and excited about being part of such a dynamic community, influencing my decision to choose DWCL.
4) "Seeing images and videos of modern facilities, engaging events, and testimonial from current students and other alumni gave me a glimpse of the dynamic environment and quality education DWCL offers."
5) "The visual content influenced my decision because it showcased the different sides and perspectives of the school community."
6) "When I saw the social media of the DWCL, it made me think to choose this school.
7) "The visual content helps me to identify what course I should take. Information is accurate."
8) "Whatever you see on their social media page is exactly what you get when you enter DWCL. When I have experienced life as a Divinian, I literally thought "I really chose the best quality of education."

For the second theme *"general feedback*," students shared particular words they used in describing the social media content of the DWCL. Words of praises mentioned were "excellent, relevant, engaging, and great visual attractive", thus, influenced them to choose DWCL for their college.

Under the third theme "*through the showcased events and programs,"* these concepts were shared by the respondents:

1) "The visual content on DWCL's social media gave me a clear glimpse of the campus life, facilities, and values, which aligned with what I am looking for."
2) "It helped me see DWCL as a supportive environment where I could grow personally and academically."
3) "DWCL's social media platforms influence my decision to choose DWCL through posting various programs, activities and events. I was thrilled."

4) “The post about the environment of DWCL seems they're touring us around DWCL virtually is very helpful. It made me aware of what kind of environment DWCL has.”
5) “DWCL's engaging social media content, featuring school events, extracurricular activities and informative visuals about the school and courses they offer, influenced my decision to choose DWCL.”
6) Seeing posts about student achievements and activities made me feel that DWCL is a place where I could grow.”
7) “I first check about the DWCL tiktok if they have activities posted by students about their experiences at school. I saw some but was limited, presumably because of the school's guidelines. Also, DWCL social media helped because I looked first at their posts about the passing rate of the nursing course in the board exam to see how good their teaching is.”

The last theme *“facilities and resources,”* concepts shared are:

1) “I’ve decided to choose DWCL since I was really interested and I am excited about the events and the facilities of the school”.
2) “The photos and videos on DWCL’s social media really helped me choose DWCL”.

These generated themes signify that by incorporating various contents about the institution, with emphasis on event, program and facilities, the DWCL social media page is a powerful tool for an effective engagement. Quality visual presentation, honest and truthful content about the institution will promote better understanding and gain trust among clientele.

Non-social media medium

Under this medium, four sub-themes were generated from the respondents’ answers (14.47%) which includes; (1) Quality education; (2) Word of mouth; (3) Preferred school; (4) Community and values.

For theme, *“quality education”,* respondents shared various insights how this influenced their decision.

1) “Honestly, I did not look on visual content to choose DWCL but I look at the quality of education on my chosen program. The visual content also influenced my decision that adds up to my reason why I choose DWCL.”
2) “DWCL's teaching quality impressed me with their excellent teaching standards, especially after hearing my sister's positive feedback.”
3) “The quality of teaching and education, also, the facilities being showed.”
4) “I don't check on visuals I usually check the quality of education.”

Under the second theme *“word of mouth”,* these were generated from their insights.

1) “My family suggested that choosing DWCL is good since my sisters and brother also graduated in DWCL. It was a pure influence for me to enter DWCL. The visual content helps me to identify what course should I take, the information is accurate.”
2) “Not much of the social media influence, my friends told me about the school’s quality education.”
3) “My approach in choosing a learning institution is through testimonies, rather than relying on social media.”

The third theme is *“preferred school”.* In this theme, respondents shared their personal reason for choosing DWCL.

1) “I chose DWCL because of its excellence, since the school already established its name in Albay even before without the use of social media.
2) “It didn't actually influence me, because I really want to enroll in DWCL, but it boosted my decision.”
3) “It was my dream school so i won't pay so much attention in visuals.”

The last theme is *"community and values."* in this theme, respondents mentioned that "i don't really like the overall visual of the page but because it is catholic school my family and I decided to apply in DWCL".

These results implied that quality education is a prime reason that influences their decision in choosing DWCL for their college, though the presence of social media was used as reference. This signifies that focusing on providing quality education enhanced the reputation of the institution, thereby establishing a strong competitive advantage. However, about 18.77% (131) of the respondents did not indicate answers why they chose DWCL. Maybe due to some personal reason they opted not to share their insights.

Table 6 presents the summary findings of the survey and the its key themes along with the corresponding percentile distribution.

Table 6. Influencing Medium in Choosing DWCL

Category	Theme	Frequency	Percentage
Social Media medium	1. Through engaging visual content	251	36
	2. General feedback	197	28
	3. Through the showcased school events and programs	11	1.6
	4. Featured facilities and resources	7	1
Sub-total			**67**
Non-social medium	1. Quality education	54	8
	2. Word of mouth	33	5
	3. Preferred school	11	2
	4. Community and values	3	0.4
Sub-total			**15**
No indicated response		131	**19**
TOTAL		**698**	**101**

N.B. Exceed 100% due to rounding error.

V. Recommendations for a More Effective Social Media Engagement

From a pre-determined list, students were asked to choose their recommendation/s for a more effective DWCLs' social media platform.

Table 7. Recommendations for a more effective college/university search process

Indicators	Frequency	Percentage	Rank
Be consistent	537	77	1st
Use visuals to engage more audience	333	48	2nd
Be more personal	199	29	4th
Engage with the audience	329	47	3rd
Use social media analytics	170	29	5th
Use hashtags	99	14	7.5
Run contests and giveaways	91	13	9th
Sponsor student ambassadors	95	14	8th
Intensify the social media advertising	108	16	6th
Partner with relevant influencers or communities	99	14	7.5

As reflected in table 7, indicator with a highest frequency of 537 (77.2%) made *"be consistent"* ranked 1st while indicator *"use visuals to engage more audience*" ranked 2nd (47.8%), followed

closely by indicator "*engage with the audience"* with 329 responses (47.3%).
Aside from the pre-determined list, the respondents were asked other recommendations for more effective social media engagement. Responses have been coded and analyzed thematically. Reflected in table 8 are the generated themes included; "feature face to face interviews with the alumni and staff of the school", "be more social" "be more competitive", and "be honest how well the institution performs", respectively. This implies that sharing testimonies from DWCL alumni and support staff can highly motivate longer viewing time. Additionally, the testimonies and stories shared by the alumni members can significantly build trust and inspire prospect students.

Table 8. Other Recommendations for a More Effective College/University Search Process

Indicators	Frequency	Percentage	Rank
Face to face interviews with the alumni and staff of the school	281	40	1st
Be more social	190	27	2nd
Be more competitive	109	16	4th
Be more honest how well the institution performs	153	22	3rd

Moreover, "*being more social"* could mean engaging with others' posts. It could also mean that students encourage for an increase of interaction or social engagement, eventually may lead to better understanding, and can facilitate sharing of knowledge. A study of Dessart (2017) surveyed 48 FB pages, spanning 9 product categories and 448 consumers. The result revealed high social media engagement increases brand relationships significantly affecting brand trust, commitment and loyalty. On the other hand, Ines and Tolentino (2024) explored the influence of social media on brand choices among college of business students at a private HEI in the Philippine. Key findings showed that "*social listening and social search significantly affect consumer perceptions, aiding in product discovery and understanding brand attributes."* Further, the study revealed that social media strongly influenced purchasing decisions, underscores the effectiveness of social listening tools in providing valuable insights, brand perception, and earning consumer loyalty.

CONCLUSION AND RECOMMENDATION

Conclusion

Based from results, Facebook emerged as the most social media platform used by the respondents. Aside from quality education, featured contents with emphasis on program offerings, college events life and activities are a powerful factor for a higher and effective engagement. High quality visual presentation, honest and truthful content will gain trust among clientele and a stronger influencing factor for college decision making. The DWCL social media platforms empower prospective students to make informed and confident choices about their higher education journey.

Recommendation

This study proposed the following recommendations to further enhance the effectiveness of the DWCL social media platform: (1) improve the quality of social media content; (2) sustain and innovate posting strategies; (3) feature diverse content emphasizing program offerings, college events and activities; (4) include face to face interview with DWCL staff/faculty and alumni of their stories and experiences (5) invest high end technical equipment for producing high quality visual content; (6) organize technical media team to handle and maintain the quality of social media page; and (7) an additional social media platform such as Tiktok for wider dissemination of information and higher viewer base can be created.

Limitation

The study was conducted exclusively at DWCL focusing on a specific population of students. The findings may not be fully generalizable to all students and to other academic institutions.

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From Isolation to Connection: Exploring Social Experiences of Deaf College Students

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ABSTRACT

The study explored the social experiences of deaf college students currently enrolled at the University of Science and Technology of Southern Philippines (USTP), aiming to gain a deeper understanding of their interpersonal interactions, sense of belonging, and participation within the university community. Four key themes were identified in the in-depth interviews and focus group discussions of deaf students: communication barriers, social isolation, efforts to connect, and a limited support system. One of the most significant problems identified was communication barriers, where hearing peers lack the skills to communicate effectively with deaf students using natural gestures, homemade signs, or basic sign language. Deaf students experience social isolation as they are left out of group discussions, social activities, and in-class conversations. Even in the face of continued obstacles, deaf students made efforts to connect and attempt to open doors to friendship. However, hearing peers were hesitant to initiate communication through signs because they were not comfortable with it. The availability of consistent interpreter services, trained faculty members, and accessible campus organizations remained scarce for deaf students. Hence, deaf students shared that building a sense of belonging often starts with small, meaningful efforts from themselves and those around them. Their efforts to connect were also key to creating a sense of community. To promote meaningful inclusion and improve the social experiences of deaf students, it is highly recommended to strengthen communication access, promote deaf awareness and sensitivity, enhance peer engagement, improve institutional support, and recognize student efforts.

Keywords: Deaf Students, Social Experiences, Inclusive Education, Sign Language Communication

INTRODUCTION

In higher education, the social experience of students is as important as academic success. For deaf students, navigating social life in a typically hearing environment brings unique challenges that affect their ability to connect with peers, access information, and fully participate in campus life (da Silva et al., 2023). Despite progress in inclusive education, deaf students still face communication barriers, social isolation, difficulties in making friends, and limited access to support systems (Hendry et al, 2021).

The experiences of deaf students are often influenced not just by their hearing status, but also by the social and institutional settings that emphasize spoken language and listening. This creates a significant challenge. Deaf students may feel isolated, rejected, or misunderstood. They often feel discriminated against and hesitate to ask questions in class, as their hearing classmates frequently perceive them as “not able” (Bitaaba, 2022), which impacts their self-esteem (Alshutwi et al., 2020).

These experiences highlight the strong relationship that exists between social interactions and emotional development as seen through the prism of socio-emotional theory. According to the theory, meaningful relationships and social engagement help to shape a student’s sense of self-worth, belonging, and emotional health. Deaf students' socioemotional development may be impeded when they face social exclusion or communication barriers, which can result in feelings of loneliness, anxiety, or low self-esteem (Anaba, 2023). On the other hand, deaf students' emotional resilience, sense of self, and sense of belonging in the academic community can all be improved by fostering inclusive interactions and supportive peer relationships.

However, hearing peers often lack the awareness or communication skills needed to connect meaningfully with their deaf classmates. This can lead to social exclusion and uncomfortable interactions (Anaba, 2023). The lack of cultural and communication skills significantly contributes to the isolation that deaf students face, both in and out of the classroom (Ma et al., 2022). To address this gap, a concerted effort is needed to promote deaf awareness, inclusive practices, and mutual respect in the academic community.

Moreover, peer relationships are key indicators of the academic and social life of deaf students. These relationships matter even more during adolescence. Deaf students often spend a lot of time with their peers. They tend to share personal thoughts more with friends than with parents. They also look to friends for feedback, which helps shape their sense of self (Terleksti et al., 2020). This time can be particularly tough for deaf students since their hearing loss can limit communication and access to information and peers (Zhang et al., 2023).

One longitudinal study found that, despite having similar social skills and behaviors to hearing students, deaf students felt less secure than their hearing peers and had more trouble making friends (Terleksti et al., 2020). They dealt with more issues with peers and had fewer friendships than their hearing classmates. A similar analysis of interviews with parents, teachers, and deaf students shows that they worried about peer relationships and struggled with their self-image (Tsou et al., 2021).

Compared to their hearing peers, deaf students who use sign language are less likely to be picked as friends by hearing classmates (Terleksti et al., 2020). They often have no friends (Todorov et al., 2022) and are generally less popular (Montiegel, 2023).

An earlier study found that students who use sign language may have more issues with peers when attending schools that focus on oral communication (Moustakas, 1994).

Furthermore, deaf students often have limited access to support systems. This can greatly affect their academic success, social integration, and overall well-being (Zhang et al., 2023). One major issue is the lack of sign language interpreters that the university should provide. Many parents end up paying for interpreters, which creates financial pressure for them. Scheduling and availability often do not

match students' class hours. Additionally, interpreter services are typically restricted, limited to classroom settings, and exclude extracurricular or social events. There are a few captioning and transcription services available.

Often, faculty and staff lack the training to communicate effectively with deaf students or to offer inclusive instruction. Peer support and mentoring were limited, making it hard for deaf students to connect with peers or find deaf role models and mentors in the college community. Extracurricular activities and campus life may be inaccessible, which can make deaf students feel excluded from the full college experience. Lastly, there is a lack of awareness and sensitivity in the campus community. Hearing peers and faculty may not fully understand deafness, which can lead to unintentional exclusion or communication problems and difficulties.

Hence, this study explored the experiences of deaf college students as they navigate the challenges of forming social relationships, overcoming loneliness, and fostering a sense of belonging within a predominantly hearing academic setting.

Statement of the Problem

This study aimed to explore the social experiences of deaf college students as they navigate life in a predominantly hearing academic world. It aims to understand how they build relationships, seek belonging, and engage with the university community despite the systemic and interpersonal challenges they face. By centering the voices of deaf students, this research hopes to offer deeper insights into the ways institutions can foster more inclusive, supportive, and socially enriching environments.

1. What are the social experiences of deaf college students within a predominantly hearing academic environment?
2. How do deaf students navigate communication and interaction with their hearing peers and instructors?
3. What challenges do deaf students encounter in building social relationships in college?
4. What strategies or forms of support help deaf students feel a sense of belonging and connection within the university community?
5. How can institutions enhance social inclusion and cultural understanding of deaf students in higher education settings?

METHODOLOGY

Research Design

This study employed (Kermit, 2019) transcendental phenomenological method to explore and understand the social experiences of deaf college students. Phenomenology, as a qualitative approach, is particularly suited to uncovering the essence of individual experiences as perceived by the participants themselves. Moustakas emphasized the importance of describing what participants experience (textural description) and how they experience it (structural description), aiming to reach the essence of the phenomenon. His method involves several key steps, each crucial for analyzing the narratives of deaf students as they move from feelings of isolation toward connection within the college environment.

Participants

There were ten deaf students enrolled at the university, where the majority of students and faculty members were hearing. Purposive sampling was employed to select participants who had meaningful social interactions within the university setting. All participants were deaf and communicated

primarily through sign language and other alternative communication modes, ensuring rich, relevant insights into their lived social experiences.

Data Collection Methods

Participants were interviewed using open-ended questions. This approach allowed them to share their experiences freely. The researcher served as a sign language interpreter in the participant's preferred communication modes, either Filipino Sign or American Sign Language. Additionally, a group discussion was held to identify common themes and promote deeper reflections through interaction with peers. With the participant's consent, the researcher recorded the interviews and took notes during both the interviews and group discussions. This helped capture non-verbal cues, emotional expressions, and context. The data were analyzed using thematic analysis, which includes transcribing and translating (from sign language to text), getting familiar with the data, generating initial codes, searching for themes, and writing the findings along with supporting quotes. The researcher ensured trustworthiness by conducting member checking, peer debriefing, and keeping a reflective journal throughout the study.

RESULTS AND FINDINGS

Emerging Themes and Analysis

Theme 1: "They Do Not Understand Me" – Communication as a Barrier

Communication remains the most significant challenge for deaf college students. Despite the presence of interpreters, participants reported persistent feelings of exclusion, especially when classmates avoided interacting with them or refused to make simple adjustments, such as using gestures or written communication. The side comments of the deaf.

"It's hard to talk to my classmates. Most of them don't know sign language." - #1deaf
"I just smile and nod, but I don't understand what they're saying." -#2deaf
"Sometimes they avoid talking to me because they think it's too hard." -#3deaf

This theme reflects the emotional burden carried by deaf students as they constantly attempt to bridge the communication gap in a hearing-dominated environment. The lack of mutual effort from hearing peers reinforces their sense of separation, impacting their self-esteem and socio-emotional well-being.

Theme 2: "I Feel I Don't Belong" – Experiences of Social Isolation

Many participants expressed deep feelings of social exclusion and loneliness. They often felt left out during group discussions, extracurricular activities, and informal social gatherings. The absence of interpreters and the limited awareness of Deaf culture among hearing peers contributed to this isolation.

"When they form groups, I'm usually the last one left." -#4deaf
"They go out together after class, but no one asks me to join." -#5deaf
"Even if I'm with them, I feel like I don't exist." -#6deaf
"I volunteer to take care of their things when doing outdoor activities." -#7deaf

This theme underscores that physical inclusion does not guarantee social belonging. The presence of deaf students in the classroom or on campus often fails to translate into meaningful participation or emotional connection, highlighting the gap between institutional inclusion and lived experience.
Theme 3: "We have our circle" – Efforts to Connect

Despite the barriers, Deaf students demonstrated strong initiative and resilience in building social relationships. They actively sought ways to connect with hearing classmates through gestures, writing messages, smiling, and joining group activities even when communication was limited.

"I try to greet them first, hoping they'll talk to me." -#8 deaf
"I joined a group to make friends, even if it's difficult to communicate." -#9 deaf
"I use my phone to type messages during group activities." -#10 deaf

This theme illustrates Deaf students' determination to overcome isolation and their proactive efforts to create connections. Their strategies reflect a deep desire for inclusion and emotional reciprocity, consistent with Vygotsky's view that social interaction fosters both learning and emotional development.

Theme 4: "We Navigate, It's Limited" – Limited Support Systems

Deaf students revealed that limited institutional and academic support significantly affects their ability to engage fully in both social and academic life. The inconsistent availability of interpreters, the lack of faculty training in inclusive education, and the absence of peer support structures leave Deaf students to navigate college life largely on their own.

"Sometimes no interpreter shows up in class, and I have to make it on my own." -#1deaf
"My teachers don't know how to accommodate me, so I just sit quietly." -#6 deaf
"I look for someone else I could talk to and understand me." -#2deaf
"The school has no support group for deaf students. I feel like I'm the only one." -#9 deaf
"I need someone to write simple instructions for me to follow." -#7 deaf

This theme highlights the institutional gaps that perpetuate feelings of isolation among deaf students. The lack of systemic support limits their opportunities for socio-emotional growth, forcing them to rely on self-directed strategies rather than collaborative or inclusive support networks.

DISCUSSION OF FINDINGS

This study sought to explore the challenges faced by deaf students in forming social relationships within the college environment. Through thematic analysis, four major themes emerged: Communication Barriers, Experiences of Social Isolation, Efforts to Connect, and Limited Support Systems. These themes offer deeper insights into the complexities of social engagement among deaf students and provide meaningful answers to the problem. Guided by Lev Vygotsky's Socio-Emotional Theory, the findings revealed how communication barriers, limited social interaction, and inadequate institutional support impact the emotional and social development of deaf learners. The emerging themes illustrate how deaf students strive to move from isolation toward social inclusion and belonging.

Communication as a Barrier

Among the most identified difficulties was communication hindrance. Deaf students found it difficult to communicate with their hearing peers as they did not have a common language modality. Lots of hearing peers did not know sign language and were reluctant to communicate by other means, such as writing or pointing. Even when interpreters were provided for classes, conversations with friends or chance encounters were not covered, so deaf students would often feel isolated from peers. This result highlights the role of communication barriers.

According to some researchers (National Academies of Scie nces,EEngineering aenMedecine [NASEM], 2020), the mode of communication plays an essential role in inclusion, making the context of inclusion for deaf individuals unique. To enhance the learning of deaf students and make education inclusive, it is indispensable to determine best practices for communication that can help deaf students

engage with others, maintain interactions, and build friendships with hearing students (Terleksti et al., 2020). Moreover, there are few opportunities to use sign language in the hearing community or in inclusive settings with hearing peers. The pressure to adopt this language in isolation has resulted in the deaf becoming segregated from the wider community, posing a challenge to the success of inclusive education (Hendry et al.,2021).

These are some side comments from hearing peers:
"I talked with them using signs but not comfortable using with it."
"I only smile if my deaf classmate talked to me in sign."
"We hesitate to include them in doing group tasks."
"We do not know if they understand the instructions and refuse to ask them."

Experiences of Social Isolation

The second theme revealed that deaf students experienced communication issues which are closely tied to social isolation. Deaf students regularly reported feeling left out of group discussions, social activities, and in-class conversations. This exclusion often led to emotional withdrawal, loneliness, low self-esteem, and other feelings of invisibility. These experiences mirror the "social silence" that occurs when accessibility focuses solely on academic accommodation without addressing emotional and relational inclusion.

These are the comments of the hearing peers:
"I do not like to include them in our group."
"I do not listen to what they are trying to say in signs."
"I ask our teacher to make their group for them to discuss freely."
"I felt bothered in communicating them in writing. It will take time."

Efforts to Connect

Even in the face of continued obstacles, deaf students made significant attempts to be sociable and build friendships. They try to communicate with their peers using gestures, written notes, and digital tools. As mentioned, peer relationships are important predictors of the academic and life skills of deaf students (Terleksti et al., 2020). This subtype of peer relationship is friendship, where deaf students want to share enjoyment, mutual liking, commitment to each other, and closeness. However, friendship starts with simple conversations that hearing peers do not connect with the deaf.

This is emphasized by Vygotsky that social relationships are the foundation for emotional and intellectual development, and even limited interactions can promote positive self-concept and confidence when mutual respect exists. These findings reflect the deaf community culture where shared experiences and mutual understanding create emotional safety.

Hearing peers commented:
"I'd like to make friends with them, but I cannot understand." "They made efforts to mingle with us, but I'd failed to do it." "They tried their best to be part of our group."

Limited Support Systems

The final theme revealed the institutional challenges deaf students face due to inconsistent interpreter availability, untrained faculty, and the absence of peer or counselling support systems. These conditions encourage deaf students to rely on themselves, often at the expense of their emotional well-being. This thematic exploration emphasized institutional duty as a critical factor in providing deaf students with essential resources to develop and sustain social networks.

The scarcity of interpreter services, trained faculty, and accessible organizations stems from several interconnected factors, including insufficient training programs, lack of awareness about the

profession, inadequate compensation, and high turnover rates. Additionally, the demand for interpreters is growing due to increased awareness of the needs of the deaf and hard-of-hearing community and the expansion of access to various services (Omokunmi, 2024).

These are the deaf students' comments:
"Sometimes there were no interpreters in class. We only sit quietly and pretend to understand."
"Our classmates talked with us in writing. But sad to say we cannot understand because they wrote it in "visaya language" (mother tongue).
"Our teachers always nod their heads. We do not know if they understand us or not."

Across the four themes, the findings showed that deaf college students often deal with the struggle of feeling isolated while seeking inclusion. Their experiences support Vygotsky's claim that emotional well-being and cognitive growth come from social interaction in a supportive cultural setting. When communication access and social chances are limited, emotional development takes a hit. On the other hand, when inclusion and awareness exist, deaf students show resilience, self-confidence, and a strong sense of connection.

These findings suggested higher education institutions to move past physical inclusion. They need to foster socio-emotional accessibility, which includes a culture of empathy, awareness in communication, and a commitment to deaf inclusion. Improving these areas not only boosts deaf students' learning but also supports the fundamental values of belonging, equality, and respect that are essential for real inclusion.

While institutional support was seen as limited, moments when interpreters were available or teachers provided visual aids and clear instructions helped deaf students feel respected and valued. Even more impactful were faculty who took time to check on their understanding or ask how to support them. From these stories, it's clear that the strategies that foster connection are often not grand or complex; they come from human effort, empathy, and consistency. What deaf students need is not just physical inclusion, but a social and emotional presence that reassures them: "You are seen, you are heard, and you are part of this community."

CONCLUSION

This study revealed that while deaf students wanted to build social relationships and could do so, they face communication barriers, a lack of support from the university, and limited understanding from their peers and teachers. Simply placing deaf students in inclusive academic settings does not guarantee they will feel socially included. Many still deal with isolation and emotional challenges because they are left out both on purpose and by accident from conversations, group work, and campus activities.

Despite these obstacles, deaf students demonstrate incredible resilience and initiative in their attempt to connect with hearing peers. Unfortunately, their efforts often go unnoticed or unsupported, highlighting the need for everyone to take responsibility for creating inclusive college environments. Without systemic changes and intentional inclusion practices, the risk of social disconnection will remain. This will impact not only their social experiences but also their emotional health and academic success.

RECOMMENDATIONS

To promote meaningful inclusion and improve the social experiences of deaf students, these are the recommendations:

1. Strengthen Communication Access

Offer basic sign language training for students, faculty, and staff.
Encourage the use of visual and written communication in classrooms and informal settings. Ensure reliable access to qualified interpreters for both academic and extracurricular activities.

2. Promote Deaf Awareness and Sensitivity
Conduct regular orientation and awareness programs focused on Deaf culture and communication needs. Include disability sensitivity training in student leadership and faculty development programs.

3. Enhance Peer Engagement
Create buddy systems or peer support groups that include both deaf and hearing students.
Encourage group activities that build teamwork and foster open communication across language barriers.

4. Improve Institutional Support
Form or strengthen organizations for deaf students to provide community and advocacy. Offer accessible counselling and mentoring services designed for deaf students. Develop inclusive policies that support the overall development of students, beyond just academics.

5. Recognize Student Efforts
Acknowledge and support the efforts of deaf students who try to connect socially. Create safe spaces for deaf students to share concerns and experiences openly. Offer leadership roles for deaf students in planning and decision-making related to student welfare and inclusive education.

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Politeness in Multilingual Online Discourse: discovering *Po* in English and Bislish Academic Interactions

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ABSTRACT

This study explores the use of the Tagalog politeness marker *po* in English and Bislish online academic interactions between a university instructor and her undergraduate students in a state university in the Philippines. Drawing from a semester-long exchange via Facebook Messenger, it examines how *po* is pragmatically and sociolinguistically deployed in multilingual digital contexts. The study is grounded in Brown and Levinson's (1987) Politeness Theory and Searle's (1969) Speech Act Theory to analyze communicative intent and politeness strategies. Participants included 35 students enrolled in a professional education course. Data were collected from naturally occurring text-based messages exchanged in the class Messenger group chat. Forty-six utterances containing *po* were extracted, manually coded, and analyzed using a three-level qualitative coding scheme that examined sentence position, speech act type, and pragmatic function. Thematic analysis was conducted to identify patterns of politeness strategies. Findings show that *po* was used primarily in requests, apologies, acknowledgments, and greetings, often positioned mid-sentence or at the end. It served both positive and negative politeness functions, helping speakers express deference, mitigate imposition, and maintain rapport in the absence of nonverbal cues. The results underscore how *po* functions as a culturally embedded but flexible politeness marker, illustrating the persistence of local norms in digital academic communication across languages.

Keywords: politeness marker; digital discourse; multilingual pragmatics; Bislish; Philippine academic communication

THE PROBLEM AND ITS BACKGROUND

Filipino students increasingly embed the politeness marker *po* into English or regional language utterances, especially when addressing instructors or authority figures (Llorica & Sosas, 2022). Common examples include "I've sent you a message *po*" illustrating how *po* is deliberately inserted into non-Tagalog expressions. This reflects a culturally grounded strategy shaped by social norms and relational contexts in digital environments (Meneses, 2020).

Despite English being the dominant medium of instruction in Philippine universities, the continued use of *po* in academic communication signals a deeper sociolinguistic process. It indicates how students navigate power dynamics, formality, and respect by localizing English with culturally significant markers (Briones & Liwanag, 2023). Such usage challenges conventional English pragmatics and highlights how digital academic discourse is reshaped through hybrid politeness practices.

This study draws on naturally occurring exchanges between a university instructor and undergraduate students over a semester, primarily via Facebook Messenger. These interactions offer authentic data to examine how *po* operates in real-time communication. The research responds to the need for a more culturally-attuned view of politeness in online academic settings, where monolingual norms often prevail (Meneses, 2020). It advocates for the recognition of hybrid strategies as legitimate expressions of identity and social awareness in multilingual academic discourse.

Multilingualism in the Philippines

With over 180 languages, the Philippines is among the most linguistically diverse countries (Zeng & Li 2023). While English and Filipino serve as official languages of instruction, students often integrate regional languages such as Bisaya in informal and digital settings (Briones & Liwanag, 2023; Pontillas & Rañada, 2022). Code-switching and code-mixing are common strategies for expressing identity, accommodating cultural norms, and managing interpersonal dynamics (Geranco, 2024).

In digital academic contexts, these practices intensify as students balance formality, deference, and solidarity in flexible, unscripted environments. However, while much research has focused on English Acquisition or English-Filipino code-switching, fewer studies explore politeness strategies like the use of *po* across languages in online academic discourse (Santos, 2022; Meneses, 2020; Briones & Liwanag, 2023).

Statement of the Problem

This study aimed to understand the role and function of the politeness marker *po* in online academic interactions that are conducted in English and Bislish. Specifically, it sought to answer the following questions:

1. Where is *po* used in English or Bislish sentences in everyday Filipino online academic interactions?
2. What are the pragmatic functions of *po* when used in non-Tagalog contexts like Bislish or in English?
3. In what types of speech acts is *po* commonly used?
4. How do speakers perceive the cultural significance of *po* when used in non-Tagalog sentences such as English and Bislish?

Scope

This study solely focused on online, text-based interactions between a university instructor and a section of undergraduate students enrolled in a professional education course during one academic semester. The data were collected from a class group chat via Facebook Messenger. The focus of politeness is on the marker *po*, and so other markers of politeness were noted but not analyzed in depth.

Theoretical Framework

This research is grounded in context-driven pragmatics which considers how culture-specific norms shape the interpretation and use of language in context (Kecskes, 2019). This is also anchored on two interrelated frameworks, particularly Speech Act Theory (Searle, 1969) and the Politeness Theory (Brown & Levinson, 1987).

Speech Act theory provides a lens for analyzing the communicative intent behind utterances containing *po*, identifying whether they serve as requests, greetings, apologies or other illocutionary acts. Politeness Theory on the other hand, offers tools to examine how speakers use *po* to manage face, express deference, and maintain social harmony, especially within the hierarchical context of student-instructor relationships.

Related Literature and Studies

Pragmatics and Politeness

Politeness has been extensively explored since the seminal work of Brown & Levinson (1987) whose politeness theory explored the face-threatening nature of communicative acts and the strategies used to mitigate these threats. Honorifics and politeness markers are interpreted as tools to preserve face. Later scholars however, argued that non-Western societies often follow a specific system of politeness which is grounded on their local cultural norms (Kecskes, 2019; Watts et al., 2005).

The Filipino politeness marker *po* holds a central place in both the grammatical and pragmatic features of Tagalog and other Philippine languages. Grammatically, *po* is classified as a discourse particle that does not change the syntactic structure or literal meaning of an utterance, but contributes a layer of social meaning (Schachter & Otanes, 1983). It appears at the end of sentence, or after pronouns and verbs and gives the utterance a formal and respectful tone. Its placement in the Tagalog language is fixed and non-inflectional, as it remains unchanged regardless of tense, number or case. It often appears in utterances involving acts that are considered face-threatening and thus require mitigation (Geranco, 2024; Llorica & Sosas, 2022)

Pragmatically, *po* is deeply embedded in Tagalog cultural norms and social hierarchies. Bautista (2004), and Meneses (2020) described *po* as a linguistic tool used to express deference and respect, especially towards elders, authority figures, or those holding higher social status. It also plays a role in mitigating face-threatening acts such as making requests and giving refusals, and contributes to fostering interpersonal harmony (Zeng & Li, 2023). The cultural importance of *po* to the Tagalogs extends beyond simple etiquette to becoming a crucial element of Tagalog identity and communication strategies.

Localization of English

As a lingua franca, English has undergone significant localization in the Philippines, resulting in what is called Philippine English, a nativized variety that reflect local usage patterns and cultural norms (Bautista, 2004; De Sevilla et al., 2017) The insertion of *po* into English sentences is a manifestation of this phenomenon, where speakers add a local identity into a global language.

According to (Canagarajah, 2013), such localized usages should not be considered as errors but as evidence of the speakers' linguistic agency or their capacity to negotiate meaning through the language they are using. Language mixing is not merely a sign of linguistic deficiency but a sophisticated tool for navigating identity, intimacy, and authority (De Sevilla et al., 2017) Its incorporation in digital academic contexts signifies that even in formal academic settings, this traditional politeness strategy serves not only to mitigate imposition but also to align with culturally prescribed norms of respect.

Gaps in the Literature

While there is adequate literature on politeness and multilingualism, limited attention has been given on how the traditional marker *po* functions in digital, multilingual academic settings, particularly student-instructor exchanges (Daniel & Gonzales, 2016). There is also limited literature on how the politeness marker *po* are perceived and adapted in higher education, which imposes a more strict language requirement compared with the basic education level where mother tongue-based languages are allowed. This study addresses this gap by analyzing how this marker is perceived and used in localized politeness strategies particularly in academic digital communication.

METHODOLOGY

Research Design

This study used a qualitative discourse analysis design to investigate the use of the politeness marker *po* in non-Tagalog digital communication among university students and their instructor. The goal was to focus on naturally-occuring data within the academic digital environment and identify patterns and describe the cultural meaning of *po* when used in non-Tagalog utterances such as English and Bislish.

Research Setting

The setting of the study was a tertiary level board course offered in a state university in the Philippines. The participants were the instructor and 35 enrolled undergraduate students who engaged in one semester of online communication via Facebook Messenger, which served as their primary channel for announcements, clarification of tasks, inquiries, and informal consultations.

Participants

Purposive sampling was used to select the 35 undergraduate participants and 1 instructor who could provide relevant information on the use of politeness marker *po* in multilingual academic communication. The inclusion criteria are as follows:

1. Enrollment in the same course section taught by the participating instructor
2. Active participation in the class Facebook Messenger GC throughout one academic semester;
3. Use of English, Bislish, or mixed language or mixed-language utterances containing the politeness parker *po*; and
4. Provision of informed consent for identified messages to be analyzed for research purposes.

This purposive sampling approach ensured data representativeness and an in depth exploration of the sociolinguistic and pragmatic dimensions.

Data Collection and Coding

The data set consisted of text-based digital messages exchanged in the class Facebook Messenger group chat over the course of one semester. These messages were downloaded and de-identified to ensure confidentiality and ethical handling. Only messages that contained the politeness marker *po* were selected for analysis with special attention to utterances embedded in non-Tagalog utterances. Other politeness markers in the utterance where *po* is found will also be noted but not analyzed, unless they contributed to the understanding of the context of *po* usage.

The extracted messages were categorized into utterance units. Relevant utterances were identified and entered into a qualitative data analysis matrix using Microsoft Excel for systematic categorization. A

total of 46 utterances were selected for analysis based on the presence of the politeness marker *po* within English or Bislish constructions.

A three-level coding scheme was used: Level 1 was for structural coding where language composition and sentence position of the politeness marker *po* were determined. Level 2 was for speech act categorization based on Searle (1969) taxonomy into directives, expressives, commissives or acknowledgments. Level 3 was on Pragmatic and Sociolinguistic functions inspired by Brown and Levinson's (1987) Politeness Theory. Two coders independently coded the data to check for inter-coder agreement and consistency, with an inter-coder agreement of 0.89 (Cohen's Kappa) indicating strong consistency. Disagreements were resolved through discussion.

Data Analysis

The coded data were subjected to thematic analysis to identify patterns and themes surrounding the use of *po* in multilingual academic communication. The analysis followed (Clarke & Braun, 2013) Six-step approach: familiarization, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and writing the analysis. Utterances were preserved in their original linguistic form to maintain fidelity.

Ethical Considerations

All ethical protocols for online data research were strictly followed. Prior consent and permission to access and analyze messages were given by the participants. The identity of students and the instructor has been anonymized, and any identifying information has been removed in reporting.

RESULTS AND DISCUSSION

Instances of po in English and Bislish Academic Interactions

The position of the politeness marker po is shown in Table 1.

Table 1. Position of the politeness marker *po*

Position of *po*	Description	Frequency	Example
Sentence-final	end of the utterance	20	"Good afternoon, ma'am. Thank you *po*." "I sent you a message po"
Mid-sentence	after the verb or subject within the sentence	23	"Pwede pa *po* sa Monday ma'am?" "Gikan po ko sa Talakag ma'am"
Multiple Instances	more than once in a single utterance	3	"Yes *pooo* ma'am. Willing to wait *po*. Take care *po*."
Total		46	

Po was most often placed at mid-sentence positions (23 utterances) and sentence-final (20 utterances), with a few instances appearing multiple times in one message. In everyday online academic interactions among Filipino university students and their instructor, the politeness marker *po* is used in English and Bislish sentences to maintain social harmony and express deference in a culturally appropriate manner. Despite its origins in Tagalog, *po* has become pragmatically integrated into English-dominant and code-switched (Bislish) utterances, serving as a conventional marker of politeness. In English messages such as "I sent you a message *po*" the marker is often placed in sentence final positions, subtly softening the time and indexing a sense of respect, especially toward authority such as the instructor. It is used to

reflect cultural values such as respect and *pakikisama*, demonstrating how these practices are shaped by social hierarchies and relational expectations (Brown and Levinson, 1987).

In Bislish utterance, *po* seamlessly coexists with Bisaya lexical items and English grammar, as seen in messages line "Pwede pa *po* sa Monday, ma'am?" or Gikan po ko sa Talakag ma'am" occurring in mid-sentence. In these instances, *po* functions as a mitigation strategy for potential face-threatening acts such as requests or reminders. It is often strategically positioned to balance informality with formality, reflecting the multilingual speaker's awareness of social norms and authority dynamics in digital academic spaces. There was also the observed elongated *po* (e.g."yes *poooooo* ma'am") which underscores the affective role of *po* in communicating patience, sincerity or emotional intensity. The use of *po* in English and Bislish messages illustrates a unique linguistic adaptation where Filipino students maintain cultural norms of politeness while communicating online.

Politeness strategies indexed through po

The strategies which include *po* within non-Tagalog academic online discourse reflect deeply rooted cultural values and communicative norms. Drawing from Brown and Levinson's (1987) Politeness Theory, the data illustrates that *po* serves both positive and negative politeness strategies, depending on context. This is illustrated in Table 2 which shows majority of the utterances (28) used the negative politeness strategy for mitigate imposition or to show deference although there were a few (6) utterances that included a mix of strategies.

Table 2. Politeness strategies indexed through *po*

Politeness Strategy	Function	Occurrence	Illustrative Use
Negative Politeness	Mitigate imposition, show deference	28 utterances	"Pwede *po* sa Monday, ma'am?"
Positive Politeness	Express appreciation, inclusion	12 utterances	"Take care *po*, ma'am."
Mixed / Contextual	Simultaneous strategies	6 utterances	"Noted *po*, thank you and God bless *po*."

In contexts where students are making requests or inquiries, *po* performs a negative politeness function by minimizing the imposition of the request and acknowledging the higher status or authority of the instructor. For instance, in "Mag-ask lang *po* mi if madayon ang demo?" or "Pwede *po* sa Monday, ma'am?" the marker *po* signals deference and reduces the potential threat to the hearer's negative face. On the other hand, *po* also operates with positive politeness strategies, particularly in expressions of gratitude ("Thank you *po* ma'am"), greetings, (Good afternoon *po* ma'am"), and in expressions of solidarity ("Take care *po* ma'am"). Here, *po* serves to enhance interpersonal rapport and indicate relational closeness or goodwill, even in a hierarchical setting.

Another key function of *po* is its role as a face saving device in potentially face threatening acts, such as late light messages, apologies or reporting technical problems. In the statement "Sorry for disturbing your evening *po*" the speaker demonstrates sensitivity to social norms and the effort to restore balance and respect in the interaction. Additionally, the use of *po* in English and Bislish utterances underscores its function as a cultural indexical marker signifying the speaker's orientation toward Filipino values such as respect, basic modesty, and interpersonal relationships.

Even when used in non-Tagalog sentences, *po* retains its sociolinguistic status, acting as a linguistic bridge between language use and cultural practice. This also shows that even non-Tagalog users recognize the function of *po* and considers this politeness marker to be appropriate to use even codes that do not originally use it to show their intention to be polite, making it culturally specific but

functionally adaptable marker of politeness, capable of traversing boundaries while maintaining its core interpersonal functions.

Speech Acts where po is used

The analysis of 46 English and Bislish online utterances between a university instructor and her students over a semester reveals that the politeness marker appears across a range of speech acts. Drawing on Searle's (1969) taxonomy of speech acts, these instances fall into several categories, with varying frequency and communicative intent. The results are presented in Table 3.

Table 3. Speech acts where po is used

Speech Act Type	Frequency	Example Utterances
Acknowledgments / Updates	13	"I've sent the file *po*, ma'am."
Requests / Clarifications	12	"Pwede pa *po* sa Monday, ma'am?"
Expressions of Gratitude	8	"Thank you *po*, ma'am!"
Apologies / Justifications	4	"Sorry for disturbing your evening *po*."
Greetings / Valedictions	5	"Good afternoon *po*, ma'am."
Others / Self-identifications	4	"Taga Talakag *po* ko, ma'am."
Total	46	

Acknowledgments and updates constitute a significant portion of the data (13 utterances) as in "I've sent the file po, ma'am." Messages like "Noted *po* ma'am" and "This is noted *po*, ma'am, thank you *po*!" illustrates how students use *po* to formally affirm receipt or understanding information while maintaining deference. This is closely related to expressions of gratitude, which are frequently marked with *po* to amplify politeness and respect, as seen in messages such as "Thank you so much *po* ma'am!"

One of the most prevalent categories is requests (12 utterances), which include utterances like "Mag ask lang *po* mi if madayon ang demo?" In this examples, *po* is employed to mitigate the imposition of asking for a favor or clarification, reflecting the speaker's recognition of the instructor's authority. Similarly, questions and inquiries such as "pila *po* ka items, ma'am?" utilize *po* to soften the directness of interrogatives.

Additionally, *po* is found in greetings and well-wishes (5 utterances), including "Good morning *po*, ma'am" and "God bless you always *po*" signaling the speaker's intent to engage with the instructor in a courteous and culturally appropriate manner. In apologies (4 utterances), such as "Sorry for disturbing your evening *po*" the marker *po* works together with the apology to reduce potential offense. Other statements such as information-sharing statements, though typically neutral, also contain *po* to maintain a respectful tone, as shown in utterances like "I sent you a private message *po*." These highlight how *po* operates not just as a linguistic form but as a functional marker in a range of communicative acts to signify politeness, relational sensitivity, and hierarchical awareness.

Perceptions of the Cultural significance of po

The analysis reveals that participants perceive that the politeness marker *po* as a culturally significant form of deference that transcends its Tagalog linguistic origins. Despite being embedded within English or Bislish utterances, it functions consistently as a marker of respect in the context of online academic communication. This suggests that *po* is seen not as a linguistic token but as symbolically charged expression of Filipino values as articulated in Brown and Levinson's (1987) theory of Politeness and further supported by Philippine sociolinguistic norms of respect, harmonious social interaction, and a sense of propriety (Bautista, 2001).

In English utterances, *po* is often retained even when English offers other politeness strategies such as indirectness and the more direct appellative honorifics term ma'am, indicating that the marker is pragmatically motivated rather than grammatically required. Utterances where *po* was used functions to soften the tone and convey deference, show strategic usage aimed at mitigating the face-threatening nature of requests, and aligns with Brown and Levinson's notion of negative politeness.

In Bislish, *po* is used to assert the speaker's regional identities while aligning with broader national values. Utterances such as "Taga-Jasaan *po* ko ma'am" shows the coexistence of non-Tagalog linguistic forms with Tagalog politeness marker. This reflects a hybrid identity where speakers navigate their local vernaculars while upholding nationally recognized cultural norms, illustrating what Canagarajah (2013) refers to as translingual practice, a dynamic blending of languages to maintain social relationships and index identity.

In digital contexts where the tone and non-verbal cues and body language are absent, *po* serves as a textual strategy for expressing politeness, emotional warmth and sincerity. Its repetition or elongation and sentence-final placement reinforce its role as a visible marker of relational stance. This aligns with researches on digital politeness, which suggests that users adapt written forms to stimulate affective cues in the absence of physical interaction (Herring, 2004).

The persistence of *po* in English and Bislish utterances indicates that speakers perceive it not merely as a Tagalog expression but as a culturally-sanctioned devise for showing respect in academic online communication. It is able to retain its sociopragmatic function even outside its original environment, demonstrating how cultural values are preserved and performed across linguistic boundaries.

DISCUSSION

The findings of this study highlight the multifaceted role of the politeness marker *po* in English and Bislish online communication. Originally a Tagalog politeness marker, *po* remains a salient linguistic feature even when embedded in English and Bislish utterances and illustrates symbolic and pragmatic function, supporting observations from Bautista (2004) and (Daniel & Gonzales, 2016) that *po* is a culturally embedded marker of politeness rather than a strictly language-bound feature.

From a speech act perspective (Searle, 1969), *po* appeared most commonly in requests, acknowledgments, questions, greetings, and the likes. This indicates that *po* is used to manage social interactions that involve a power dynamic and requires interpersonal sensitivity, particularly in teacher-student exchanges. The presence of *po* in requests and questions aligns with its function to soften utterances and a means of reducing imposition and signaling deference. This exemplifies Brown and Levinson's (1987) negative politeness strategy which is employed when a speaker seeks to avoid imposing to the listener's autonomy. At the same time, *po* also operated as a marker of positive politeness, particularly in greetings, gratitude, and messages of concern and solidarity. These show how students use the politeness marker to maintain rapport and reinforce social harmony, resonating with Filipino values of *pakikisama* or harmonious interpersonal relationship (Munalim & Genuino, 2019). This dual role supports the claim that Filipino politeness strategies are inherently relational and multifunctional, with *po* functioning as both a deferential and affiliative device.

A key implication is the persistence of cultural norms even in English and online contexts, suggesting that politeness is a matter of culture. *Po* is a pragmatic tool that bridges linguistic gaps and sustains social hierarchy even when the context is non-Tagalog, showing that digital spaces reflect, rather than dilute, culturally situated communicative practices.

The strategic placement of *po* where the sentence-final positioning is most frequently observed demonstrates its flexibility and embeddedness in digital discourse, mirroring the Tagalog syntax and indicates a transfer of cultural framing into the structure of non-Tagalog utterances. This reinforces the speaker's show of respect while integrating politeness markers into English or Bisaya language and highlights the indexical nature of *po* (Burdelski, 2011).

On a broader implication, the use of *po* reinforces the need for educators and researchers to be attentive to cultural and linguistic hybridity, especially in multilingual settings like the Philippines where multiple languages intersect. Educators, particularly those who use English as medium of instruction, should be mindful that linguistic features such as *po* carry cultural meanings beyond grammar. It is also important to view politeness markers such as *po* to be possibly portable, adapting to diverse linguistic environments while retaining their core functions.

CONCLUSION

The data in this study examined the use of the Tagalog politeness marker *po* in English and Bislish online interactions between undergraduate students and a faculty member over a semester long course via Facebook Messenger. Drawing from naturally-occurring information in an online academic setting, the analysis reveals that *po* is not simply a grammatical formality but a culturally embedded communicative strategy that signals deference, maintains relational hierarchies, and sustains cultural identity within a multilingual online discourse.

The responses to the research questions highlighted the nuanced and deliberate use of *po*:

a. *Po* is consistently embedded in English and Bislish messages, particularly in contexts involving requests, confirmations, apologies and expressions of gratitude, illustrating how cultural markers remain active even in English-dominated online environments
b. The pragmatic functions of *po* include mitigating imposition, reinforcing politeness, expressing gratitude, and asserting in-group solidarity, suggesting its strategic and deployment across languages.
c. It is most commonly inserted in speech acts related to greetings, requests, apologies, and acknowledgments, speech acts that involve the management of face and social relationships in hierarchical interactions
d. Students perceive *po* as indispensable in signaling respect and politeness. Even in English or regional language messages, *po* serves as a relational cue rooted in Filipino cultural norms, this enabling speaker to perform politeness n a way that aligns with institutional and cultural expectations.

These findings contribute to a more localized and socially grounded understanding of politeness in academic discourse, particularly in contexts where multilingualism, cultural norms, and digital immediacy intersect. *Po* emerges not as an artifact of Tagalog grammar but as a flexible, relational device shaped by students' need to balance academic accountability with respect and emotional tact.

Limitations

This study was limited on a single class section within one university, which restricted the generalizability of findings to other academic or linguistic contexts. The use of purposive sampling ensured relevance but may not capture the full diversity of politeness practices across disciplines or regions. Additionally, the analysis was confined to utterances containing *po*, excluding broader patterns of code-switching or other politeness strategies. Data were also limited to text-based interactions on Facebook Messenger, which may differ from other digital or face-to-face communication contexts. These limitations suggest directions for future research, including comparative studies across academic levels, platforms, or linguistic regions to further explore culturally embedded politeness in multilingual settings.

Recommendations

Based on these findings, the following practical and scholarly recommendations are given:

1. Institutions should include modules or inputs on linguistic diversity awareness and Filipino politeness norms such as the use of *po* in student and faculty programs and even in appropriate curricula for understanding and awareness.an understanding of these strategies will help students

and educators interpret messages more accurately ad respond in ways that sustain rapport and respect.
2. In crafting institutional guidelines in online communication, institutions should aim to craft those that accommodate local communicative practices and reflect multilingual realities rather than enforcing purely Anglophone or purely Tagalog norms to support more polite online environments.
3. Future studies should explore similar politeness markers across other languages of the country and investigating how they function in academic settings. Comparative studies could also be one to reveal how politeness markers such as *po* shift based on context religion, and institutional culture.

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Voices in Silence: Academic Realities of Deaf Learners in Higher Education

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ABSTRACT

Anchoring on inclusive education laws, a university in the Philippines accepted eleven deaf students in the undergraduate program, Bachelor of Technical-Vocational Teacher Education. Prompted by the 64 percent attrition rate, this study was undertaken to gain a deeper understanding of the students' academic struggles in order to develop a more responsive inclusion program and appropriate support systems that would ensure improved educational outcomes for future deaf students. Utilizing Moustakas' transcendental phenomenological approach, eight of the deaf students were interviewed in focus group discussions to explore their lived experiences and determine the essence of how they navigated academic life in a hearing educational setting. Epoche and systematic reduction of data generated the following themes: navigating complex course content; shift to onsite learning modality; access to instructional material; assessment-related difficulties; communication facilitators and barriers; and financial constraints. In overcoming these challenges, the students mentioned the importance of technology-based solutions and reliance on a support network. The findings suggest that establishing a university disability services unit, coupled with providing flexible pathways to access curriculum and assessment could provide the necessary support.

Keywords: Transcendental Phenomenology, Deaf College Students, University Disability Services, Special Needs

INTRODUCTION

In the Philippines, Republic Act 7277 (Magna Carta for Persons with Disabilities) and Republic Act No. 11650 (Inclusive Education Act) are laws that provide equal educational opportunities for children with disabilities. Anchoring on these legal frameworks, a state university accepted eleven deaf students in its undergraduate degree program, Bachelor of Technical-Vocational Teacher Education (BTVTED). However, seven have already been dropped since the last semester, reflecting a high attrition rate of 64 percent. This raised questions regarding the provision of teaching services and supports, and the students' readiness for the university-level academic rigor, that could have contributed to their failure.

Deafness results from the dysfunction of one or more parts of the ear, which impedes an individual's ability to hear and understand speech even with the best amplification (www.who.int; Schein & Simon, 2019). In higher education, deaf students face significant barriers in their pursuit of a degree, which may include unavailability of qualified interpreters, lack of curricular adaptations, and lack of adequate infrastructure (Huertas, 2024), accessible resources (Sarkar & Ghosh, 2024) and facilities (Suryanto et al., 2024). Additionally, an examination of literature revealed that deaf college students face challenges such as lack of empathy from the hearing academic community (Batista & Garcia, 2023). Even while the typical hearing person may show acceptance, the deaf could feel excluded (van den Heuij, Neijenhuis & Coene, 2022) and isolated (Alsamih, 2024). They also face communication challenges and barriers (Ain, 2021; Basha et al., 2020; Im & Park, 2024).

Given what research findings in different parts of the globe revealed, it was imperative that the distinct academic journey of deaf students at a university in the Philippines be likewise heard. While national laws such as RA 7277 and RA 11650 provide direction for inclusion, there was little data determining how practices in higher education conform with these laws, which points to a clear gap. Aligned with the Critical Disability Theory, it was hoped that transformative policies related to institutional, social, and structural systems and practices could be proposed, creating an inclusive academic community supporting deaf college students.

Research Question

This phenomenological study attempted to explore and describe the lived experiences of deaf college students of a university in the Philippines, uncovering challenges with the aim to propose a program that would support educational needs of future deaf students. Specifically, the following central research question was pursued: What are the academic experiences of deaf students enrolled in the BTVTED program within the institutional and social contexts of the university?

Theoretical Framework

The following theoretical and philosophical frameworks were applied in the study: Critical Disability Theory (CDT) and the phenomenological model of disability. The Critical Disability Theory (Hall, 2019) has been used by studies to explain the circumstances and functioning of disabled people in various aspects of life and to understand issues surrounding disability as a reference point (Flynn, 2022; Jaulus, 2020). Similarly, the phenomenological model of disability is an approach that explores the lived experiences of individuals with disabilities and how they make meaning of them, rather than focusing on the impairment. One application can be found in the study of Gloria et al. (2024) which explored the needs and challenges of students with special needs with the intention of creating a facility that supports their educational requirements. The diagram in Figure 1 below captures how the theories served as the analytical lenses through which the academic experiences of the deaf students were examined.

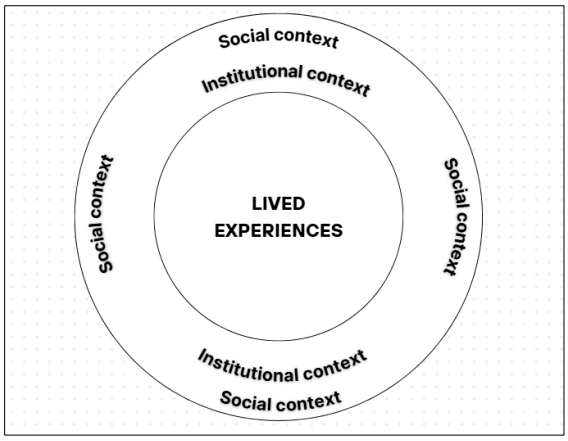

Figure 1: Framework for analysing deaf students' navigation of academic experiences

Anchored on CDT and the phenomenological model of disability, the main goal was to describe the essence of the lived experiences of deaf students as shaped by the barriers and enabling practices in their academic environment. Within the scope of institutional context are curriculum content, pedagogical approaches, adaptations, and other teaching practices. On the other hand, social context encompasses communication processes, faculty perceptions, peer attitudes, family support, etc.

METHODOLOGY

The approach employed in understanding the essence of the experiences of the deaf students was Moustakas' transcendental phenomenology. Guided by the definition of Delmas and Giles (2022), this descriptive approach analysed the essences perceived by the consciousness of the students as they navigated through the academic activities while enrolled in the BTVTED program. Through convenience sampling, eight out of eleven deaf BTVTED students were interviewed in a series of focus group discussions. Such data gathering method was chosen over individual interviews because of the rich, qualitative data generated from the participants' building on each other's responses and clarifying meaning in the process. More so because they came from the same class who underwent similar academic experiences.

The transcendental phenomenological methodology used in data analysis proceeded in four major steps. The first was the epoche or bracketing, which required the researcher to set aside biases and look at the phenomenon with a raw perspective (Greening, 2019) while listening to and transcribing the responses. To establish accuracy, the full transcript was read and corrected twice vis-a-vis the audio recording. The second step was phenomenological reduction, which involved the process of letting the meanings emerge through "conscious and insightful engagement with the data" (Yee, 2019). Utilizing manual transcript analysis, significant statements were extracted from the transcription and organized into preliminary clusters assigned with phrase codes, done repeatedly at separate times using an Excel spreadsheet. Through a focus on the "what," the textural descriptions and broader themes of the students' lived experiences were generated. The third step undertaken was imaginative variation, which explored the "how" of the experiences (Yee, 2019). At this point, the structural descriptions or refined themes were produced from the statements. The final step was the synthesis wherein the final description or articulation of the essence of the experiences was produced.

Consideration of credibility and confirmability criteria under the framework of trustworthiness by Lincoln and Guba (1985; cited in Stahl & King, 2020) contributed to establishing the reliability of the transcription analysis. Credibility was maintained by the process of member checking wherein the participants reviewed the direct significant statements quoted and the themes generated. Moreover,

confirmability or minimization of research bias was pursued through careful verbatim transcription of the responses, and the practice of bracketing.

Ethical considerations were observed all throughout the gathering of data, including informed consent and assurance of anonymity. Since the questions sometimes dealt with sensitive issues, especially that some were already removed from the program, the researcher exercised caution on how they were asked. Bracketing, the first step undertaken in the phenomenological approach, also contributed to the study's adherence to ethical principles.

RESULTS AND DISCUSSION

Six themes emerged from the transcendental phenomenological process that was followed in this study, namely: navigating complex course content; shift to onsite learning modality; access to instructional material; assessment-related difficulties; communication facilitators and barriers; and financial constraints. Table 1 shows the significant statements that were extracted from the transcripts of the interviews.

Table 1: Themes generated from the significant statements

Themes	Sub-Themes	Significant Statements
Navigating complex course content	Subject complexity	*Agriculture was difficult. It was so stressful that it affected my brain.* *There were explanations in one subject that were hard that I could not understand.* *Math during the 3rd year was really a problem, especially with formulas.*
	Language-based learning difficulty	*Writing was really hard for me. Even if I studied, I could not understand.* *My problem was English. We had to write essays, which was difficult.* *When given a book assignment, I could not understand what I read.* *Even with Google access, I found it difficult to understand because of the deep words.*
	Technology-aided comprehension	*It was better to have Internet so that I could read the book more.* *To overcome difficulty understanding, when I received work or assignment, was to search for connectivity.* *For instructions, I ask the other deaf through Messenger chat.* *I answered using chatGPT or Google. Work became simpler with Google.*
	Reliance on support persons	*I asked the help of other deaf. I just asked for ideas.* *My classmates let me read their answers and I used other words in my work.* *When I found it hard to understand the meaning of the words, I went to the interpreter.* *A teacher helped us how to prepare our lesson plans.* *My family did not know my assignment and instructed me to go to my cousin who already graduated.*

Themes	Sub-Themes	Significant Statements
		My aunt helped with research as I do not know it well.
Shift to onsite learning modality	Oral reporting difficulty	*I was shaking and nervous during the face-to-face sessions because it required oral reporting.* *I felt really awkward in the face-to-face Powerpoint presentations.* *We never had experience in reporting during high school.* *My and my classmates' problem with face-to-face reporting was how to communicate.*
	Onsite logistical challenges	*My teacher erased the board immediately. We did not have time to take a photo of the texts because another class was coming in.*
	Online preference	*I preferred online because I could read the captions.* *The interpreter assisted better during online sessions.*
Access to instructional material	Non-mediated instruction	*In one subject, we were not allowed to use the calculator.* *It was purely talk... no writing on the chalkboard.*
	Multimedia-supported teaching	*My teacher discussed with visual aids.* *He wrote assignments on the chalkboard.* *He had his Powerpoint presentation interpreted by the deaf for others.*
	Script-supported reporting	*I felt lost without a script. Thus, I always prepared my script and memorized it for face-to-face reports.* *We made a script for the presentation, which the hearing classmate read for us.*
Assessment-related difficulties	Time-pressured methods	*I was constantly crying because of the schedules in the submission of assignments… one on top of another.* *The teacher dictates quiz items so fast. It was so hurried and there was little time.*
	Confusion with instruction	*Sometimes the instructions were not clear. I could not understand them.* *I wanted clear instructions because I really could not understand. So, I just cheated when given the opportunity.*
Communication facilitators and barriers	Technology-aided communication	*The closed captions in online classes help a lot.* *I use chat GPT when I could not understand.*
	Mediation by the hearing	*When we were grouped with the hearing (one deaf per group), I started interacting through chatting.* *When we and the teacher did not understand each other, we asked the hearing classmates to explain. Some of them knew already how to finger spell.* *A teacher who knew a little sign language paired us with a hearing classmate. Then, we were able to participate.* *The hearing community always assisted. If the deaf found it hard to understand the teacher, then the hearing helped us.* *We did not communicate much, but my classmates helped me. With group projects, they wrote on paper what they wanted to talk about.*

Themes	Sub-Themes	Significant Statements
		My cousin explained the reading assignments to me. I let others read for me, too.
		When I faced difficulty, the interpreter always assisted. I did not have go to deaf peers.
		In the summer class, it was another teacher who assisted in interpreting during PE classes.
	Marginalization	*We were transferred to a teacher who knew a little sign. I felt it was discrimination -- removing us from the hearing class.*
		We did not ask questions or raised our hands in the class as we were afraid.
Financial constraints	Limited support for academic requirements	*I did not have cell phone load. I kept borrowing a phone.*
		I pleaded with my mother to pay the interpreter.
		I had a huge problem with Internet connectivity for online class.
		My mama was unable to pay, thus I was constantly disconnected.
	Reliance on specific family members	*My papa gave P3000 a month for phone load, food, and fare.*
		My father and aunt regularly sent money through Western Union.
		Only my sister supported me… gave assistance for the projects and assignments.
		My mother gave support. This was shared with my sister.
		It was my father who helped me when we were asked to buy ingredients for an activity.
	Economic sustainability	*My parents have little money. I told them I was stopping with studies, but by mother said "no, continue with college."*
		I did not experience the face-to-face. I stopped schooling because of money.

Navigating Complex Course Content

The deaf students experienced academic challenges in some subjects, especially those with difficult content and with learning activities that involved calculations, reading and writing, citing "formulas" and "deep words" as the sources of difficulty that caused stress and mental strain. Understandably, the curriculum of BTVTED itself connotes a complexity of learning as it combines acquisition of knowledge, skills, and attitudes as well as application of strategies in transferring these competencies to other settings (Jones, 2025). While the deaf students' academic struggle with complex content may mirror those of typically developing college students, theirs are shaped by their disability. For instance, studies have shown that deaf individuals appear to lag behind hearing peers in mathematics (Buyle et al., 2022) and in language acquisition because of limited modalities of communication (Durán-Bouza et al., 2021; Kusumaarum & Fanani, 2024). Additionally, the deaf may have insufficient knowledge of grammar, comprehension (Günhan & Güldenoğlu, 2024) and limited expansion of vocabulary because of the inability to hear (Rhespati et al., 2023).

Despite the challenges, they attempted to learn by studying and completing assignments with the aid of the Internet, accessing Google and ChatGPT. They reported seeking the help of deaf and hearing peers through the Messenger app, asking for ideas and rewording their written work. Studies have shown that deaf students rely on digital tools because of the "communication and support, visual information

presentation, etc." (Krasavina et al., 2023). The internet is considered a significant instructional material as it holds a vast spread of online tools, materials and platforms that can enhance learning experiences (Chalova, 2024) and are accessible by diverse learners who actively collaborate (Usmanalievna, 2024) at a reduced educational cost ((Kadirova, 2024). The use of ChatGPT among college students can be explained by the quick problem resolution and personalized learning experiences that it offers (Dragojević & Turudić, 2024).

Looking through the lens of CDT, the challenges experienced were a result from institutional barriers such as the curriculum designed for the hearing and the lack of adaptations. In addition, the social support from family and technology assistance that were constantly sought indicated their need for scaffolds that enable them to navigate the complex learning environment. Their struggles and persistence with overcoming barriers inherent in the curriculum created a combination of informal support and personally accessible digital tools that were woven from the deficiency in structured provisions of the institution.

Shift to Onsite Learning Modality

When the classes shifted from online to hybrid, the deaf students experienced nervousness with the face-to-face reporting. Similarly, Santos and Silva (2019) found that deaf people may have 'speaking anxiety' inherent to deafness. Additionally, the classroom-to-classroom transitions resulted to missing texts written on the board. Thus, they expressed preference toward the online class delivered through Google Meet with closed captions converting the teacher's or classmates' speech to text. This practice finds support from the work of Jolly et al. (2024) and the case study of Reyes et al. (2022) which revealed that students with sensory disabilities prefer online because of accessibility, flexibility, and support to the psycho-emotional well-being of participants.

From a CDT viewpoint, the students encountered difficulties due to the institutional decision to shift to hybrid classes, which includes an onsite setting that favored the hearing and disregarded the needs of the deaf. With very minimal preparation for the participation of the deaf learners in terms of procedures and accommodations, this change resulted to feelings of anxiety and communication difficulty. It was worth noting that the online learning with captions and better interpretation access were preferred by the deaf students. This highlights the need to redesign conventional teaching-learning environments in the onsite setting to imitate the inclusionary features of the online modality.

Access to Instructional Materials

The deaf students reported that while one instructor utilized multi-media materials in his lectures, another teacher discouraged even low technologies. Visual aids are devices considered to stimulate creative thinking, aid in comprehension, enhance engagement, and make the learning process more interesting (Qasserras, 2024) and were well-appreciated by the students. Specially designed instructional media address the distinct academic needs of learners (Siswono, 2023). Yet, the phrase "*we were not allowed to use the calculator*" implies a barrier, especially for the deaf students who were provided this accommodation in high school.

Equally important to the access of the instructors' learning materials was the students' access to their own learning materials such as scripts. The deaf students expressed that they "*felt lost without a script*" and that they always prepared them for the reporting. The script has a pivotal role as an instructional material for the whole class as it contains the information and the applications that the deaf student wishes to convey. Thus, the deaf student ascribed high value on them.

As seen through the CDT perspective, the inconsistency in the use of instructional media and materials, ranging from full utilization by some teachers to limitation of gadget use by students, reveals a weak

institutional practice of inclusion. Moreover, the experiences of the deaf students show how teaching practice can form barriers, disabling them with their participation in the learning activities.

Assessment-Related Difficulties

The students' experience with their failed subjects contributed to the uncertainty over the outcome of assessments. While the failures were distinct one-time events, there was fear that they may fail again in the recent performance assessments. The collective expression of "we" in the statement suggests a sharing of this struggle, especially that they feel that they tried their best as a group. It seems that this perspective agrees with what Thompson-Ochoa (2020) stressed: that failure is not largely influenced by the deaf student's ability; it is more influenced by the level of support provided.

The assessment methods were distressing for one student in terms of work piling "*one of top of another*." Additionally, the quizzes were reported as rushed, leaving little time to figure out the answers to the dictated questions which had to be interpreted first. From the statements, it can be seen that the volume of assignments as well as the pace and the manner of quizzes overwhelmed the students. Furthermore, the deaf students expressed their confusion over the instructions in the assessment, such that one resorted to cheating as a coping behavior. The vagueness of a learning task consequently results to students not being fully engaged. For instance, in a survey by Roy et al. (2018) of assessment practices of higher education institutions, the quality of written assessment tasks significantly affected students' satisfaction.

From the lens of CDT, the findings showcase how assessment practices embedded in the BTVTED curriculum do not consider the unique needs of the differently abled. The confusion due to vague instructions, and anxiety from tasks that are either rushed or overwhelming suggest that the issue stems from the assessment design and practice rather than the students' disability. By synthesizing these observations, CDT highlights the deficiencies in the teaching and evaluation methods, urging a shift to more accessible and universal modes.

Communication Facilitators and Barriers

One student preferred the online modality because of the closed captions in the Google Meet video conferencing platform while another preferred ChatGPT whenever the interpreter was not around to translate. These were technological tools and support mechanisms that were selected as solutions to problems with communication in the learning activities, which is reflective of the study by Jolly et al. (2024) where students experienced effective communication by accessing real-time captioning.

Whenever the students encountered school-related communication problems, they sought support from hearing classmates, family members and their hearing community. If the signed communication failed, they resorted to alternatives such as finger spelling and note writing. Through all these exchanges, the interpreters constantly played an active role. The article by De Meulder and Haualand (2021) confirms this, saying that access for deaf people is dependent on the presence of sign language interpreters. Thus, learning often occurred through the mediation of peers, teachers, family, and the interpreter.

During their transfer from a hearing class, the students felt they were detached and excluded. Even if the intention of the teacher was out of concern on their difficulty in communicating, it was perceived as discriminatory. The students also felt intimidated such that they did not raise hands in class to ask questions. It appears that when there is no open communication by others regarding their intentions, there will be feelings of exclusion and marginalization among the deaf.

Interpreted through the standpoint of CDT, the students' experiences demonstrate that learning of the deaf is influenced by the availability of digital-based communication supports as well as the assistance

of teachers and interpreters. When these supports are available and utilized, the communication barriers are overcome. However, the well-meaning assistance from teachers can also be misinterpreted as exclusionary, leading to feelings of marginalization and insecurity among the deaf.

Financial Constraints

Financial hardship was largely experienced by the deaf students. Due to the limited income of their families, they encountered difficulty paying for projects, for the cell phone load that facilitated their connectivity and access to digital tools, and for the interpreter. This experience revealed that the government's free tertiary education program was not even enough for families to be able to support their children's education. This unstable financial capacity could also have impacted the confidence of the students as they struggled to comply with the academic requirements.

Despite these financial hardships, the students received support from the family's remittances from abroad and meager regular allowance. This commitment to allot a portion of the family budget to sustain the education of the deaf students shows that families have a solid support system. When one of the students signified her withdrawal from studies, he was met with parental encouragement to "*continue with college*." It can be seen that even with the lack of finance resources, the family's persistence will sustain the education of those still continuing their studies until graduation.

Grounded on the insights of CDT, the financial struggles faced by deaf students highlight the ways in which structural and socio-economic inequalities combine with disability to hinder their full engagement in education. These obstacles illustrate that accessibility goes beyond teaching methods to encompass the financial conditions necessary for learning. In spite of these systemic failures, the determination and sacrifices of families demonstrate how individual resilience can make up for the shortcomings of structural support that should provide equitable access for all students.

CONCLUSION

Viewed from the perspective of Critical Disability Theory, the findings drawn from the data gathered through phenomenological inquiry demonstrated that institutional practices and social forces are causes of the learning struggles encountered by the students. From curriculum design and teaching practices to modality shifts, barriers surfaced in the absence of adaptations and other inclusionary measures. Because of these, scaffolds were sought by the students such as family and peer support and technological tools, which served as compensatory solutions and as substitutes to structured institutional provision of support.

LIMITATIONS

The findings reflect the narratives of only eight deaf students who were available during the interviews; thus, the voices of other three were not heard. Apart from missing the latter's experiences, the responses of those interviewed come from their memory which could not have been totally accurate. Additionally, some statements may have lost their true meaning during the process of interpretation even while they underwent member checking. From the CDT perspective, there are certain dimensions beyond the institutional and social contexts that could have been excluded in the analysis. Since the study was focused solely on one university, the findings are not generalizable to other higher education institutions in the region

RECOMMENDATIONS

The findings have practical implications to the provision of support and services that will promote the academic success of deaf students. Firstly, the subjects where the deaf students have problems with could undergo a curriculum review to transform teaching strategies and assessment methods, making

them more responsive to the cognitive and linguistic needs of the students. Secondly, digital tools and platforms as well as interpretation solutions can be made more accessible to students as they appear to be a powerful problem-solver in comprehension and communication challenges. Finally, the university could consider creating a disability services unit which will enable a systemic transformation to inclusive education.

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Senior High School Learners Engagement and Interaction during Synchronous and Asynchronous Classes for SY 2024-2025

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ABSTRACT

This study employs a mixed-method design to investigate Senior High School learners' engagement and interaction in synchronous and asynchronous classes during the School Year 2024–2025. The quantitative phase used an adapted structured survey to assess students' perceptions in both learning environments. A simple random sampling ensured representative data, analyzed through descriptive statistics. Qualitative phase involved focus group discussions analyzed via thematic analysis to explore students' experiences, challenges, and coping strategies in greater depth. Results revealed that students somewhat agrees on the learning engagement and interaction in they experience in both synchronous (M=2.83) and asynchronous (M=2.78) classes. Both modes support learning by providing accessible materials and teacher support. Synchronous learning excels in real-time interaction, while asynchronous learning offers flexibility and self-paced study. However, neither mode is widely viewed as more effective in improving assessment outcomes or fully comparable to traditional face-to-face learning. Qualitative results highlighted factors influencing engagement, including effective teaching strategies, stable technology, and supportive learning environments. Students reported challenges such as technical disruptions, delayed communication in asynchronous settings, procrastination, and difficulty maintaining focus. Personal strategies like time management, note-taking, and peer support emerged as important aids. The study recommends integrating interactive teaching methods, enhancing technical support, ensuring timely feedback, and fostering community to improve engagement. These results suggest that a blended learning approach may better balance flexibility with interaction to enhance student outcomes.

Keywords: Synchronous and Asynchronous classes, Learner's Interaction and Engagement, and Learning Environments

INTRODUCTION

Schools have implemented hybrid learning models to guarantee continuity of instruction in the changing educational scene, particularly following the peak of the COVID-19 pandemic. These are synchronous learning (real-time classes on digital platforms) and asynchronous learning (self-paced study using uploaded resources). Particularly for Senior High School (SHS) students getting ready for higher academic or professional routes, every model offers unique benefits and drawbacks in promoting student involvement and interaction.

According to Cordeiro (2024) effective learning is indicated by involvement and interaction. While interaction includes teacher-student and peer-to-peer exchanges that foster more knowledge, engagement shows a learner's emotional, cognitive, and behavioral involvement. The efficacy of these components can differ greatly across synchronous and asynchronous learning settings. Though their use has grown, especially in relation to Philippine education in SY 2024–2025, there is little study specifically on how SHS students experience and react to these modalities. Recent changes in the educational scene have been significant as it has moved from traditional in-person education to various forms of digital training. The COVID-19 pandemic hastened this change by demanding the widespread use of online learning formats including synchronous and asynchronous courses. Though in-person teaching in schools has started up again, the use of digital platforms remains a vital component of the educational process. In the domain of Senior High School (SHS), when students are at a turning point in their academic and vocational development, understanding the influence of different learning modalities on their involvement and interaction is vital (Gulyamova, 2023)

Rationale

Driven by technology developments, the shift to flexible learning modalities has changed the way education is delivered, particularly at the Senior High School (SHS) level. It is especially important to understand how both synchronous and asynchronous approaches affect student learning experiences as educational institutions employ both, especially in terms of involvement and interaction, which are key indicators of academic success. While asynchronous classes promote autonomy and self-directed study, synchronous classrooms provide real-time interaction and structured learning. Different modalities' effectiveness changes with student involvement and interaction inside each learning environment. Though their use is rising, little study has been done on the particular reactions of SHS students, especially in relation to the present academic year (SY 2024–2025), when blended learning remains a basic approach. By examining and contrasting the degrees of involvement and interaction among SHS students in both settings, this study aims to fill that gap. The results will provide important new information for administrators, teachers, and legislators on how to improve instructional methods supporting digital learning environments' general academic performance, active participation, and student motivation.

Current State of Research in the Field

Educational research has increasingly focused on online and hybrid learning, especially following the shift to distance education during the COVID-19 pandemic. Numerous studies highlight the benefits of synchronous learning in boosting student engagement, real-time interaction, and a stronger sense of community (Baber, 2021; Martin et al., 2020), as well as its ability to deliver timely feedback and enhance motivation. Asynchronous learning offers greater flexibility and learner autonomy but often struggles to maintain consistent engagement due to the lack of direct interaction and structured schedules. Poor instructional design can lead to feelings of isolation and reduced motivation among students. (Borup, 2020)

In the Philippine context, there is limited research on Senior High School (SHS) students, as most studies focus on higher education. This leaves a gap in understanding how SHS learners engage with different online learning modes. Additionally, while engagement and interaction are typically studied

separately, there is growing recognition of the need to explore their combined influence on learning outcomes (Redmond, 2018). As digital learning continues in the post-pandemic era, it is crucial to assess its impact on SHS students. This study contributes to the discourse by comparing the effects of synchronous and asynchronous learning on SHS student engagement and interaction during the 2024–2025 academic year, addressing both local and global research gaps.

Review of Related Literature and Studies

Grounded in constructivist learning theory—which emphasizes active, student-centered knowledge construction through interaction and experience—blended learning modalities have become essential in today's educational landscape, especially for senior high school students who are expected to develop critical thinking, collaboration, and independence (Khanifam, 2020). Engagement, defined as students' interest and enthusiasm (Balwant, 2017), and interaction, or meaningful communication with peers and teachers (Apriliyanto et al., 2018), are central to effective learning. Synchronous learning offers real-time feedback and structured support through platforms like Zoom and Google Meet (Setiadi et al., 2021), while asynchronous learning promotes flexibility and self-directed learning, though it requires higher motivation and digital skills (Northey et al., 2015). When combined, these modalities enhance participation, reduce isolation, and address issues of access and equity, particularly when supported by interactive strategies such as breakout rooms and live discussions (Bunga et al., 2021; Lane et al., 2021). Technology further strengthens constructivist outcomes by enabling critical inquiry, communication, and collaboration (Vargas et al., 2021; Singhal et al., 2020), making blended learning an increasingly vital model for responsive and inclusive education.

Gap to be bridged

While a growing body of literature explores online learning, much of it focuses on higher education. There remains a notable gap in research on Senior High School (SHS) students, whose developmental needs, learning behaviors, and motivational profiles differ significantly from those of adult learners. This lack of focused research is especially critical in the Philippine context, where challenges such as uneven access to technology, teacher preparedness, and familial support structures directly influence student learning experiences. Moreover, existing studies often examine synchronous and asynchronous learning in isolation, limiting a holistic understanding of how these modalities can be effectively integrated. Comparative and combined analyses that explore their respective strengths and limitations are scarce, particularly in secondary education. Additionally, post-pandemic educational shifts including the normalization of blended learning remain underexplored for SHS students adapting to new learning environments.

This study seeks to bridge these gaps by analyzing the experiences, challenges, and engagement patterns of SHS students within synchronous and asynchronous modalities. By grounding the research in constructivist learning theory and focusing on the blended learning landscape, the study aims to inform the design of more responsive, student-centered online learning environments.

Problem in the Field

The move to online and blended learning has transformed traditional classrooms, often making it harder to keep students—especially Senior High School (SHS) learners—engaged. While online learning offers flexibility, it can reduce motivation and increase isolation due to limited interaction and developing self-regulation skills (Borup et al., 2020; Dixson, 2015). Synchronous classes promote social presence and real-time feedback but face barriers like tech issues and distractions (Martin & Bolliger, 2018). Asynchronous learning supports independence but often lacks engagement due to minimal structure (Hrastinski, 2008; Redmond et al., 2018). In the Philippines, these challenges are worsened by unequal access to internet, devices, and digital skills (Dizon, 2021). Despite widespread adoption, little research exists on how Filipino SHS students engage in hybrid learning. Most studies focus on college students or foreign contexts (Chiu, 2021; Saavedra, 2020), limiting teachers' ability to

create effective, locally relevant instruction. Filling this gap is essential to improve outcomes and promote equitable, 21st-century education.

Objectives of the Study

This study aims to examine the levels and nature of learning engagement and interaction among Senior High School students in synchronous and asynchronous classes during the School Year 2024–2025. Specifically, it seeks to: (1) assess the levels of student engagement in synchronous and asynchronous learning environments; (2) analyze students' experiences of interaction with peers and teachers in both modalities; and (3) propose a data-informed action plan to enhance student engagement in blended learning settings.

Significance of the Study

The demand for flexible education has led to an increase in the popularity of online learning, with synchronous and asynchronous modes being the primary strategies. Synchronous learning promotes real-time interaction and community, but it is not flexible, whereas asynchronous learning provides flexibility but may decrease engagement. The efficacy of each mode is contingent upon its ability to foster communication and engagement. By examining factors such as involvement, interaction quality, cooperation patterns, and instructional strategies, this study compares student engagement and interaction in synchronous and asynchronous settings. The objective is to assist educators in improving student engagement and to assist institutions in the development of more effective online programs for a variety of learners. Furthermore, the investigation endeavors to offer insights for the enhancement of both learning modalities by analyzing students' experiences across various strands. These results have the potential to assist institutions in the development of more dynamic, supportive environments that will enhance student achievement and overall development.

Scope and Delimitation

This study aims to assess the engagement and interaction of Senior High School (SHS) students in synchronous and asynchronous learning during the SY 2024–2025 at University of Santo Tomas-Legazpi. It examines how students participate, communicate, and respond to different instructional methods, identifies common barriers to engagement, and proposes strategies for improvement. Academic and behavioral engagement—such as attention, motivation, and participation—are explored based on Freires and Lopes (2024). Data was gathered through surveys, focus groups, and key informant interviews, concentrating on online and blended learning. Findings may not be generalizable to all contexts but aim to provide insights that can guide lesson planning and policy-making, especially for SY 2025–2026.

METHODS

This study adopts a mixed-methods research design, integrating both quantitative and qualitative approaches to obtain a holistic understanding of Senior High School learners' engagement and interaction in synchronous and asynchronous classes during School Year 2024–2025. The quantitative component allows for the collection of measurable data on students' levels of engagement across different modalities, enabling statistical analysis and comparison. Meanwhile, the qualitative component provides rich, contextual insights into students' lived experiences, including the challenges they face, the strategies they use, and the factors that influence their interaction and motivation. By combining these methods, the study ensures both breadth and depth of analysis, capturing not only what is happening but also why and how it occurs—thereby strengthening the validity and relevance of the findings for practical application in blended learning environments.

Participants of the Study

The participants for the study were the Senior High School students of UST-Legazpi for S.Y. 2024 – 2025. The participants included are students from various strands to capture a diverse range of responses with a total population of 704. To determine the sample size, the Slovin's formula was used. Slovin's formula allows a researcher to sample the population and gives an idea of how large the sample size needs to be to ensure a reasonable accuracy of results (Ellen, 2022). The Slovin's formula for sample size calculation is given by:

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = sample size
N = population size
e = margin of error (typically set at 0.05 for a 95% confidence level)

Using the aforementioned formula, the supposed respondents of the study are the 352 Grade 11 and 12 students of UST-Legazpi. However, due to the limitations brought by several school activities, 210 responses were retrieved.

Research Instruments

To gather relevant data on the learning engagement and interactions among Senior High School students at UST-Legazpi, the researchers utilized a mixed-method research instrument composed of two main tools:

a. Survey Questionnaire. An adapted survey questionnaire from the study of Tunay et.al. (2021) to determine the learning engagement and interaction of the senior high school students in both synchronous and asynchronous classes.
b. Semi-Structured Interview. To complement survey data, participants was also asked to answer an interview question adapted from the study of Hidalgo-Andrade et al. (2022) to gain deeper insights about their experiences during synchronous and asynchronous classes. The interview includes a question focusing on students' challenges encountered, factors influencing their engagement and interaction and personal strategies and school initiatives to support students.

Data Gathering Procedures

Prior to the implementation of the study, the researchers sought permission from the Principal of the Senior High School Department of University of Santo Tomas-Legazpi to allow them to conduct the study to senior high school students. The data gathering procedure included the following phases:

a. Pre-Implementation. After securing the permission, the researchers proceeded with the modification and finalization in the adapted survey and interview questionnaires. The research instruments were then uploaded via google forms for easier access by the participants and collection of responses.
b. Implementation. For ethical considerations, the researchers made sure that the responses of the students will remain confidential. During the implementation process, a short orientation was conducted to ensure that the participants are aware about the conduct of the study, including the specific details on how they will access and answer the survey questionnaire. After the students answered the survey questionnaire, the researchers proceeded with the interview through a focus group discussion. The researchers asked for permission to record their responses for easier collection of data.

c. Post-Implementation. After collecting all the necessary data, the researchers proceeded with tallying the responses from the survey questionnaire. Responses from the FGDs were transcribed and organized.

Data Analysis

Quantitative data were analyzed using descriptive statistics such as mean and standard deviation to determine the levels of student engagement and interaction in both synchronous and asynchronous classes. To identify significant differences between the two modalities, comparative statistical tests such as independent samples t-tests were employed. Additionally, correlational analysis was used to examine the relationships between engagement levels and key variables such as frequency of participation, mode of delivery, and perceived interaction quality. Meanwhile, qualitative data from focus group discussions (FGDs) were analyzed using thematic analysis, identifying recurring patterns and categories that support, explain, or challenge the quantitative results. This mixed-methods approach enabled triangulation, enhancing the validity of the findings and ensuring that both statistical trends and learner experiences were considered in developing targeted strategies to improve engagement in blended learning environments.

Ethical Consideration

This study adhered to strict ethical standards to ensure the protection, dignity, and rights of all participants. Participation in the research was voluntary, and informed consent was obtained from all respondents prior to data collection. Participants was clearly informed about the purpose of the study, their right to withdraw at any time, and the use of the data they provide. Utmost confidentiality and anonymity were maintained and all sensitive information disclosed during interviews were handled with utmost care and respect.

RESULTS AND DISCUSSION

This research presents the perceptions of students regarding their interaction and engagement in synchronous and asynchronous learning environments. The presentation, analysis, and interpretation of data are arranged as follows: (1) learning engagement and interaction of the senior high school students in both synchronous and asynchronous; (2) learners' engagement and interaction experiences in synchronous and asynchronous classes; and (3) recommended plan of actions to enhance learning engagement of the students.

To ensure the reliability and validity of the study, the researchers employed several measures across both quantitative and qualitative components. For the quantitative phase, standardized survey instruments were a used instrument from existing research. In the qualitative phase, focus group discussions followed a semi-structured guide, and transcripts were analyzed through thematic analysis. Reliability was enhanced through consistent facilitation, and member checking to confirm the accuracy of interpretations. Triangulation of quantitative and qualitative data further strengthened the credibility and trustworthiness of the findings.

Learning Engagement and Interaction of Senior High School Students in Synchronous and Asynchronous Classes

With the adoption of different learning modalities in educational systems in the Philippines, understanding how students get engaged and interact with their classmates and teachers has become important. In this study, the researchers measured the learning engagement and interaction of Senior High School Students in terms of their synchronous and asynchronous classes.

Table 1. Learning Engagement and Interaction of Students in Synchronous Classes (N=210)

Items	Mean	SD	Interpretation
The instructional materials used during synchronous classes are appropriate and suited for my academic needs.	2.94	0.87	Somewhat Agree
Subject teachers utilize various strategies to encourage active learning among students, which enables me to learn more effectively.	2.99	0.87	Somewhat Agree
My internet connectivity is good and conducive for learning, so I am able to keep up with the discussions.	2.95	0.85	Somewhat Agree
I can easily interact with my teachers, so the questions I have in mind are clarified immediately and clearly.	2.91	0.82	Somewhat Agree
I can easily interact with my classmates, and we are able to discuss the content of a topic, which enables me to take the level of depth into a topic further than the instructor's presentation alone would.	2.91	0.86	Somewhat Agree
I get higher grades on my assessments when the topic is taught in synchronous sessions than when I do under the synchronous classes.	2.49	0.95	Somewhat Disagree
I can say that synchronous learning is in-par with face-to-face classes when it comes to the quality of learning that I get from it.	2.63	0.90	Somewhat Agree
Average Mean	**2.83**	**0.88**	**Somewhat Agree**

Table 1 shows the learning engagement and interaction of students in terms of synchronous classes. Results showed an average mean of 2.83 with a standard deviation of 0.88 indicating that the students somewhat agree as to how they maintain learning engagement and interaction whenever they have synchronous classes. Moreover, while students generally agreed that conducting a synchronous classes were still relevant in catering their academic needs, they somewhat disagreed when it comes to assessments. This result implies that synchronous classes may have the same level of student performance outcomes as with face-to-face (FTF) learning because of effective instructions (Francescucci et al., 2018), however the study of Kemp in 2020, reported that FTF classes offered more opportunities for direct interactions with instructors and peers, resulting in a larger sense of participation. This indicates that while delivery and support are strong, many still see synchronous classes as less effective than traditional classroom instruction. In terms of asynchronous classes, the table below shows how learning engagement and interactions are perceived by students.

Table 2. Learning Engagement and Interaction of Students in Asynchronous Classes (N=210)

Items	Mean	SD	Interpretation
The instructional materials uploaded on Aralinks are clear and easy to understand, and are arranged properly; thus, I am able to learn effectively even without the supervision of a teacher.	2.79	0.97	Somewhat Agree
There are different types of instructional and supplementary materials provided by the teachers (e.g., video presentations, recording of the discussions, etc.) that help me understand the lessons better.	2.85	0.98	Somewhat Agree
The subject teachers use different strategies such as evaluation tests and lesson sharing to assess what I learned about the topic.	2.86	0.89	Somewhat Agree

I can easily reach my subject teachers through FB messenger or using Aralinks inbox whenever I have questions regarding the lessons.	3.04	0.80	Somewhat Agree
The time I allot for different topics/subjects allows me to focus well, thus helping me learn at my own pace	2.97	0.94	Somewhat Agree
I get higher grades on my assessments when I study under an asynchronous set-up than when I do under synchronous classes.	2.42	0.96	Somewhat Disagree
I can say that asynchronous learning is in-par with face-to-face classes when it comes to the quality of learning that I get from it.	2.50	0.94	Somewhat Disagree
Average Mean	**2.78**	**0.93**	**Somewhat Agree**

Table 2 shows that students had a moderate level of engagement and interaction in asynchronous classes, with an average mean of 2.78 (SD = 0.93), indicating general agreement. However, unlike in synchronous classes, students somewhat disagreed that asynchronous and face-to-face modes offer equal learning quality. While asynchronous learning provides flexibility, materials, and teacher support (Pinar, 2021), it may lack the personal and social development benefits essential to student growth (Serdyukov, 2020). Thus, despite its convenience, concerns remain about its overall effectiveness and impact on academic performance.

Both synchronous and asynchronous modes support learning by providing accessible materials and teacher support. Synchronous learning excels in real-time interaction, while asynchronous learning offers flexibility and self-paced study. However, neither mode is widely viewed as more effective in improving assessment outcomes or fully comparable to traditional face-to-face learning. This suggests that a blended learning approach may offer a more balanced and effective solution.

The focus group discussion (FGD) explored the qualitative experiences of Senior High School students regarding their engagement and interaction in synchronous and asynchronous classes. The discussion aimed to identify key challenges to maintaining focus, as well as the personal strategies and school initiatives that support learner engagement. Responses from the interview questionnaire were coded and thematically analyzed to surface recurring themes and patterns.

Challenges Encountered in Maintaining Focus

Students reported a range of difficulties in sustaining focus across both synchronous and asynchronous learning modes. In synchronous classes, they noted that real-time interaction and teacher enthusiasm enhanced their attentiveness. However, frequent challenges included unstable internet connection, device limitations, procrastination, screen fatigue, and performance anxiety. Participants also shared that teacher delivery style and lesson interactivity significantly influenced their ability to remain engaged. These findings are consistent with the work of Hizriani et al. (2022) and Rido et al. (2023), who highlighted similar barriers to engagement such as technological limitations, low motivation, and varying levels of student participation.

In asynchronous settings, students used platforms like Messenger and email for communication, but delays in feedback often led to miscommunication and a sense of disconnection. Although some appreciated the less pressurized environment that allowed more time for reflection, many expressed a preference for the immediacy and clarity of synchronous interactions. These insights echo the findings of Nacionales (2023) and Bilad (2023), who emphasize the role of timely teacher feedback and structured communication in maintaining engagement in asynchronous learning.

Personal Strategies and School Support Mechanisms

To cope with these challenges, students shared various personal strategies to sustain their focus and engagement. These included time management techniques, goal setting, and the use of checklists or focus-enhancing apps (Belen, 2023; Javier et al., 2019). Additionally, note-taking, participation in discussions, and peer support through group chats or collaborative reviews helped maintain motivation and comprehension (Zhao et al., 2021). On the institutional level, learners appreciated school initiatives such as flexible deadlines, recorded lectures, and guided activities that supported autonomy while providing structure—especially in the asynchronous setup (Samson et al., 2023).

Overall, the FGD findings suggest that while synchronous learning fosters engagement through real-time interaction and teacher presence, it is often hampered by technical issues and screen-related fatigue. On the other hand, asynchronous learning promotes flexibility and self-paced study but suffers from delays in communication and reduced interactivity. Across both modalities, students emphasized the importance of interactive teaching methods, consistent technological support, a quiet learning environment, and clear learning structures as critical factors for maintaining focus and engagement.

Plan of Actions to Enhance Learning Engagement and Interaction

Based on the analysis of both synchronous and asynchronous learning experiences, it is recommended that educators and institutions implement the following:

Enhance Engagement through Interactive Teaching Strategies. Teachers should incorporate more interactive elements in both modalities, such as real-time quizzes, breakout group discussions, and multimedia materials. Making lessons more dynamic and responsive increases student motivation and attention.

Improve Technological and Environmental Support. Schools should consider providing technical assistance for students facing connectivity issues and promote the creation of conducive learning spaces at home through guidelines or support kits.

Encourage Clear Communication and Timely Feedback. In asynchronous learning, delayed responses are a common concern. Establishing regular check-ins, clear communication channels, and timely feedback mechanisms can significantly enhance student engagement.

Promote Time Management and Self-Regulation Skills. Students struggle with procrastination and distractions in asynchronous settings. Schools can support them by integrating time management workshops, encouraging the use of productivity tools (e.g., to-do lists, timers), and providing structured schedules.

Foster Community and Peer Support. Encouraging peer interaction through group chats or forums helps reduce feelings of isolation and builds collaborative learning communities. Teachers can assign peer-based tasks to enhance interaction.

Offer Flexibility with Structure. While flexibility is appreciated, the absence of deadlines can reduce productivity. Assignments should have reasonable deadlines and clear criteria, with built-in flexibility to accommodate individual student needs.

By addressing these key areas, institutions can create more engaging, inclusive, and effective learning environments across both synchronous and asynchronous platforms.

CONCLUSION

The finding of the study highlights the varied experiences of students in synchronous and asynchronous learning. The study revealed that students somewhat agrees on the learning engagement and interaction in they experience in both synchronous and asynchronous classes. Both modes support learning by providing accessible materials and teacher support. Synchronous learning excels in real-time interaction, while asynchronous learning offers flexibility and self-paced study. However, neither mode is widely viewed as more effective in improving assessment outcomes or fully comparable to traditional face-to-face learning. While many adapted by using strategies like note-taking and productivity tools, they still faced challenges such as home distractions, technical issues, delayed communication, and difficulty focusing. Key factors influencing engagement included effective teaching, responsive communication, and a supportive environment. Interactive activities and a sense of community also boosted motivation. The findings emphasize the need to balance flexibility with structure, enhance interaction through intentional teaching, and provide both technical and emotional support to create a more engaging blended learning experience.

RECOMMENDATIONS

The researchers recommend that future studies focus on the development and implementation of an evidence-based blended learning framework that integrates the strengths of both synchronous and asynchronous modalities. At the policy level, this framework can guide the formulation of national or institutional guidelines that standardize blended learning practices across basic education, ensuring quality and equity in digital instruction. At the classroom level, such a framework can support teachers in designing structured yet flexible learning experiences tailored to diverse student needs.

Further, it is recommended that future research examine the role of teacher facilitation, technological infrastructure, and instructional design in optimizing blended learning environments. Findings from such studies can inform professional development programs and resource allocation policies, ensuring teachers are equipped with the competencies and tools needed to effectively manage blended classrooms. Investigating the factors influencing students' learning satisfaction, academic behaviors, and adaptability to digital platforms can support both school-level implementation plans and policy interventions aimed at improving student engagement and long-term resilience in digital learning. These insights are critical for sustaining meaningful exposure to blended learning and for crafting learner-centered education policies responsive to the evolving demands of 21st-century education.

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Promoting Secondary School Students' Critical Thinking and Reasoning Skills using Inquiry-Based Learning Activities

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ABSTRACT

Critical thinking and reasoning are key skills for the complex and globalized economies and societies of the 21st century. There is increasing consensus that educational institutions and systems should cultivate these skills with their students. Thus, this study aimed to study critical thinking and reasoning skills using inquiry-based learning activities and to examine the impact of the program using A quasi-experimental one-group pretest-posttest design was utilized with 39 secondary school students in Bangkok., Thailand. Data were collected using a researcher developed situation based critical thinking and reasoning skills test, which demonstrated a Pearson's correlation coefficient of 0.87. Quantitative analysis was performed using means, standard deviations, and Cohen's d effect sizes. Three inquiry-based learning activities, validated by experts with an Index of Item Objective Congruence (IOC) between 0.67 and 1.00, were implemented. Results demonstrated a significant enhancement in all measured dimensions, with large effect sizes consistently observed. The overall critical thinking and reasoning scores showed a substantial increase from a pretest mean of 10.56(SD=4.91) to a posttest mean of 25.98(SD=6.88), yielding a large overall effect size of 2.58. These findings strongly support the efficacy of the 7E inquiry learning model in cultivating critical thinking and reasoning skills by actively engaging students in knowledge construction and facilitating the transfer of learning to real-world applications. The result also showed that students' critical thinking and reasoning skills in term of identifying relationships was the highest and making effective problem-solving decisions was the lowest in both pretest and posttest compared to other dimensions. These findings strongly support the efficacy of the 7E inquiry learning model in cultivating these skills by actively engaging students in knowledge construction and facilitating the transfer of learning to real-world applications.

Keywords: Critical Thinking and Reasoning Skills, Inquiry-Based Learning Activities, Secondary School Students

INTRODUCTION

Critical thinking and reasoning skills are essential because they empower people to successfully negotiate the challenges of today's world (Halpern & Dunn, 2021). The Partnership for 21st Century Learning (P21) emphasizes that students must master these skills to succeed in work and life. These skills are increasingly recognized as what distinguishes students who are prepared for complex life and work environments from those who are not . Within the context of key academic subjects, students must learn essential skills like critical thinking and problem-solving (Battelle for Kids, 2019; Thornhill Miller Branden et al., 2023). Those who can think critically and communicate effectively must build on a base of key academic subject knowledge. Ultimately, a focus on critical thinking and reasoning skills is essential to prepare students for the future.

Critical thinking and reasoning skills are a crucial foundation for developing educational and professional capabilities in Thailand (Kwangmuang et al., 2021). They are essential for individuals to adapt and apply critical judgment. Critical thinking and reasoning skills is a pivotal cognitive process that involves breaking down complex information into its essential components, identifying relationships between these parts, and establishing logical principles that connect disparate elements in a reasoned manner (Hart et al., 2021). Its ultimate goal is to foster a deep understanding of data or situations, enabling individuals to synthesize useful knowledge, make rational decisions, and solve problems effectively. Researchers have consistently identified analytical thinking as a crucial cognitive process, outlining its core components as follows: 1. Discerning essential components, 2. Identifying relationships, 3. Logically connecting information, and 4. Making effective problem-solving decisions (Battelle for Kids, 2019; Halpern, 2013; Wechsler et al., 2018). Consequently, developing analytical thinking skills is imperative for enhancing one's ability to navigate various global challenges and is a skill that should be cultivated in children and youth from an early age.

The Program for International Student Assessment (PISA), an international standardized assessment designed to evaluate the quality of education systems worldwide, assesses 15-year-old students. For Thailand, the assessed students were primarily in grades 7 within the compulsory education system. The recent PISA results for Thailand reveal a concerning trend Thai students achieved an average score of 409 in science and 379 in Reading (OECD, 2023). When compared to the PISA 2018 assessment, Thailand's average scores in both domains have declined. Specifically, the average score in science dropped by 17 points, and in Reading, it decreased by 14 points (Boonsathirakul & Kerdsomboon, 2023) . From practical experience in classroom instruction, a significant challenge observed in most students regarding analytical thinking skills lies in their ability to analyze problem statements. Students frequently struggle with interpreting meaning and providing answers directly relevant to the given questions.This issue becomes particularly pronounced when students encounter problems or scenarios that require the analysis of information or situations related to daily life. In such cases, students commonly face difficulties in comprehending the question, interpreting its implications, processing relevant data, and ultimately formulating appropriate responses. This consistent pattern strongly indicates a pressing need to enhance students' analytical thinking skill levels through targeted educational interventions.

Effective instruction is instrumental in fostering students' critical thinking and reasoning skills, transcending mere factual transmission to cultivate a more profound engagement with knowledge (Plummer et al., 2022). Pedagogical approaches that emphasize inquiry, problem-solving, and active learning afford students significant opportunities to independently analyze, synthesize, and evaluate information (O'Reilly et al., 2022). These instructional strategies compel learners to challenge presuppositions, consider diverse perspectives, and actively construct their understanding, thereby moving beyond the passive reception of information. Learning models that actively engage students in constructing knowledge, rather than passively receiving it, are particularly effective in enhancing critical thinking and reasoning skills. Among the most prominent and empirically supported are problem-based learning (Anggraeni et al., 2023; Smith et al., 2022), project-based learning (Hursen, 2021; Loyens et al., 2023) and inquiry-based learning (Lu et al., 2021; Sasanti et al., 2024). These

models share a common pedagogical foundation: they position students at the center of the learning process, thereby requiring them to actively investigate, analyze, and synthesize information within meaningful and authentic contexts.

The inquiry learning model represents a robust pedagogical paradigm that positions students as active participants in the construction of knowledge, moving beyond traditional transmissive approaches to education. Rooted in constructivist epistemology, this model emphasizes the development of higher order thinking skills, fostering deep understanding, and cultivating an intrinsic motivation for learning through investigation and discovery. This pedagogical approach manifests in various multi-stage frameworks, notably including the 5E inquiry learning model (Bybee, 2009), the 6E inquiry learning model (Burke, 2014), and the 7E inquiry learning model (Eisenkraft, 2003). A fundamental advantage inherent in these instructional paradigms is their pronounced emphasis on direct experiential learning, through which students are actively engaged in the process of seeking and investigating information to independently construct their own knowledge. The 5E inquiry learning model has served as a widely adopted and effective constructivist framework for science education (Leekhot et al., 2024) . The model were designed to guide students through an active learning process that aligns with contemporary understanding of how individuals construct knowledge (Ngozi & Hyacinth, 2021). While the 5E Inquiry Model is very widely recognized and often serves as the foundational framework for inquiry-based learning, some adaptations and specific implementations extend this to 7 steps. It expands on the 5E model by adding two initial "E"s that focus on eliciting prior knowledge and extending the learning beyond the core concept (Eisenkraft, 2003). The 7E inquiry learning model builds upon the 5E framework to provide a more comprehensive instructional approach, comprising seven distinct phases: engagement, exploration, explanation, elaboration, elicitation, evaluation, extension. It begins with Elicit to diagnose students' prior knowledge, followed by engage to spark interest. Students then Explore phenomena through hands-on activities, before the Explain phase where they articulate understanding and teachers introduce concepts. Elaborate applies knowledge to new contexts, while Evaluate assesses learning. Finally, Extend facilitates the transfer of learning to broader, real-world applications, systematically guiding students through a process that fosters deep understanding and critical thinking.

Based on the preceding discussion highlighting the critical need for enhanced critical thinking and reasoning skills among students, particularly in navigating real-world complexities. This study aims to investigate the effectiveness of inquiry-based learning activities in promoting critical thinking and reasoning skills among secondary school students. Specifically, this research will employ the 7E Inquiry Learning Model to explore its impact on students' abilities to analyze information, interpret implications, process relevant data, and formulate appropriate responses in various scenarios. By providing empirical evidence on the application and benefits of this specific inquiry framework in a secondary school context, this study seeks to contribute valuable insights for educators and curriculum developers seeking to cultivate these indispensable 21st century competencies.

Research Question

How does the 7E Inquiry Learning Model's effectiveness in enhancing critical thinking and reasoning skills among Thai secondary school students?

Research objective

To study critical thinking and reasoning skills using inquiry-based learning activities and to examine the impact of the program

METHODS

Research design

The present study employed a quasi-experimental research design, specifically utilizing a one-group pretest-posttest design to investigate the effectiveness of the intervention. This design involved

administering a pretest to the participants, followed by the implementation of the intervention, and concluding with a posttest administered to the same group. This allowed for the comparison of participants' critical thinking and reasoning skills before and after the intervention, with the aim of identifying any significant change.

Participants and data collection procedure

The population for this research consisted of 502 students across 14 classrooms at a school in Bangkok during the second semester of the 2024 academic year. A purposive sampling technique was employed to select the study's sample, consisting of 39 students from the same institution, as this particular group was under the direct instruction of the researcher. The experimental intervention spanned nine hours, delivered in weekly three-hour sessions, during the second semester of the 2024 academic year. The curriculum content utilized for this research aligned with the indicators and core learning standards outlined in the revised Science curriculum (B.E. 2560) within the framework of the Basic Education Core Curriculum B.E. 2551. The specific subject matter focused on "Our Weather," encompassing topics such as "Our Atmosphere" and "Climate change"

To evaluate the effectiveness of the inquiry-based learning model in promoting critical thinking and reasoning skills, data collection was conducted sequentially. Initially, the researcher clarified the learning objectives and procedural agreements with the participating students. Consent for participation, including permission for video and audio recording during the learning sessions, was then obtained from the study group. This was followed by a thorough explanation of the learning stages, activity design, and the respective roles of both the instructor and learners. A pre-intervention assessment of critical thinking and reasoning skills assessment was administered to the study group. Subsequently, the inquiry-based learning model was implemented. After the intervention, a posttest was administered to the same study group. Upon completion of both pre- and post-tests, the critical thinking and reasoning skills assessments were scored, and statistical analyses, including mean, standard deviation, and effect size, were performed.

Measurements

The research instruments utilized in this study comprised both instructional tools and data collection tools. The instructional tools consisted of three lesson plans. The primary data collection tool was an critical thinking and reasoning skills test.

The development of the critical thinking skills assessment involved several steps, including a review of relevant literature on critical thinking and rubric scoring. The assessment aimed to measure key abilities such as discerning essential components, identifying relationships, and logically connecting information, with the ultimate goal of fostering deeper understanding, useful knowledge synthesis, rational decision-making, and effective problem-solving in situational contexts. Additionally, the researchers consulted the Basic Education Core Curriculum B.E. 2551 (Revised B.E. 2560) for the Science learning area, specifically Earth and Space Science, and the curriculum for Science and Technology at the grade 7 level. A situational critical thinking skills assessment was then constructed to evaluate the ability to distinguish important components, find relationships, establish logical connections, understand information in depth, summarize useful knowledge, make reasoned decisions, and solve problems effectively. This assessment was subsequently presented to an advisor for review and revision, followed by submission to three experts for content validity evaluation, which yielded an Index of Item Objective Congruence (IOC) ranging from 0.67 to 1.00. Finally, the validated and revised assessment was piloted with a non-sample group before being implemented with the actual study sample.

RESULTS

Results of the data analysis on critical thinking and reasoning skills of students before and after receiving instruction using the 7-step inquiry-based learning model.

Table 1: The pretest and posttest mean scores, standard deviations, and effect sizes for each dimension of critical thinking and reasoning skills.

Critical thinking and reasoning skills	N	Full score	Pre-test M(SD)	Post-test M(SD)	Effect Size	Interpretation
1. Discerning essential components	39	12	3.34 (1.18)	6.76 (1.56)	2.47	Large effect
2. Identifying relationships	39	12	3.48 (1.41)	6.92 (1.43)	2.42	Large effect
3. Logically connecting information	39	12	2.00 (1.15)	6.12 (1.92)	2.60	Large effect
4. Making effective problem-solving decisions	39	12	1.74 (1.17)	4.98 (1.97)	2.62	Large effect
Overall	39	48	10.56 (4.91)	25.98 (6.88)	2.58	Large effect

Table 1 presents the pretest and posttest mean scores, standard deviations, and effect sizes for each dimension of critical thinking and reasoning skills. The data indicates a significant improvement in all measured dimensions from pretest to posttest. Specifically, for discerning essential components the mean score increased from 3.34(SD=1.18) to 6.76(SD=1.56), with a large effect size of 2.47. Similarly, identifying relationships showed an increase from 3.48(SD=1.41) to 6.92(SD=1.43), with an effect size of 2.42, also categorized as large. Logically connecting information demonstrated a substantial gain, moving from a pretest mean of 2.00(SD=1.15) to a posttest mean of 6.12(SD=1.92), yielding a large effect size of 2.60. The dimension of making effective problem-solving decisions also exhibited considerable improvement, with the mean score rising from 1.74(SD=1.17) to 4.98(SD=1.97), and a large effect size of 2.62. Overall, the total critical thinking and reasoning skills score increased from a pretest mean of 10.56(SD=4.91) to a posttest mean of 25.98(SD=6.88), resulting in a large overall effect size of 2.58. These findings consistently suggest that the intervention led to a substantial enhancement in critical thinking and reasoning skills across all analyzed components.

The findings of this study reveal a significant enhancement in students' critical thinking and reasoning skills following the implementation of the 7-step inquiry-based learning model. The consistent "large effect" sizes observed across all measured dimensions discerning essential components, identifying relationships, logically connecting information, and making effective problem-solving decisions—strongly support the efficacy of this pedagogical approach. The substantial increase in overall critical thinking and reasoning scores from pretest (M=10.56, SD=4.91) to posttest (M=25.98, SD=6.88), with an effect size of 2.58, underscores the model's profound impact.

DISCUSSION

The 7E Inquiry-Based Learning Activities provide a structured pedagogical framework for developing students' critical thinking skills within the context of climate change and weather. Each phase of the model is intentionally designed to facilitate specific cognitive processes. The Elicitation phase activates students' prior knowledge by connecting it to phenomena related to the subject, ensuring they are prepared and engaged.(Okafor & Nwonu, 2021) This foundational step helps students construct new knowledge. In the Engagement phase, learning stimuli such as problem statements, stories, or demonstrations related to climate change are used to capture student interest and foster active learning.(Astuti et al., 2023)

Following this, the Exploration phase provides students with opportunities to practice scientific inquiry by observing, identifying variables, and designing investigations. Using this hands-on approach, students learn meaningfully, develop scientific attitudes, and formulate hypotheses and conclusions about climate change and weather. The teacher provides guidance and feedback and also evaluates student achievement. The Explanation phase allows for the formal introduction of new concepts and terms, summarizing the findings from the exploration stage.

In the Elaboration phase, students apply their newly acquired knowledge, which can generate new problems for further investigation. The Evaluation phase provides a formative assessment of students' conceptual understanding, principles, and ability to apply concepts. Finally, the Extension phase encourages students to relate and apply concepts to everyday life, reinforcing their critical thinking skills throughout the learning process.(Gyampon et al., 2020) This approach is well-grounded in established pedagogical research and is particularly effective for complex, real-world topics like climate .change.

The significant gains observed in "discerning essential components" and "identifying relationships" indicate that the structured inquiry process effectively facilitated students' ability to deconstruct complex information and recognize underlying connections. This outcome is consistent with prior research asserting that inquiry-based approaches compel learners to challenge presuppositions and actively construct their understanding (Lu et al., 2021). Similarly, the marked improvement in "logically connecting information" and "making effective problem-solving decisions" suggests that the 7E model successfully guided students in synthesizing information, drawing reasoned conclusions, and applying their understanding to resolve challenges.(Lubiano & Magpantay, 2021). This comprehensive development across various facets of critical thinking and reasoning underscores the inquiry-based model's capacity to transcend rote learning, fostering a deeper, more transferable understanding of scientific concepts. This is particularly pertinent given the concerning decline in PISA scores for Thai students, highlighting a critical need for such pedagogical interventions (Sasanti et al., 2024).

Furthermore, the "Extension" phase (Step 7) of the 7E model, which promotes the transfer of learned knowledge to real-world applications, likely contributed significantly to the sustained improvement in problem-solving and reasoning abilities. This phase encourages students to apply concepts in novel situations, thereby reinforcing their analytical capabilities and underscoring the practical relevance of their learning. This finding corroborates arguments that effective instruction in critical thinking transcends mere factual transmission to cultivate a more profound engagement with knowledge (Plummer et al., 2022) and aligns with the 21st century skills framework, which emphasizes the importance of applying knowledge to complex life and work environments (Battelle for Kids, 2019; Ngozi & Hyacinth, 2021). The results of this study are also congruent with other investigations that have found inquiry-based learning to be effective in improving analytical thinking skills (Sasanti et al., 2024)and critical thinking skills (Kwangmuang et al., 2021; Leekhot et al., 2024).

The present study contributes valuable empirical evidence to the growing body of literature supporting inquiry-based learning as a potent strategy for enhancing critical thinking. It specifically highlights the utility of the comprehensive 7E Inquiry Learning Model in a secondary school setting, directly addressing a critical educational need for such skills within the Thai context.

CONCLUSION

This study successfully demonstrated that the 7E Inquiry Learning Model significantly enhances critical thinking and reasoning skills in secondary school students. The observed large effect sizes across all measured dimensions underscore the model's effectiveness in promoting active learning, problem-solving, and the application of knowledge. These findings are particularly relevant for improving educational outcomes in contexts requiring stronger critical thinking abilities, such as those indicated by recent PISA results in Thailand. We conclude that the 7E Inquiry Learning Model offers a powerful pedagogical framework for fostering essential 21st century skills, urging further investigation into its long-term impacts and broader implementation.

RECOMMENDATION

This section outlines key recommendations derived from the research findings, focusing on both the practical application of the 7E Inquiry Learning Model and avenues for future research.

1. Alignment of Content and Objectives: It was found that the selection of learning content and the formulation of learning objectives must directly align with the specific components of

analytical thinking skills intended for development in students. This ensures that instructional activities precisely target the desired cognitive abilities.

2. Strategic Questioning: During each phase of the 7E Inquiry Learning Model, teachers or implementers should consistently employ thought-provoking questions designed to stimulate students' analytical thinking. This approach helps students effectively apply learned knowledge to real-world situations and daily life contexts.
3. Emphasizing the Extension Phase: The 7E Inquiry Learning Model is effective in enhancing students' analytical thinking skills, particularly through the Extension phase (Step 7). This phase significantly stimulates analytical thinking and the transfer of knowledge to broader situations, enabling students to apply learned concepts beneficially in daily life. Furthermore, it encourages students to logically connect information, propose solutions for given scenarios, and ultimately make effective problem-solving decisions.
4. Future research should investigate the long-term effects of the 7E Inquiry Learning Model on analytical thinking skills and academic achievement. This would help track the durability and retention of knowledge and skills acquired by students over an extended period.
5. There is a need to develop more sophisticated assessment tools capable of evaluating analytical thinking skills across multiple dimensions. This could include the use of qualitative assessment methods such as observations, interviews, and analysis of student work. Additionally, analyzing student learning behaviours, such as their interaction patterns with learning content, teachers, and peers, would provide deeper insights into their learning styles and processes.
6. Future studies should explore the effects of the 7E Inquiry Learning Model on other dependent variables or its potential to foster additional skills, such as teamwork, to understand its broader educational impact.

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Factors Related to The Happiness Level of Early Childhood Education Students at Ramkhamhaeng University

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ABSTRACT

This research was descriptive research. The objective was to study the happiness level of early childhood education students at Ramkhamhaeng University and the relationship between sex, age, birthplace, grade level, family characteristics and how to meet with the student's advisor/professor related among early childhood education students' happiness. The sample consisted of 248 early childhood education students at Ramkhamhaeng University.The instruments used to collect data personal and a questionnaire on the happiness level of early childhood education students. This research collected data by interview method. Cronbach's alpha coefficient was 0.739. Percentage, mean, standard deviation and Chi-Square were employed for data analyses. Results, the majority of the respondents had a good level of happiness. 48.39%, followed by the fair level of happiness. The rate was 40.32% and the poor level was 10.29% . This was found that factors related to happiness are: gender, birthplace and family characteristics factor correlated with the happiness level of early childhood education students. The statistical significance was 0.05.

Keywords: Factors related, Happiness level, Early Childhood Education students

INTRODUCTION

The current framework for higher education in Thailand aligns with the National Higher Education Plan for Human Resource Development (2021–2027), established in accordance with the Ministry of Higher Education, Science, Research and Innovation Administrative Act, B.E. 2562 (2019), Section 11. The plan aims to enhance the quality of higher education systems by developing human capital as a key factor in increasing national competitiveness and promoting long-term societal sustainability. However, today's global context is rapidly evolving due to globalization, the emergence of the digital generation, technological advancements, and disruptive events such as the COVID-19 pandemic, which have directly affected lifestyles and economic conditions. These changes have exerted pressure on the labor force to adapt and upgrade their competencies. In addition, the ongoing deterioration of natural resources and the environment presents increasingly severe and tangible challenges.

These dynamics underscore the relevance of Section 6 of the National Education Act B.E. 2542 (1999), which emphasizes that "education must aim to develop Thai people into complete human beings in terms of physical, mental, intellectual, ethical, and moral aspects, and to foster cultural values for living happily with others." Therefore, universities have a responsibility to produce graduates who are not only competent but also happy. Happiness during university years is a vital part of undergraduate student life, particularly during the transition from late adolescence to early adulthood—a developmental stage characterized by adjustments to new environments, social interactions, and academic activities.

Undergraduate students, particularly those who study away from home and come from diverse backgrounds, often experience differences in upbringing, thoughts, and behaviors. These factors influence their daily lives, academic performance, and overall well-being. As such, it is imperative that universities and educational institutions pay close attention to designing learning systems and extracurricular activities—referred to in teacher education programs as "teacher identity development activities"—as well as fostering supportive environments and accessible guidance. In this regard, it is essential to develop the knowledge, skills, and attitudes necessary for each field of study in a manner that promotes joy in learning.
This approach is consistent with Ramkhamhaeng University's identity of "producing graduates with knowledge and morality." Enabling students to live and learn happily throughout their academic journey is fundamental. Consequently, universities must understand the factors that affect students' happiness, particularly intrinsic, individual-based factors. As noted by Apichai Mongkol (2011), a happy life results from the ability to manage life's challenges effectively and to develop oneself toward a better quality of life—encompassing internal virtues even in a changing social context. Student happiness is indicative of educational readiness, positively influencing learning motivation, creativity, health, interpersonal relationships, goal-setting, academic achievement, and employability.

Therefore, this study seeks to examine the factors associated with the happiness level of Early Childhood Education students at Ramkhamhaeng University. The findings aim to provide a foundation for the department and related stakeholders to formulate effective educational planning strategies that ensure students can genuinely enjoy their academic experiences.

Literature Review

Conceptual and Theoretical Frameworks on Happiness

Definition of Happiness

The Department of Mental Health (2020) defines happiness as a state of well-being resulting from an individual's ability to manage life challenges and develop oneself toward a better quality of life. This encompasses moral and emotional strength. Wittmann (2003) defines happiness as a high level of emotional satisfaction, often referred to using various synonymous terms such as well-being, pleasure, luck, joy, satisfaction, contentment, and ecstasy.

Measurement and Classification of Happiness

Phakbongkot (2001, p. 29) describes individual happiness as a feeling of self-worth, love for others, and a sense of satisfaction and understanding of oneself. Researchers in this field frequently ask, "What makes a good life?"—a question that must be answered individually. This form of happiness, often termed “subjective well-being,” plays a crucial role in both personal development and the promotion of others’ happiness.

Happiness, as a psychological dimension, is foundational to cognitive and emotional development, beginning with early attachment between mother and child. The Department of Mental Health (2009) categorized happiness into three levels:

1. Higher-than-average happiness (Good): Characterized by satisfaction with personal and social life, having life goals and meaning, positive emotions (e.g., energy, cheerfulness, hope), and the ability to handle stress effectively.
2. Average happiness (Fair): Individuals can function normally but experience alternating periods of positivity and stress, often with concerns related to finances, work, or relationships.
3. Lower-than-average happiness (Poor): Associated with chronic stress, sadness, burnout, lack of life goals or social support, and risk behaviors such as substance abuse and social withdrawal.

Factors Influencing Happiness

1. Individual Factors: Personal attributes such as income, mental health, personality, and self-esteem significantly influence happiness. Sufficient income, for instance, is consistently linked to higher life satisfaction as it alleviates financial stress and enables access to essential resources (Diener & Biswas-Diener, 2002).
2. Family and Social Factors: Family relationships and social support networks play a vital role in shaping individual happiness.
3. Environmental and Community Factors: The quality of the living environment significantly affects well-being.
4. Organizational and Work-Related Factors: A positive work environment contributes meaningfully to employee happiness.
5. Psychological Frameworks: The PERMA model—comprising Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment—provides a comprehensive structure for understanding sustainable happiness (Seligman, 2011).

Context of the Early Childhood Education Program at Ramkhamhaeng University

The Bachelor of Education Program in Early Childhood Education at Ramkhamhaeng University is housed under the Department of Curriculum and Instruction within the Faculty of Education. The program offers a single degree aimed at producing early childhood educators with distinct identities—individuals who embody both academic knowledge and moral integrity.

Philosophy of the Program

The program is founded on the principle of nurturing early childhood educators who are honest, responsible, creative, and committed to lifelong learning. Graduates are expected to effectively utilize technology and possess the professional competencies necessary to contribute to the development of themselves, their profession, society, and the nation.

Program Objectives

The program aims to produce graduates with the following characteristics:

1. Moral and Ethical Integrity – Graduates uphold ethical standards and embody the professional spirit of early childhood educators through honesty, diligence, patience, and responsibility.
2. Holistic and 21st-Century Skills – Graduates are equipped with life skills and 21st-century competencies, able to manage early childhood learning environments, communicate effectively, and collaborate with children, families, educational institutions, communities, and society at large.

3. Technological and Innovative Proficiency – Graduates are capable of applying diverse digital innovations and technologies to integrate knowledge development and address learner challenges through effective research and innovation.
4. Leadership and Adaptability – Graduates understand the roles of academic leadership and followership, stay current with educational changes, and apply creative thinking in early childhood education settings.
5. Lifelong Learning – Graduates continuously develop themselves, their learners, their profession, society, and the country.

Curriculum Development Principles

The program's ongoing development is driven by a focus on modernization, alignment with national development strategies, and responsiveness to digital learning trends. The curriculum has been informed by prior research revealing structural redundancy, as well as international best practices in teacher preparation. Stakeholder consultation also played a vital role in refining the curriculum to meet national education quality goals. Key principles of the curriculum include:

1. Competency-Based Integration – The curriculum is designed to be integrative and competency-based rather than content-focused, emphasizing self-directed learning and research-driven innovation.
2. Flexibility and Responsiveness – The structure allows flexibility to meet present and future demands for qualified educators and responds to diverse learner needs.
3. Institutional Autonomy – Universities have the freedom to tailor curriculum structures to reflect their unique identities and local contexts, using learning outcomes as a shared goal across education disciplines.
4. International Standards and Digital Integration – The curriculum is designed to reflect global standards, with modern instructional design incorporating digital media and technologies.
5. Professional Identity and Ethics – The curriculum fosters strong professional competencies, a teaching ethos, and alignment with national teaching standards.
6. Rigorous Quality Assurance – The curriculum emphasizes robust quality assurance systems to ensure that students are holistically developed—physically, mentally, emotionally, socially, and intellectually—so they can live happily and contribute to national peace, prosperity, sustainability, and global competitiveness.

As a result, the Early Childhood Education Program at Ramkhamhaeng University is structured to be responsive to current societal needs and aligned with both the Thai Qualifications Framework for Higher Education and the professional standards of the Teachers' Council of Thailand (Khurusapha). It aims to produce graduates who meet real-world demands.

Supplementary Curriculum Activities (Teacher Identity Development Activities)

The Bachelor of Education Program also includes "Teacher Identity Development Activities," designed to cultivate the attributes of 21st-century teachers—often referred to as "Teacher 4.0." These activities are essential for developing graduates who meet the standards of the Teachers' Council of Thailand and the National Qualifications Framework (2015). Such activities may be standalone or integrated into course content, and each university may organize them according to their institutional context. At least two activities are required per year. Examples include:

1. Activities fostering faith, commitment, and passion for the teaching profession
2. Volunteering and public service projects benefiting communities and society
3. Activities promoting patriotism, religion, monarchy, and Thai cultural identity
4. Activities aligned with the philosophy of Sufficiency Economy and the King's initiatives
5. Scout, Girl Guide, or Red Cross Youth activities
6. Health promotion, disease prevention, and sex education programs
7. Activities promoting democratic values and civic participation (e.g., elections)
8. Cultural, artistic, musical, and performing arts activities
9. Health, sports, and recreational programs
10. Academic development activities
11. Other activities deemed appropriate by the institution

Universities may customize these activities according to their institutional context, such as English language development, digital literacy, life skills, or professional-specific training. The selection and implementation of such activities depend on the objectives and expected learning outcomes of each institution. Consequently, teacher development activities are diverse and integrate both science and the arts to nurture student potential.

Moreover, the curriculum remains responsive to ongoing contextual changes, ensuring that the content and structure of teacher identity development activities stay relevant and student-centered. This responsiveness aligns with national educational policies and contributes to students' well-being during their academic years and as future graduates of the Early Childhood Education Program.

Therefore, from the study of concepts, theories, and related literature, a conceptual framework has been formulated to be used as a guideline for study. As shown in Picture 1.

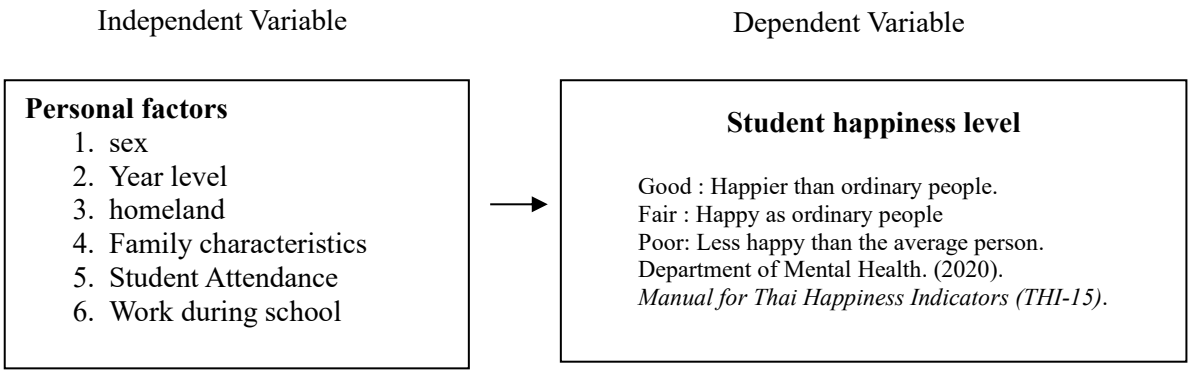

Figure 1 Conceptual framework for research

Objective

1. To study the level of happiness of students majoring in Early Childhood Education Ramkhamhaeng University

2. To study the relationship between gender, academic year level, place of origin/home province, family background, class attendance, student employment and the level of proficiencyThe Happiness of Early Childhood Education Students Ramkhamhaeng University

METHODOLOGY

Population and sample

The population was 681 students majoring in Early Childhood Education, Ramkhamhaeng University who were enrolled in the 2nd semester of the 2024 academic year.

The sample studied was 248 students of the Department of Early Childhood Education, Ramkhamhaeng University who were enrolled in the 2nd semester of the 2024 academic year.

Research Tools

In this research, a questionnaire was used to collect data, divided into 2 parts as follows: Part 1 Questionnaire General information Part 2: 15-question questionnaire on the happiness level of students in Early Childhood Education (updated from Department of Mental Health.

Part 1: General information questionnaire with 6 questions, including gender, academic year level, place of origin/home province, family background, class attendance, student employment \ and close-ended response questions.

Part 2 Questionnaire on the Happiness Level of Early Childhood Education Students 15 questions are 4 levels of rating scale.

Instrument Quality Inspection
Once the draft questionnaire is created, The content validity was checked by 3 experts to be used to calculate the consistency between the question and the purpose of the study (Index of item objective congruence (IOC) using the selection criteria for question questions with a value of more than 0.5. The results of the investigation showed that the consistency index value for each item was between 0.67-1.00, and then the questionnaire improved according to the expert's recommendation was tested on a sample (try out) of 30 sets to analyze the reliability of the whole questionnaire with the Cronbach Alpha Coefficient value, which was equal to 0.739.

Data Collection
This research Data was collected through an online questionnaire via Google Form and a paper questionnaire by sending the questionnaire to a sample of students majoring in Early Childhood Education. Ramkhamhaeng University

Statistics used in research and data analysis
Once the data is complete, the general data of the respondents and the happiness level of the students of the Early Childhood Education Department will be analyzed. Ramkhamhaeng University using statistics. Frequency, percentage, and find the relationship between personal factors and happiness levels of students majoring in Early Childhood Education. Ramkhamhaeng University With Chi-Square Test

RESULTS

1. Results of the analysis of the personal status data of the sample

The participants in this study were students enrolled in the Early Childhood Education Program at Ramkhamhaeng University. The majority of respondents were female, totaling 236 individuals, which accounted for 95.16% of the sample. Most were fourth-year students (n = 93, 37.50%). Regarding their place of origin, the largest group came from the southern region of Thailand, with 148 students (59.68%). In terms of family background, most students lived with both parents, totaling 184 individuals (74.19%). As for class attendance, the majority reported attending classes regularly (more than 80% of the time), totaling 213 students (85.89%). Concerning employment status during their studies, most students were not employed, accounting for 117 individuals (47.18%).

1. Results of the analysis of the happiness level of the sample

2.1 The analysis of the happiness levels among students in the Early Childhood Education Program at Ramkhamhaeng University revealed the following:

1. High level of happiness (Good) – 120 students (48.39%) scored between 33 and 45 points, indicating a happiness level above that of the general population.
2. Moderate level of happiness (Fair) – 100 students (40.32%) scored between 27 and 32 points, indicating a happiness level equal to that of the general population.
3. Low level of happiness (Poor) – 20 students (11.29%) scored 26 points or less, indicating a lower happiness level than that of the general population.

Table 1 Results of analysis of student happiness level overall (n=248)

Student happiness level	Number (n=248)	percent
Good (33 – 45 points)	120	48.39
Fair (27 – 32 points)	100	40.32
Poor (26 points or less)	28	11.29
combine	248	100.00

2.2 Analysis of Itemized Happiness Levels among Early Childhood Education Students

The analysis of itemized responses regarding happiness among Early Childhood Education students at Ramkhamhaeng University revealed the following key findings:

1) Daily Life Satisfaction – 155 students (62.50%) reported a high level of happiness in their daily life routines.
2) Self-pride – 120 students (48.39%) reported feeling a strong sense of pride in themselves.
3) Physical Well-being – 160 students (64.52%) indicated good physical health in their daily lives.
4) Body Image Satisfaction – 110 students (44.35%) expressed satisfaction with their physical appearance.
5) Friendship and Peer Relationships – 118 students (47.58%) reported very high levels of happiness with their social interactions.
6) Crisis Management Confidence – 114 students (45.97%) expressed high confidence in handling life crises.
7) Frustration Tolerance – The majority (149 students or 60.08%) reported only a low level of tolerance for unmet expectations.
8) Empathy toward Others' Success – 158 students (63.71%) reported very high happiness in feeling joy for others' achievements.
9) Independence in Daily Tasks – 142 students (57.26%) could independently perform daily routines with a high level of satisfaction.
10) Happiness in Helping Others – 161 students (64.92%) reported a very high level of happiness when helping others.
11) Perceived Community Safety – 139 students (56.05%) believed their community to be safe.
12) Perceived Value to Family – 156 students (62.90%) felt they were highly valued by their families.
13) Availability of Social Support – 120 students (48.39%) acknowledged having access to supportive friends or community members.
14) Initiative and Determination – 126 students (50.81%) reported being happy when starting new tasks and striving to complete them.
15) Opportunity for Rest and Relaxation – 102 students (41.13%) indicated that they had sufficient opportunities to rest and relieve stress.

Table 2 Results of happiness level analysis Student Essay

Question	**Comment Level**						
1. Students feel happy in their daily lives.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	1	35	155	57	2.08	0.618	8
percent	0.40	14.11	62.50	22.98			
2. Students feel proud of themselves.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	1	36	120	91	2.21	0.696	6
percent	0.40	14.52	48.39	36.69			
3. Students are in good physical health in life.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	2	37	160	49	2.03	0.616	10
percent	0.81	14.92	64.52	19.76			
4. Students feel satisfied with their appearance.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	6	63	110	69	1.98	0.794	11
percent	2.42	25.40	44.35	27.82			
5. Students have a good relationship with friends.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	1	25	104	118	2.37	0.678	5

Question	Comment Level						
percent	0.40	10.08	41.94	47.58			
6. Students are confident to face serious events that occur in life.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	16	89	114	29	1.63	0.774	13
percent	6.45	35.89	45.97	11.69			
7. Students will "not" feel frustrated. If things don't go as expected,	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	11	149	73	15	1.37	0.667	14
percent	4.44	60.08	29.44	6.05			
8. Students are delighted with the achievements of others.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	0	6	84	158	2.61	0.536	2
percent	0.00	2.42	33.87	63.71			
9. Students can perform various daily routines on their own.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	0	10	96	142	2.53	0.575	4
percent	0.00	4.03	38.71	57.26			
10. Students feel happy in helping others when they have the opportunity.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	0	2	85	161	2.64	0.497	1
percent	0.00	0.81	34.27	64.92			
11. Students are confident that the community in which they live is safe.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	0	46	139	63	2.07	0.661	9
percent	0.00	18.55	56.05	25.40			
12. Students feel that students are valued by their families.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	1	16	75	156	2.56	0.634	3
percent	0.40	6.45	30.24	62.90			
13. Students have friends or other members of society to help students in times of need.	not at all	slight	very	most	Mean	Hours of deviation	order
amount	2	43	120	83	2.15	0.722	7
percent	0.81	17.34	48.39	33.47			
14. Students are happy to take new initiatives and are committed to achieving them.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	1	14	126	107	2.37	0.609	5
percent	0.40	5.65	50.81	43.15			
15. Students have the opportunity to relax and relieve stress.	not at all	slight	very	most	Mean	Std. Deviation	Rank
amount	5	85	102	56	1.84	0.792	12
percent	2.02	34.27	41.13	22.58			

3. Results of the analysis of the relationship between personal factors and happiness level of students majoring in Early Childhood Education. Ramkhamhaeng University

3.1 Gender personal factors are related to the level of happiness

3.2 Academic year level factors are not related to happiness level.

3.3 Place of origin/home province factors are related to happiness level.

3.4 Family background factors are related to the level of happiness.

3.5 Class attendance factors are not related to happiness level.

3.6 Student employment factors are not related to happiness level.

Table 3 Results of the analysis of the relationship between personal factors and student happiness level **(**n=248)

Personal factors	Student happiness level	
	Chi-Square	P-value
gender	85.625	0.001*
academic year level	57.632	0.891
place of origin/home province	125.109	0.025*
family background	62.344	0.080*
class attendance	49.907	0.397
student employment	52.323	0.310

Note: * Statistically significant at the level of 0.05

DISCUSSION

The results of this study provide a comprehensive understanding of the happiness levels of students in the Early Childhood Education Program at Ramkhamhaeng University. The findings indicate that the majority of students experience moderate to high levels of happiness, with 48.39% reporting above-average happiness and 40.32% reporting happiness levels equivalent to the general population. Only 11.29% of students reported below-average happiness, which reflects a predominantly positive well-being profile among the student population.

Itemized Happiness Indicators

Item-level analysis revealed that the highest levels of happiness were associated with students feeling joy in helping others (mean = 2.64), celebrating the success of others (mean = 2.61), and feeling valued by their families (mean = 2.56). These findings suggest that prosocial behavior, empathy, and familial support play a critical role in students' sense of well-being. These results align with the findings of Seligman (2011), who emphasized "relationships" and "meaning" as core components in the PERMA model of well-being.

Moreover, students also reported high levels of independence in daily tasks (mean = 2.53), strong peer relationships (mean = 2.37), and motivation to initiate new challenges (mean = 2.37), which are indicative of positive psychological functioning and adaptive coping mechanisms typical of resilient individuals.
Conversely, the lowest scoring items were related to emotional regulation. Specifically, many students indicated a low capacity to remain calm when outcomes do not align with their expectations (mean = 1.37). This suggests a need for interventions that support emotional resilience, frustration tolerance, and adaptive stress management—key competencies for both personal well-being and future professional roles as educators. Additionally, relatively low mean scores were recorded in satisfaction with physical appearance (mean = 1.98) and opportunities for rest and relaxation (mean = 1.84), which may reflect challenges related to body image and student workload.

Relationship Between Personal Factors and Happiness

Chi-square analysis of personal factors revealed that gender, place of origin/home province, and family background were significantly associated with happiness levels at the 0.05 level:

Gender: Female students reported significantly higher happiness levels compared to their male counterparts ($\chi^2 = 85.625$, $p = 0.001$). This finding may reflect stronger emotional expression and

social support networks among female students, which have been noted in previous studies to enhance subjective well-being.

Place of origin/home province: Students from different regions showed significant variation in happiness levels ($\chi^2 = 125.109$, $p = 0.025$). This may be attributable to regional differences in cultural norms, social expectations, or access to support systems during university life.

Family background: Students living with both parents were more likely to report higher happiness levels ($\chi^2 = 62.344$, $p = 0.080$*), underscoring the importance of stable family environments in fostering emotional security and psychological well-being.

Meanwhile, no statistically significant relationships were found between happiness and academic year, class attendance, or part-time employment. This suggests that while academic experiences and work responsibilities may influence stress levels, they do not necessarily determine long-term happiness, which may be more deeply rooted in social and psychological domains.

DISCUSSION AND CONCLUSION

1. Based on the study of happiness levels among Early Childhood Education students at Ramkhamhaeng

University, it was found that the majority of students had higher levels of happiness than the general population. A smaller number of students reported happiness levels equal to the general population (fair), followed by those with lower happiness levels (poor). This indicates that most students have characteristics of people with happiness levels above the average for the Thai population. This reflects a good quality of life, strong mental health, and the ability to effectively handle stress or life obstacles. They also have good social relationships and clear life goals and purpose. This level of happiness is considered a crucial goal for the long-term development of the quality of life of citizens. This finding is consistent with the research of Patcharee Thungkaw (2018), who studied a mental health promotion program using a 5-dimensional psychological happiness model. The study found that before participating in the program, 13 elderly participants (21.67%) had lower happiness levels than the general population, 22 participants (36.67%) had happiness levels equal to the general population, and 25 participants (41.67%) had higher happiness levels than the general population.

However, this study also found a cautionary point for the group with lower happiness levels (poor). Individuals in this group often show signs of being at risk for mental health issues, such as chronic stress, feelings of sadness, hopelessness, or a lack of life goals. Some may also exhibit social withdrawal or, in some cases, depression. This group should receive urgent assistance or mental health promotion to prevent the development of severe mental health problems in the future.

2. Based on the study of the relationship between factors such as gender, academic year, hometown, family

type, student enrollment, and working while studying on the happiness levels of Early Childhood Education students at Ramkhamhaeng University, it was found that only three personal factors had a relationship with happiness levels: gender, hometown, and family type. This suggests that a person's happiness is significantly influenced by personal factors as well as family and social factors. Family relationships and social support play an important role in an individual's happiness and access to various fundamental factors, which have a positive effect on happiness, should be increased. This is in line with the Department of Mental Health (2020), which stated that true happiness comes from within, including a happy state of mind, self-satisfaction, and self-love. These feelings are then projected outward, creating good relationships with others. Receiving good support from those around you, including family, friends, society, and the community, as well as being in a good environment that provides a sense of security and safety, further contributes to a happy mind.

RECOMMENDATIONS

Based on the findings, the following recommendations are proposed:

1. Integrate Emotional Intelligence and Stress Management Training Universities should incorporate workshops or modules on emotional regulation, stress tolerance, and mindfulness practices to support students in managing frustration and maintaining psychological resilience.
2. Enhance Access to Counseling and Wellness Services. Institutions should strengthen student support services, including mental health counseling, especially for those experiencing low levels of happiness or signs of emotional distress.
3. Promote Balanced Lifestyles and Workload Management. Curriculum designers and academic advisors should ensure that student workloads allow time for rest, recreation, and self-care to promote overall well-being.
4. Encourage Family and Community Engagement. Activities that strengthen connections between students, their families, and local communities should be promoted, given their positive correlation with happiness levels.
5. Design Culturally Responsive Programs. Since students' hometowns significantly influenced happiness, student services should be sensitive to regional and cultural differences, offering support tailored to diverse backgrounds.
6. Foster Peer Support Networks and Mentorship. Creating structured peer mentorship or buddy systems can help foster inclusion and emotional support, particularly for students from less advantaged or distant regions.
7. Utilize Findings for Program Development. The Early Childhood Education department and relevant stakeholders can use these findings to revise curricula and co-curricular activities to ensure students are not only competent but also happy and well-adjusted.

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Development of Learning Achievement and Attitude toward Science Using CIPPA Model Teaching Technique in Junior High School

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ABSTRACT

This study investigated the effectiveness of the CIPPA Model instructional strategy in enhancing science achievement and fostering positive attitudes toward science among grade 9 (Secondary 3) students at Wat Nongchok School, Bangkok, Thailand. Recognizing the critical role of science literacy and the challenges Thai students face in international assessments, this research sought to provide empirical evidence for an innovative pedagogical approach. The study employed a quasi-experimental, pre-test–post-test single group design, involving a randomly selected sample of 40 students from a total population of 429. Six lesson plans specifically designed using the CIPPA Model were implemented over three weeks to teach the topic "Writing Chemical Equations." Both science achievement and attitudes toward science were measured using pre-test and post-test instruments. The achievement test, consisting of 30 multiple-choice questions, and an eight-item Likert-scale attitude questionnaire, demonstrated high Item Objective Congruence (IOC) values. A paired-samples t-test was conducted to compare pre- and post-test scores, with statistical significance set at $p<0.05$. The results revealed a statistically significant improvement in science achievement (mean pre-test = 10.65, mean post-test = 21.68; $t=17.60$, $p<0.001$) and a significant positive shift in attitudes toward science (mean pre-test rating range: 3.18-3.71, mean post-test rating range: 4.03-4.59; $t=7.96$, $p<0.001$). These findings strongly support the hypothesis that the CIPPA teaching technique effectively enhances both students' academic performance and their positive engagement with science. This research contributes valuable foundational evidence for future studies exploring and implementing student-centered instructional models to improve science education outcomes in the Thai context and beyond.

Keywords: Academic Achievement, Model Teaching, CIPPA Model, Attitude Toward Science

INTRODUCTION

Science literacy underpins individuals' capacity to understand the natural world, solve problems, and make informed decisions in a technology-rich society. This study centres on two focal constructs as indicators of effective science education. Academic achievement denotes measurable gains in curriculum-aligned knowledge and skills, conceptualised along Bloom's taxonomy from recall to higher-order application. Attitude towards science is treated as a multidimensional construct encompassing cognitive beliefs (value and relevance), affective responses (interest and enjoyment), and behavioural tendencies (willingness to engage), aligning with the PISA 2006 attitudinal domains of interest in science, support for scientific inquiry, and responsibility towards resources and environments (Bybee & McCrae, 2011). Mapping our instruments to these established models strengthens construct clarity and interpretive alignment.

Thailand's recent performance trends underscore the need for pedagogical innovation. International assessments indicate declines in science achievement relative to 2018 benchmarks (OECD, 2023a; 2023b), and national evaluations such as the O-NET continue to signal gaps in students' scientific understanding (NIETS, 2024). Policy priorities concurrently emphasise cultivating 21st-century competencies—critical thinking, problem solving, collaboration, and communication—as integral to science learning (van Laar et al., 2017). The Thai Qualifications Framework for Higher Education (TQF:HEd) further articulates graduate characteristics across morality and ethics, knowledge, intellectual skills, interpersonal responsibility, and communication with information technology (Office of Higher Secondary Education Administration, 2015). Instructional designs that explicitly connect active knowledge building with authentic application are therefore especially salient.

The CIPPA model—Constructivism, Interaction, Prior knowledge, Participation, and Application—offers a coherent, student-centred approach that operates directly on these constructs. Constructivism positions learners to actively create meaning, promoting conceptual change and schema construction. Interaction structures collaborative discourse that surfaces misconceptions and provides feedback, enhancing understanding while fostering enjoyment and belonging. Prior knowledge activation reduces cognitive load and scaffolds integration of new ideas. Participation ensures hands-on involvement that consolidates skills through practice. Application situates concepts in authentic contexts, strengthening transfer (achievement) and perceived relevance and responsibility (attitudes). Collectively, these mechanisms target the cognitive and affective pathways by which instruction influences both achievement and attitudes (Webb, 2023; Boonklum, 2015; Anjirawaroj, 2020).

Recent evidence in basic education reinforces this theoretical linkage. Duangjinda and Eiamguaw (2023) reported that Grade 6 students taught Earth-science topics with CIPPA achieved higher post-test scores and greater interest in science than peers in conventional lessons. An experimental comparison at Grade 4 similarly found superior science achievement for CIPPA groups over traditional instruction (ICBTS/SSRU Proceedings, 2020). Beyond science, Binda-oh et al. (2023) observed higher mathematics achievement among Grade 8 students under CIPPA, suggesting the model's mechanisms generalise across subjects. Complementary conceptual syntheses detail CIPPA's cyclical practice stages and their alignment with cognitive and affective outcomes (Klahan & Yawai, 2024). Together, these studies provide both conceptual rationale and empirical precedent for examining CIPPA's effects on achievement and attitudes towards science in lower-secondary settings.

Wat Nongchok School, located in Bangkok's Nong Chok district, serves a diverse cohort of lower secondary students, many of whom come from semi-urban and peri-urban communities. Grade 9 (Secondary 3) was chosen because it represents a transitional stage before upper secondary education, where foundational science concepts are consolidated. Internal school records indicated that prior cohorts exhibited below-average performance in chemistry-related topics, suggesting a need for targeted instructional intervention. During Semester 1/2025 at Wat Nongchok School (Bangkok), Grade 9 science classes exhibited relatively low test scores alongside weak motivation and interest. Responding to this local need within the national reform context, the present study investigates the effectiveness of CIPPA-based instruction for enhancing academic achievement and attitudes towards

science among Grade 9 (Secondary 3) students. Our conceptual framework maps CIPPA's elements to hypothesised cognitive outcomes (curriculum-aligned achievement) and attitudinal outcomes (interest in science, support for inquiry, responsibility), providing a clear basis for measurement and interpretation. The findings aim to inform educators and policymakers seeking robust, student-centred strategies to strengthen science learning and cultivate positive dispositions, contributing to national goals for scientific literacy and a skilled 21st-century workforce.

Conceptual framework

The conceptual framework of this study illustrates the relationship between two key variables: the CIPPA Model instruction and its impact on the learning achievement and attitude toward science of Secondary 3 students at Wat Nongchok School (Figure 1).

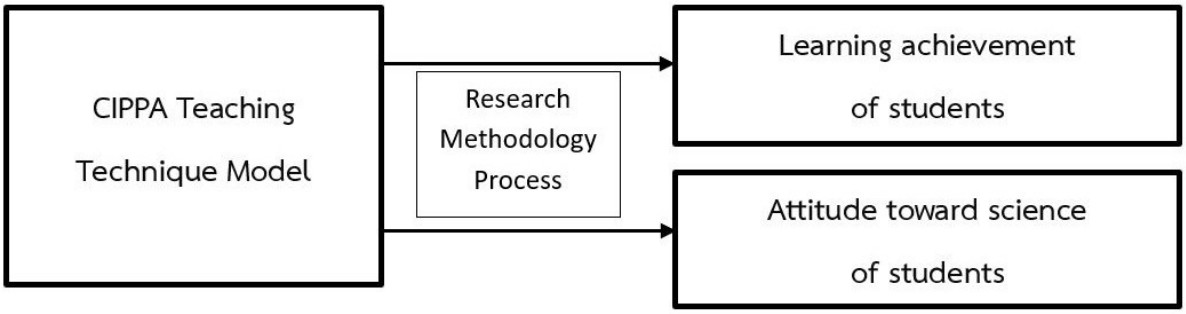

Figure 1 The conceptual framework of this study

RESEARCH METHODOLOGY

Population and samples

The population for this research consisted of 429 Grade 9 (Secondary 3) students enrolled in the second semester of the 2024 academic year at Wat Nongchok School, Bangkok, Thailand. From this population, a sample of 40 students was randomly selected as one group.

Research instrument and procedures

The experiment was conducted using the following procedure:

(1) The researcher developed six lesson plans based on the CIPPA Model for teaching the topic "Writing Chemical Equations." These lesson plans covered a period of three weeks, totaling nine hours of instruction. The content and learning objectives of the six lesson plans were designed in accordance with the standards of the Science Learning Area within the Basic Education Core Curriculum B.E. 2551 (2008), integrating the CIPPA Model teaching methods as detailed in Table 1.

Table 1: The organizing learning activities based on the CIPPA Model according to Khamanee (1999).

Step 1: Review of Previous Knowledge	
Purpose: Activate prior knowledge and prepare for new learning.	Activities: • Ask questions to recall past lessons. • Use mind maps or brainstorming. • Conduct short quizzes or discussion.
Step 2: Seeking New Knowledge	
Purpose: Expose learners to new content.	Activities:

	• Provide reading materials or videos. • Give research tasks. • Guide students to explore specific sources or media.
Step 3: Understand and Link New Knowledge	
Purpose: Help learners internalize and connect new ideas with prior knowledge.	Activities: • Encourage note-taking or concept mapping. • Have learners explain ideas in their own words. • Facilitate individual reflection or journaling.
Step 4: Share Knowledge with the Group	
Purpose: Promote collaborative learning and peer feedback.	Activities: • Group discussions or presentations. • Peer teaching or collaborative tasks. • Use of group reflection tools (e.g., shared documents or posters).
Step 5: Summarize and Organize Knowledge	
Purpose: Structure learning outcomes for clarity and memory.	Activities: • Create summaries or charts. • Develop visual aids (e.g., diagrams, timelines). • Write reflective notes or journals.
Step 6: Practice and/or Performance	
Purpose: Demonstrate learning through action.	Activities: • Role play, experiments, or simulations. • Projects or real-world problem-solving tasks. • Peer or teacher feedback on performance.
Step 7: Applied Knowledge	
Purpose: Apply learning in new or real-life situations.	Activities: • Solve new problems using learned concepts. • Conduct mini-projects or case studies. • Present application outcomes to peers or community.

(2) Achievement Tests: An achievement test on "Writing Chemical Equations" was administered, consisting of 30 multiple-choice questions. To ensure the test items aligned with the learning objectives and content, the Index of Item Objective Congruence (IOC) was calculated by three experts. An IOC value of at least 0.50 is considered acceptable (Kayawan, 2007, cited in Bindulem, 2019). The achievement test's IOC values ranged from 0.67 to 1.00, indicating that the test items were suitable for measuring student understanding.

(3) Attitude Toward Science Questionnaire: An eight-question questionnaire was used to assess students' attitudes toward science. This questionnaire comprehensively covered three areas of student attitudes as evaluated by PISA 2006: 1) interest in science, 2) support for scientific inquiry, and 3) responsibility toward resources and environments (Bybee & McCrae, 2011). The questionnaire utilized a 5-level Likert scale to measure respondents' attitudes (Table 2). The Index of Item Objective Congruence (IOC) for the questionnaire, determined by three experts, also revealed acceptable values ranging from 0.67 to 1.00.

Table 2: Rating scale at 5 levels of Likert scale

Averages	Meanings
4.51-5.00	Strongly Agree
3.51-4.50	Agree
2.51-3.50	Neutral
1.51.2.50	Disagree
1.00-1.50	Strongly Disagree

(4) This research employed a quasi-experimental design using a single-group experimental model. The single group underwent both a pre-test and a post-test for both achievement and attitude toward science, consistent with the experimental characteristics outlined by Campbell and Stanley (1963). Further details are provided in Table 3.

Table 3: One group Pre-test Post-test Design

Pre-test	Treatment	Post-test
T1	X	T2

(5) Data Analysis: Comparative analysis of scores was performed using means and standard deviations. Pre-test and post-test scores for the single sample group were compared using a dependent samples t-test at a significance level of $p<0.05$. The t-test (dependent samples) was the primary statistic employed for comparing test scores in this study.

RESULTS AND DISCUSSIONS

This research investigated the development of learning achievement and attitudes toward science among Grade 9 students at Wat Nongchok School, Bangkok, Thailand, through the implementation of the CIPPA Model teaching technique. The study involved a randomly selected sample of 40 students from a total population of 429 Grade 9 students in the second semester of the 2024 academic year at Wat Nongchok School.

The results for learning achievement demonstrated a significant improvement. The mean pre-test score was 10.65, while the mean post-test score increased to 21.68 This indicates a substantial gain, with the post-test scores being significantly higher than the pre-test scores ($t=17.60$, $p=0.00$). This finding supports our hypothesis that students learning with the CIPPA Model teaching technique achieve higher academic performance. Specifically, the statistically significant increase in post-test scores at the 0.05 level suggests that the CIPPA Model effectively contributes to students' enhanced learning achievement. These results align with previous studies by Binda-oh et al. (2020), Boonklum (2015), and Webb (2023), all of whom found that instructional management using the CIPPA Model effectively improves learners' academic achievement. These consistent findings confirm the CIPPA Model's efficacy in fostering academic progress.

Regarding attitudes toward science, the eight-question questionnaire revealed shifts in students' perspectives. The mean Likert scale ratings for the pre-test ranged from 3.18 to 3.71 (Table 4), indicating that students' attitudes were generally neutral, with the exception of Question No. 5, "Students recognize the importance of science in daily life," which showed an "agree" rating. Notably, the overall post-test scores for attitudes toward science were significantly higher than the pre-test scores ($t=7.96$, $p=0.001$), with rating scales ranging from 4.03 to 4.59 (from "agree" to "strongly agree"). Our findings on science attitude are consistent with Anjirawaroj, (2020) study, which compared the CIPPA instructional model and an inquiry method's impact on nursing students' scientific achievement and attitude. That study revealed that the CIPPA model led to a higher positive influence on students' scientific attitudes compared to the inquiry method. However, two specific items, Question No. 3 ("Students are interested in participating in science-related activities every time") and

Question No. 5 ("Students recognize the importance of science in daily life"), showed no significant difference between pre-test and post-test scores (Table 4). The consistent "agree" level for these attitude questions suggests that students already recognized the importance of science in their daily lives prior to the intervention.

Table 4: The averages and t-test values between pre-test and post-test of the students' attitude toward science test.

Items	Means ± SD		T-test (p-values)
	Pre-test (N=38)	Post-test (N=32)	
1. Students feel enthusiastic when studying science.	3.34 ± 1.19	4.09 ± 0.89	2.94 (p=0.04)*
2. Students enjoy participating in science-related activities.	3.39 ± 0.92	4.34 ± 0.75	4.69 (p=0.00)*
3. Students are interested in participating in science-related activities every time.	3.18 ± 0.93	3.84 ± 0.99	2.88 (p=0.05)
4. Students are interested in content related to science.	3.24 ± 0.97	4.03 ± 1.00	3.37 (p=0.01)*
5. Students recognize the importance of science in daily life.	3.71 ± 1.04	4.25 ± 0.76	2.44 (p=0.17)
6. Students feel that studying science helps them develop systematic thinking.	3.47 ± 1.01	4.56 ± 0.56	5.44 (p=0.00)*
7. Students feel that studying science is interesting and helps them learn new things.	3.44 ± 1.18	4.59 ± 0.61	4.96 (p=0.00)*
8. Students are able to apply scientific knowledge in the future.	3.39 ± 1.26	4.41 ± 0.91	3.78 (p=0.00)*

* Symbol showed the significance difference

Table 5: the overall of students' scientific attitude between pre-test and post-test of CIPPA model teaching.

Scientific attitude examination	N	Means ± SD	T-test (p-values)
Pre-test	8	4.27 ± 0.26	7.96 (p=0.00)*
Post-test	8	3.40 ± 0.16	

* Symbol showed the significance difference

While effective, the study's limitations include a pre-test–post-test single group design and relatively small sample size. Future research should incorporate a control group and a larger sample to enhance generalizability and confirm causal relationships.

CONCLUSION

Our research offers valuable insights for teachers, who are enhancing the development of science learning achievements and positive attitudes toward science challenges. This study provides compelling evidence that the CIPPA Model teaching technique significantly enhances both science learning achievement and positive attitudes toward science among Grade 9 students in a Thai junior high school. The CIPPA model, an instructional design emphasizing a student-centered learning environment that promotes active engagement and knowledge construction. This approach aligns well with the development of crucial 21st-century skills such as critical thinking, problem-solving, collaboration, and communication, which are essential for navigating the complexities of the modern world. Moreover, this research contributes to the national goals of cultivating a scientifically literate citizenry and developing a skilled workforce for the 21st century. Future research could explore the

long-term impact of the CIPPA model and its applicability across diverse scientific topics and educational levels.

Limitations
1) One-group pre-test and post-test design limits causal inference.
2) Small, single-school sample constrains generalizability.

Recommendations
1) Include control groups and larger, more diverse samples.
2) Investigate long-term retention and transfer of skills.
3) Explore CIPPA's application across other scientific domains and education levels.

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Bridging the Gap: Navigating English Language Challenges among Deaf ASL User in Higher Education

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ABSTRACT

The American Sign Language (ASL) is the primary language for many deaf around the world, including the Philippines. However, similar to the hearing individuals, linguistic challenges are prevalent in higher education attributing it to their failure in some subjects. With this, the study aimed to explore the lived experiences of deaf ASL users in navigating English grammar, syntax, and vocabulary in technical-vocational education contexts. Employing transcendental phenomenology method, eight deaf students were interviewed in focus group discussions. Utilizing Moustakas' transcendental phenomenological method, the following stages were employed, the epoche stage where personal biases were set aside, phenomenological reduction in enabling meanings to emerge organically through intentional and thoughtful interaction with the data, the imaginative variation to explore the "how" of these experiences, and synthesis combining the textural and structural components into a single, coherent story that captured the essence of the students' shared experience. Using thematic analysis, findings revealed their struggles with the English grammar and syntax, and with the newly encountered complex terminologies in their field of study. Compounding the problem was the limited time in assessments given ASL as the primary language and English as the second language. To cope with the challenges, they turned to peer and digital support. In the light of the findings, the study recommended the creation of inclusive learning communities, assessment accommodations, and special early English language programs.

Keywords*:* Deaf ASL Users, Higher Education Institutions, Technical-Vocational Education Contexts, Language Challenges, Grammar, Syntax, Vocabulary, Assessment, and Coping strategies

INTRODUCTION

American Sign Language (ASL) serves as a complete natural language among our deaf students (Sutton-Spence & Woll, 2020). In promoting inclusive and equitable access to education, these learners face linguistic and social challenges in their transition to mastering the English language as the medium of instruction in the Philippine setting.

Developing the English language and literacy skills among deaf ASL users is critical due to its role in comprehension, constructing ideas, and communicating them with others (Cummins, 2007). On the other hand, deaf learners' primary language is visual and gestural, not written or spoken English. This linguistic gap contributes to challenges in English grammar, syntax, and vocabulary. According to Nugroho and Lintangsari (2022), these problems often lead to academic hurdles, subject failure, and reduced self-efficacy. Consequently, language barriers remain one of the major factors affecting academic success among deaf learners worldwide.

While existing literature acknowledges the importance of inclusive pedagogies and technological support (Lin, 2024), it has limited references on the lived experiences of deaf students. Empathizing with their personal experiences and understanding their day-to-day struggles and coping mechanisms is essential in designing efficient and effective learner-centered teaching and support programs. For instance, research by Dima et al. (2021) demonstrates that promoting an inclusive classroom environment and peer collaboration can significantly enhance language learning for deaf students. However, these strategies must be rooted in the lived and subjective experiences of deaf students.

In the context of employing transcendental phenomenology, related studies emphasize the importance of capturing authentic stories and narratives of these learners as baseline information for crafting policies and programs, aided by teachers' acceptance toward inclusive education for deaf students (Ibrahim & Abd Talib, 2019). This approach seeks to understand the essence of lived experiences—to explore how deaf ASL users navigate complex English language demands within technical-vocational higher education settings in the Philippines. Guided by Moustakas' (1994) methodology—comprising epoche, phenomenological reduction, imaginative variation, and synthesis—this research aims to uncover core themes related to linguistic struggles and adaptive strategies.

Drawing from the findings, deaf students face difficulties in understanding and applying English grammar, syntax, and vocabulary, compounded by limited time for assessments. They rely on peer support and available digital resources to bridge linguistic gaps and build resilience, consistent with Tennyson and Covell's (2012) findings. However, these measures alone are insufficient. Lin (2024) argues that cultivating inclusive academic communities and providing assessment accommodations can foster equitable opportunities for success. Hence, this study advocates for inclusive learning communities that promote peer collaboration, assessment accommodations tailored to deaf learners, and early English language development programs designed for their needs. These initiatives are essential to bridging linguistic gaps, enhancing academic success, and fostering a more equitable higher education landscape for deaf ASL users.

In summary, understanding the lived experiences of deaf students in their linguistic struggles provides critical insights for designing programs and support that are inclusive and sustainable. Addressing English language challenges through the lens of deaf students could transform higher education into an inclusive space where they can thrive academically and socially.

Statement of the Problem

This study aimed to explore the lived experiences of deaf ASL-user students enrolled in the undergraduate program, Bachelor of Technical-Vocational Teacher Education, in navigating the English language. To achieve this, the study focused on answering the central question: What were the experiences of the deaf students in English language use in terms of the following: linguistic challenges, assessment-related issues, and coping strategies.

Framework of the Study

This study is anchored on Vygotsky's Sociocultural Theory (1978), which emphasizes that learning and language acquisition occur through social interactions with knowledgeable peers. The American Psychological Association acknowledges that learning is primarily a social process shaped by collaboration and interaction. A study by Beatty (2019) emphasized the important role of the support systems (interpreters, classmates, and teachers) as both helpers and advocates, highlighting the social dimensions of learning. Cannon and Kirby (2013, as cited in Beatty, 2019) highlighted the challenges encountered by deaf and hard-of-hearing students in mastering English grammar skills, emphasizing the need for language-specific support. Moreover, insufficient curricula and evaluation techniques significantly hinder the education of Deaf students, underscoring the importance of teaching resources specifically designed to address their distinct needs (Lollis and LaSasso, 2009, as cited in Beatty, 2019).

In conducting the study, it employed Moustakas' transcendental phenomenological method (i.e., epoche stage, phenomenological reduction, the imaginative variation, and synthesis). There were eight students who actively participated in the focus group discussion. From their statements, these were analyzed and created a thematic analysis based on the findings of the study. These were linguistic challenges, assessment-related issues, and coping strategies. Sub-themes were also identified aligned with the themes and significant statements. Ethical research practices such as informed consent were also considered in the study.

METHODOLOGY

To explore the lived experiences of Deaf ASL-user students at Bachelor of Technical-Vocational Teacher Education, the study employed Moustakas' transcendental phenomenological method, following the definition established by Delmas and Giles (2022), which involves examining the fundamental elements as recognized by consciousness. A total of eight Deaf students who consented to participate in a set of focus group discussions had been enrolled in the program for three years and used American Sign Language (ASL) in both personal and academic interactions. Of the eight, two were male and six were female, all who are profoundly deaf since birth without other comorbidity and use ASL as their primary language. Of the eight, six of them are in the same age and the two of them are older than two years. All eight of them has basic English proficiency. The researchers organized the discussions to collect their narratives and uncover the fundamental essence of their educational experiences within a predominantly hearing environment. Purposive sampling was employed, selecting participants who met the criteria and were available for the series of interviews. Thematic saturation was reached after analyzing all interviews, as no new themes emerged from the data.

Utilizing Moustakas' transcendental phenomenological method, the research commenced with the epoche stage, where personal biases were set aside to allow for a fresh perspective on the phenomenon (Greening, 2019). The researchers commenced a focus group discussion by setting aside prior knowledge about Deaf students' experiences with English in higher education. Interviews were conducted in ASL with the assistance of the official certified sign language interpreter accredited by the Philippine Registry of Interpreters for the Deaf and the researcher, who is also a trained interpreter. Reflexive practices were observed to minimize bias: interviews were video and audio-recorded and transcribed verbatim, and both interpreters independently validated interpretations to ensure accuracy. They listened closely to the participants' experiences, with the assistance of interpreters, and carefully recorded every detail of their responses. The recordings were reviewed several times by the researchers during the transcription process. The next stage conducted was phenomenological reduction, a method focused on enabling meanings to emerge organically through intentional and thoughtful interaction with the data (Yee, 2019). From the recorded interviews, significant statements were identified and utilized to create textual descriptions, focusing on the "what" to illustrate the essence of the participants lived academic experiences. Following this, the imaginative variation stage was employed to explore the "how" of these experiences (Yee, 2019). Data coding was conducted manually by the researchers. Following the identification of significant statements from the transcripts, codes were developed by

searching for trends in the participants' answers and grouping them according to meaning, from which themes were derived. Raw interview recordings, complete transcripts, coding sheets, and theme development notes were all kept in the research's audit trail. Ultimately, synthesis was done, combining the structural and textural components into a single narrative that captured the spirit of the colleagues' shared experience. Using Lincoln and Guba's paradigm for trustworthiness, member screening was done to preserve credibility. By presenting the significant comments to the eight participants four months later, the researchers gave them the opportunity to verify and validate the accuracy of the interpretations.

Throughout the study, ethical considerations were observed. Prior to participation, they received a clear explanation of the study's goals and methods, ensuring that informed consents were acquired in writing. The researchers emphasized the importance of confidentiality, particularly during the lengthy interviews, which initially lasted four hours for the first session and three hours for the second. Given the emotional sensitivity of the participants, particularly those who had left the program, the researcher approached the interviews with empathy and thoughtfulness. Furthermore, the initial epoche process helped uphold the study's ethical standards by allowing the researcher to remain neutral and receptive to the participants' perspectives.

RESULTS AND DISCUSSION

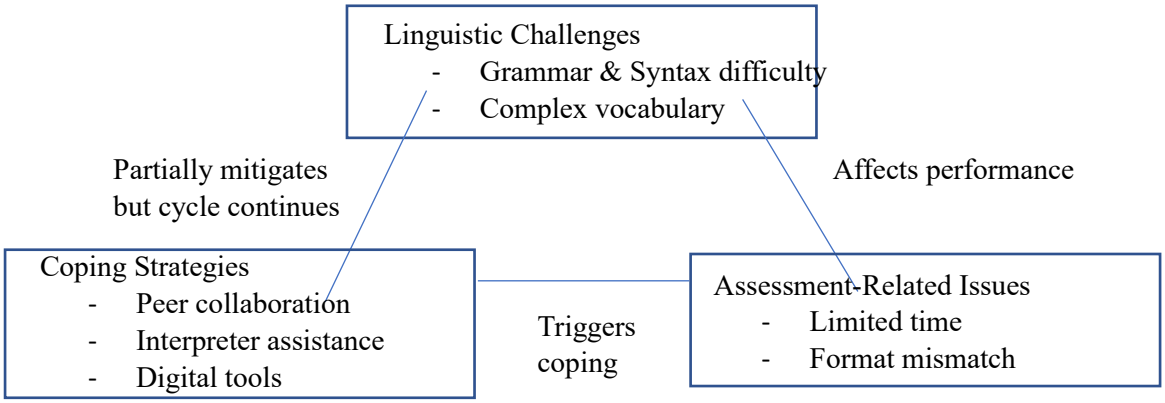
Table 1 presents the thematic analysis generated from the significant statements of the participants in this study. It has three major themes that transpired in the focus group discussions, namely, linguistic challenges, assessment-related issues, and coping strategies. It also shows the significant statements from the responses and the sub-themes which were evident in the data gathered during the discussions.

Table 1: *Themes generated from the significant statements*

Theme	Significant Statements
1. Linguistic Challenges a.) Difficulty with English grammar and syntax	*There was also Signing Exact English (SEE), especially in constructing sentences. I needed practice with grammar.* *I did not have difficulty, except that words are sometimes not in the proper order.* *I remember an assignment… I misinterpreted it. We were not used to using commas and periods.* *I had problems with the essay because grammar in high school was limited.*
b. Difficulty understanding complex vocabulary	*I could understand "pour," "mix," and other words one at a time. But when they were grouped together, it became difficult to understand.* *When I read chat messages, I decoded them into signs in my brain… in a deaf way.* *With complex words in exams or quizzes, I found it hard to understand, so I just answered by guessing.* *Upon reaching college, I could understand the words and sentences, but it was hard.*
2. Assessment-related issues a) Difficulty with the limited time in assessments	*Everything was very fast during the exams.* *We needed more time during exams, which were usually one hour.* *When it came to writing and time-bound work, it was difficult.* *Exams were only one hour.*

b) Format mismatch	*Midterm and final exams were really hard because the words were too deep.* *With face-to-face assignments and projects, I could not follow well.* *Reading and writing were very difficult during face-to-face classes.* *When it came to writing and time-bound work, it was difficult.*
3. Coping Strategies a) Peer collaboration	*With assignments, I first sought help from deaf classmates before I went to hearing classmates with written notes.* *If I could not understand, I asked my deaf classmate through PM.* *If I was not satisfied, I asked help from hearing classmates.* *I asked, "Can you please help?" Then they shared, but warned me not to copy the work.*
c) Sign Language Interpreter Assistance	*I asked Ma'am M to interpret what the instructions meant.* *I always relied on the interpretation of the shadow teacher.*
d) Digital Tools	*I went to ChatGPT and copied.* *I went to Google to check what the words meant.* *I checked with Google and read there.* *In Zoom, there was speech-to-text, and in Google Meet, there were closed captions. We also relied on the OJT.*

Model 1: Thematic model for the results



The model illustrates a cyclical process in which linguistic challenges, such as difficulties with grammar, syntax, and complex vocabulary, contribute to assessment-related issues like limited time and format mismatches. These assessment barriers trigger the use of coping strategies, including peer collaboration, interpreter assistance, and digital tools. While these strategies partially mitigate the initial linguistic challenges, they do not eliminate them entirely, leading the cycle to repeat over time. This loop highlights the interconnected nature of language proficiency, academic assessment demands, and adaptive learning behaviors in the experiences of Deaf students.

Linguistic Challenges

Findings revealed that deaf ASL learners face linguistic challenges in the areas of grammar, syntax, and vocabulary comprehension. In addition, the participants' statements showed difficulties in understanding and constructing English sentences. This is aligned to the notable difference between sign language syntax and learning through oral and written English that served as barriers in academic learning modality. Assistive technological support could also aid them in the process of learning for language proficiency (Lin, 2024). For instance, some of the learners' struggles with English grammar are constructing accurate sentences with appropriate punctuation (e.g. commas and periods) and word order. As one participant described, "I misinterpreted an assignment because we weren't used to using commas and periods," indicating a lack of familiarity with English punctuation rules. This resonates the

findings of Hamlin and Horgan (2020) who emphasized that deaf learners learn through visual-manual languages in ASL unlike the auditory-oral-written settings in the typical English language learning set up.

With regard to vocabulary development, several of the participants claimed that they found it as an obstacle in advancing to complex words as experienced in college. For example, they could understand simple words in context such as "pour" or "mix" but struggled with multi-word phrases or "big words". This validates the findings by Dima et al. (2021) that specific vocabulary in technical fields have influence in comprehension and academic performance among deaf students. Another great challenge is when English words are imbedded within Tagalog or local languages. Hence, this necessitates for a bilingual or multilingual support among our deaf learners.

Another notable observation is the process of understanding written communication such as chat messages. Rendel et al. (2018) shared about the processing among deaf learners. Many deaf ASL learners are reliant using SEE (Signing Exact English) that could be limited in a more complex or abstract language. As a result, participants expressed that with complex syntax and advanced vocabulary, they were left guessing or misinterpreting. This calls for a need in the targeted language instruction to tailor fit the teaching and learning process for deaf learners integrating visual support and contextualized teaching as found in the recommendations of ASEAN's (2021) frameworks for inclusive education.

Assessment-related Issues

The participants' statements identified assessment-related issues that significantly impede the academic performance and learning experience of deaf ASL users in higher education. They cited the following concerns: "insufficient time during examinations" (i.e., often only for an hour), "everything was very fast during the exams" and "it was difficult to write in the limited time" lead toward assessment practices that are not aligned with their learning needs. These are not isolated concerns reflecting the challenges faced by deaf learners in the Philippines and in the global setting. Hence, there is a need to reevaluate the conventional assessment formats to suit the needs of the deaf learners with the aid technology-based assessments (Qi & Mitchell, 2012). In addition, the time pressure feedback among the participants required more cognitive effort. They need to decode due to language processing differences—time to comprehend questions and provide responses among others (Marschark et al., 2015). In their statements, students expressed that "it took longer to write," and "midterms and finals were really hard because the words were too deep," were consistent with the results in the vocabulary development area as part of linguistic gaps. This observation has been highlighted on how strict time limits could lead to heightened anxiety and underscore academic performance among deaf learners (Lin, 2024).

Another concern identified is the format mismatch—assessments are often traditional and time-pressured design summative assessments that may not be incongruence to the learners' cognitive and linguistic capacity. For instance, "reading and writing were very difficult during face-to-face classes," suggests that they needed more time to comprehend and process their thoughts with limited English proficiency due to the difference in the ASL language learning to the typical English language learning (i.e., oral and written). The ASEAN Education Ministers' 2021 guidelines, calls for a flexible and inclusive assessment practices such as providing alternative assessments tailored to the needs of deaf learners. Raji et al. (2023) advocate for feedbacking as part of formative assessments as critical in mastering the skill. Similarly, Dima et al. (2021) emphasized in using visual or multimedia-based assessments which could aid the deaf learners to comprehend and process their thoughts.

In general, these assessment-related issues highlight some barriers among deaf learners to fully maximize their potentials in academic learning. Strict time limits, inappropriate assessment formats and designs, and accommodation of linguistic processing differences were predominant in this study. To foster and promote inclusive and academic growth in higher education, the institution may revisit its curricula, teaching and learning processes, and assessment practices to ensure academic success among deaf learners for them to demonstrate their learning effectively.

Coping Strategies

The results reveal that deaf ASL-user students employed various coping strategies to overcome the linguistic challenges they experienced in higher education. Based on their statements, these strategies were centered on collaborating with others, asking assistance from their classmates and interpreters, and utilizing digital tools which reflects their motivation in academic pursuit.

In peer collaboration, it was highlighted as a critical strategy for information clarification and assistance. All the participants reported that they asked for assistance from both their hearing and deaf classmates whenever they encountered complicated instructions, reading materials, and activities. Statements such as the following statements: "If I was not satisfied, I asked help from hearing classmates," and "When what I read was not clear, I asked my classmates to interpret or explain it" highlighted the role of peer scaffolding in comprehension and task completion. This was confirmed in the study by Sahara et al. (2024), which notes that peer support is crucial in the development of the proximal zones and language acquisition of deaf students in the classroom.

For the sign language interpreter assistance, among the critical support systems is the sign language interpreters including shadow teachers. Phrases like "I asked Ma'am Mariz to interpret what the instructions meant," and "I always asked for Ma'am Mariz's interpretation," demonstrate a reliance of an expert in sign language interpretation and emphasizes the significant role of the sign language interpreters to decode verbal instructions. A study from Karusu and Istel (2024) supports this by emphasizing the improvement in subject comprehension and language acquisition with the assistance of the sign language interpreter.

With regard to digital tools utilization, participants also reported utilizing various digital platforms and strategies including Google, ChatGPT, captions on Google Meet and Zoom, chat functions during online classes, and speech-to-text software, as shown in statements like "I went to Google to check what the words meant," and "In Zoom, there was speech-to-text, and in Google Meet, there were closed captions." The reliance of the participants to digital technologies illustrates the crucial role of technology in bridging communication gaps and academic performance. These findings support the recent study that emphasizes the significant improvement noted upon the utilization of Voice-to-Text technology in terms of enhancing academic achievement and promoting inclusive education (Wang, 2024).

As a context, this is based on the study conducted to deaf college students particularly on their experiences with academic language and assessment.

In Vygotsky's theory, these challenges on difficulty with English grammar, syntax, and understanding complex vocabulary highlighted the gap between actual and potential linguistic competence. This is aligned to the indicators of the Zone of Proximal Development (ZPD). Consequently, deaf students could not maximize their full potentials because of limited scaffolding in grammar instruction and vocabulary exposure. According to Bauman and Murray (2014), their decoding and processing of cognitive and linguistic processing is rooted in visual-spatial modalities. Hence, there is a need for culturally responsive pedagogy that validates deaf linguistic identity.

CONCLUSION AND RECOMMENDATIONS

The study highlights the multifaceted challenges among deaf ASL learners in higher education, particularly in linguistic challenges, assessment-related issues, and coping strategies. These students described their lived experiences, demonstrating remarkable resilience by engaging in peer collaboration, interpreter assistance, and utilizing available digital tools as vital supports in overcoming academic hurdles as college students.

To foster an inclusive academic environment and support, higher education institutions may implement orientation programs for non-ASL faculty to understand the context and lived experiences of deaf students. Through this, they could create authentic formative and summative assessments tailored to their learning needs, addressing linguistic gaps, time constraints, and adapting alternative tasks. Additionally, implementing peer mentoring programs (e.g., learning basic ASL to communicate with deaf students), expanding access to qualified language interpreters, and utilizing available digital tools and resources such as AI translation can enhance learning engagement. Eventually, deaf students are empowered to become independent learners with the assistance of their peers, teachers, and ASL language interpreters to ensure academic success.

In terms of coping strategies related to sociocultural scaffolding concepts, peer support and aid from interpreters are associated with Vygotsky's process of learning through interaction. AI and digital tools also serve as technological mediators to reach the cognitive level of understanding.

Hence, scaffolded language instruction is recommended to attain visual grammar tools. As part of inclusive assessment design, teachers could collaborate and co-design with deaf educators to ensure cultural relevance among these students. Addressing the linguistic gaps, assessment-related issues, and coping mechanisms among deaf learners is crucial for inclusive and equitable access to higher education. With collective efforts, their needs could be genuinely met, enabling them to succeed personally and professionally in their chosen respective fields.

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The Figurative Language in the English Translated Subanon Epic, The Song of Dumalinao

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ABSTRACT

The epic is attributed to the Subanon in Dumalinao, Zamboanga del Sur. It is representative of the Subanen living in Misamis Occidental, and the Zamboanga peninsula in Mindanao, Philippines. Officials celebrate festivals and establish the Subanen lineage in Zamboanga del Norte and Misamis Occidental respectively, yet many of the younger generation no longer speak the Subanen language. Hence, the objectives of the study are: 1) cataloguing the hyperbolic, simile and metaphoric lines in the epic; and 2) revealing the achieved aesthetic value and meaning using figurative devices encoded in the epic. This study analyzes the English translation of the epic. The discussion centers on the significant human experience and expresses the Subanon's psyche and worldview through the narrative's figurative language namely, hyperbole, simile, and metaphor. It reveals that the primary tropes lend its universal truth any ordinary linguistic utterance is unable to express. The written form preserves the linguistic expressions which enables readers to have sensory experiences and create mental images of the Subanon's glorious heroic past. It posits to impress the significance of the study of the Subanon epic: its aesthetics, literary value, historical aspect, linguistic modalities, and others; its timelessness; and comparative worth alongside the world's renowned epics. Finally, the results of the study could be incorporated not only in the study of grammar and figurative language, but also in multicultural classes.

Keywords: Subanon epic, culture, metaphor, simile, hyperbole

INTRODUCTION

Words give life and immortalize actions, experiences and emotions celebrating heroism, expanding knowledge or idealizing thoughts through songs and stories. These apparently gained their timeless quality as it is passed through oral tradition and in print form. The epic is one of the oldest and most influential literary genre. Epics make use of formal and elaborate diction and stylized syntax. The use of epic conventions or formulas, similes and epithets are embedded in the narrative style. The poems are narrated in ceremonial manner, not using the everyday speech by design equating the grandeur and formality of the heroic subject and genre (Abrams and Harphan, 2015). These are described as the most magisterial and inclusive of poetic genres (Hurley, 2012).

The K-12 curriculum underscored the importance of cultural studies. A look at the subjects offered showed that the study of Philippine folklore is relegated to the first quarter of Grade 7 in the Department of Education (DepEd) K to 12 curriculum. The subject is incorporated in the study of grammar. Menez (1986) has raised the need to integrate folkloric study in the Philippines as it offers importance sources for a multicultural curriculum.

There is a research gap in the examination of the figurative language among the Subanon epics. As such, this paper, as a literary study, exposes the Subanon rhetoric using descriptive expressions to illustrate the environment, feelings, observed phenomena and other momentous events detailed in the epic. This paper also contributes to the continuous folkloric studies in the Philippines, particularly for the Subanen in the Zamboanga peninsula and part of Misamis Occidental, Mindanao. Subanon culture is illumined through the examination of the use of hyperbole, metaphor and simile in the epic.

DESIGN AND METHODS

The aesthetic beauty and value of the English translated Subanon epic, *The Song of Dumalinao*, can be best appreciated by following a set of principles directed by literary experts. The cataloging of the figurative language namely: hyperbole, simile and metaphor employed in the epic brought about by the epic convention and rendered in the poetic style of the unknown poet is anchored on Wellek and Warren (2018) discussion about the role of imagery and figurative language in poetry. They said that there are two aspects of imagery: one, its sensuous particularity or sensuous aesthetics and continuum; and, two, its use in the comparison of worlds or that of analogy and comparison. There is the idea of equivalence between an object which refers to another object, an analogy between sign and signified, which requires attention from the reader.

Lakoff (2018) lay the groundwork for metaphor as the primary trope. He claimed that metaphor is the main mechanism in understanding abstract concepts and performing abstract reasoning. Metaphors are mappings across conceptual domains and based on the individual's correspondences in one's experiences. As such, in other figurative language, grammar and lexicon of a language, metaphorical mapping are used to extract generic-level structure. Adopting Cacciari's argument about metaphor (Katz, 1998), this study posits that figurative language is used for conceptualizing and making expressible relevant parts of universal truths in the epic through sensory experiences, mental representations, and linguistic expressions. Citing Johnson, hyperbole is described as an argumentative technique, an inventional device, a philosophical critique, and ultimately a world view. The rhetoric is dependent upon the processes of expansion and extension transcending the boundaries of style and substance (Abbot, 2012).

On a literal level, simile has a similar function as metaphor as both are used to compare unlike objects. Hence, in most cases metaphor and similes are interchangeable and that they convey equivalent meanings. On the other hand, their differences lie in the processing interpretation of texts. All apt metaphors, both novel and conventionalized, are understood via the same categorization-based, interactive property attribution process. Similes, on the other hand, are interpreted via a comparison process (Haught, 2005).

A close reading was conducted on the English translation of the epic. After which, statements showing simile, metaphor and hyperbole were extracted from the narrative and placed in a tabular form. Further analysis was done to arrange the purpose of the figurative language in the overall presentation of the epic and arranged in themes.

Conceptual Framework

The aesthetic beauty and value of the Subanon epic are elucidated following a set of principles directed by literary experts. The primary concern is the cataloging of the figurative language namely: hyperbole, simile and metaphor employed in the epic, and more importantly, the figurative synergy evoked in the text brought about by the epic convention and rendered in the poetic style of the unknown poet.

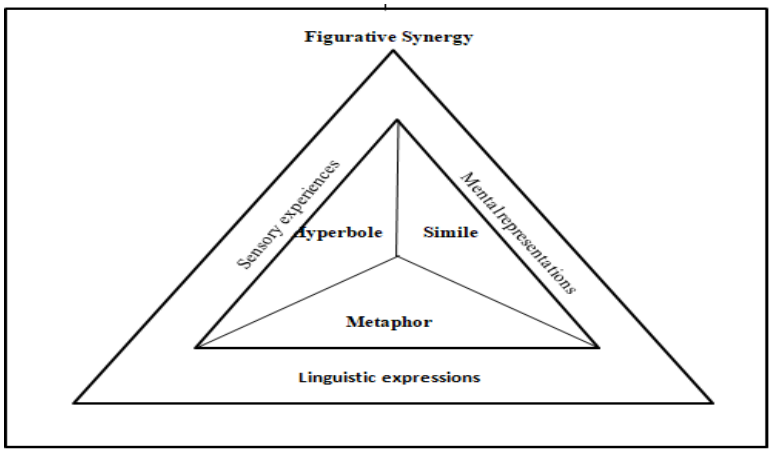

Figure 1. Conceptual Framework

The figure places metaphor on the baseline of the three tropes. The rationale behind this placement lies in the metaphor's over-arching role in the interpretation of the text through the conceptual maps derived in the text. The deliberation in both simile and hyperbole will be integrated in the conceptual mapping of the metaphoric images. Furthermore, the tropes are at the core of the triangle as all three experiences are anchored on the tropes.

The figurative synergy is represented in the encasement of the figurative language with the sensory experiences, mental representations, and linguistic expressions evoked in the epic. The element, linguistic expressions, is at the bottom of the figure to underscore the fact all thoughts and ideas, particularly the non-literal ideas, are coached in words and have structures called linguistic expressions. The three elements namely sensory experience, mental representations, and linguistic expressions suggest that the tropes (hyperbole, simile, and metaphor) primarily used in the epic evoke imagery creating meaning and thought using non-literal language. Such poetic convention defamiliarizes the reader and brings anew a fresh outlook of the epic's worldview.

The study assumes that the Subanon epic, *The Song of Dumalinao*, uses figurative language, a non-literal language, which provides insight and defining features of a Philippine epic. As such, the literary considerations of the epic, the poetic style of the ancient, unknown or community poet, and its emotive effect on the community and the readers are brought to the fore by this scholarly work in its attempt to place Philippine epic studies in the larger literature about language and thought.

The study sought to present two objectives. First is to elucidate the hyperbolic, simile and metaphoric lines from the narrative. Second, is to explicate the encoded meaning and aesthetic value using figurative devices.

Hyperbolic, Simile and Metaphoric Lines in the Epic

The Song of Dumalinao presents the worldview and psyche of the Subanon. These are evidenced through the examination of the three tropes, namely: hyperbole, simile and metaphor in the narrative.

Simile and metaphor are used to describe the setting or environment of the narrative. The narrative employed simile to illustrate the greatness of the river, Dlaklat'n, that bounds Mount D'liyag'n. The moving waters make a pleasant sound likened to a bell's tinkling resonance. Comparative statements in the form of simile and metaphor are used to heighten the emotional effect of the narrative. The arrival of the enemy in the kingdom's shore elicited fear among the two couples left to take care of the kingdom. Bayslaga, the female partner of the one of the two couples, saw the enemies brightness likened to the sun. It is strong and it inevitably comes.

Table 1. Lines depicting the environment

Hyperbole	Simile	Metaphor
Lines 5 - 10	Lines 30-36	Lines 46-47
The water of Dlaklat'n that flows so straight that standing at the mouth one can see the source; standing at the source one can see the mouth.	The river of Dliyag'n has golden foam, golden bubbling foam, tinkling as you pass by, ringing as you go along, for it has foam like bells, foam of tinkling bells.	the sands are beads of gold, golden beads are the sands.

Metaphor is used to describe the warlike life of the people in Mount Dliyag'n in the past, alluding to the enemies' skulls and teeth littering the valley. In the present time, the narrative foreshadowed the impending chaos using the metaphor of the birds forcibly opening the buds under the sun's sweltering heat. It becomes more significant as the narrative progressed and reached the end. It is used to underscore the underlying or great power of two kingdoms, Dliyag'n and Pagtologon. Their devastation is pictured as embraced by flames or surrounded and consumed by flames. It was also used in the restoration of the kingdoms. This also presents an ethereal or cosmic metaphor as it shows that the "evil design is woven into their creation." Hence, the kingdoms will undergo both prosperous and tumultuous periods. And it is only through war and win it that it can establish its fame.

Finally, the concept of peace is illustrated in the last episode through the performance of the "buklog." It is a ritual expressing gratitude to the powerful being, ensuring harmony among the members in the kingdom.

Similes and metaphors in classic epics play an important role in the narrative. Homer's narrative technique uses simile to show restoration of order after chaos (Feeney, 2014); characters' relationships, experiences, feelings, and others (Beck, 2023); and, comparisons of the world of living nature to illustrate another such as the gods assuming the likeness of birds or of heroes to lions and many more (Buxton, 2004). On the other hand, similes and metaphors act as special forms of footnotes. They are used to compare landscapes in vigorous or violent motions. They support the interpretation and arouse a response from the readers.

Hyperbole is also used in describing the environment in the narrative. Yet, hyperbole is mostly observed in the presentation of the characters, and in their performance of their duties and responsibilities. At the onset of the war, the narrative showed two elderly men and women and a young girl stave off the first wave of confrontation against their enemies. As the elders later on died, the young girl took it upon herself to fight the enemies. To say, *"battleground is the quarter the quarter is the battlefield"* (lines 516-517) sets the message of the whole narrative. This emphasized an extraordinary action where an elderly hero and later a young girl fought a multitude of their enemies.

Table 2. Lines illustrating momentous events

Hyperbole	Simile	Metaphor
Lines 551-562	Lines 2678 – 2683	Lines 2996-3009
Coming out from the palace a person came from within, outside came a maiden of extreme beauty. Still very young she was, small indeed she was; one couldn't look straight at her for her glittering beauty was glaring to the eyes. Said the maiden: "O my aged mother, to the battleground I'll go…"	When the shout subsided, like thunder fell upon the mount kingdom ground a lone gentleman, fresh blood flowing from the blade of his kampilan.	"Oh Mother and Father, why is it, I'm surprised, always in tribulation always in trouble is our kingdom Dliyag'n?" Pombanwa answered: "Oh my child, my child, in case you did not know: the kingdom Dliyag'n and kingdom Paktologon, woven into their creation is evil by the creator of the heavens; were made to stand against devils...

Hyperbolic descriptions of the situation evoke a strong emotion from the reader. For instance, the enemies' arrival in the kingdom caused so much upheaval. As their war gongs resounded, landslides occurred in many parts of the Mount Dliyag'n. Meanwhile, Bayslaga's call for help using the gongs is compared to the strength of a storm.

The numerous battles described in the narrative show an escalation of the magnitude of the battles. The description of the final battle is unlike the previous battles narrated. The powerful force of nature is used to describe the devastation in the kingdom. First, fire consumed the kingdom. Next, landslides destroyed the environment, but the surrounding was magically restored. Then a storm stirs the community contributing to its further devastation and carries the maidens away from the kingdom. The heroes follow the storm and their actions are compared to the quickness of a lightning. Their individual combat actions are compared to a twisted rope. The heroine's courage is an emotive emphasizing her refusal to be taken against her will and her readiness for active combat. As such, supernatural events require a magical response from the heroes. Thus, hyperboles enable readers to view the epic with a broader appeal and greater clarity, vividness, and simplicity (Horrell, 2017).

Table 3. Lines expressing emotions

Hyperbole	Simile	Metaphor
Lines 2083-2090	Lines 1725-1735	Lines 1524-1527
The man went to the peak of Mount Dlominilong: almost in ruins was the kingdom; but eager to restore it, the prince of the kingdom waved his kerchief and restored the kingdom to its old appearance.	The maiden was quick she held his hand saying: "Oh prince Madlawe, wait for just a moment, sit down for a while, sit beside me: don't be in a hurry, not like a bird that flies, nor like a stone that sinks; vengeance you shall take for your long suffering."	"…Your kampilan does not choose. Your arms know no sex. Even maidens and princesses you cruelly kill."

The presentation of the hyperbole, simile and metaphor in epic is different from ordinary discourses. They enrich the literariness of the narrative. The plot, with emphasis on conflict, is enlivened with the hyperbolic events and situations, and the contrast of the extraordinary power of the heroes and the

villains. Their extraordinary prowess, their temporary defeats and eventual victories are highlighted in the narrative. The framing of the figurative language enables readers to get a glimpse of the ancient Subanon's use of language set in extraordinary circumstance, such as the singing or chanting of the epic set in a specific environment, in contrast to the use of the language in ordinary circumstance.

The Encoded Meaning and Aesthetic Value Using Figurative Devices

The meaning and aesthetic value of the epic lies in the structure of the narrative revolves primarily on the following epic narrative elements: plot with emphasis on conflict, character, setting and theme. The three figurative devices hyperbole, simile and metaphor contribute greatly in the development of the narrative and in presenting its message across the readers showcasing its aesthetic value.

The presentation of the plot and description of the characters in a given setting are through hyperbolic, simile and metaphorical expressions. This enables the reader to experience or apprehend abstract ideas presented in the figurative language that are inexpressible by literal language (Cacciari in Katz, 1998). The narrative is able to satisfy the folkloric narrative conventions namely: 1) it has a sustained length; 2) there is an observance of the epic laws based on Olrik's epic conventions in the development of plot, character, setting and theme; and, 3) its endurance is made possible by the epic singers and chanters keeping the tradition alive (Hemmingsen, 2014).

The linear narrative captures the reader's attention. The flow of the plot is continuous and is not episodic. Scenes and the sentiments about the tribulation experienced are seemingly repeated. However, each repeated situation or utterance involves different heroes or heroines and happen on a different plane. It is noticeable that each plane has a different dimension and level of difficulty. In addition, the farther the reader encounters the events in the narrative, the more difficult experiences are in it. Attention is focused on the narrative elements and it follows as the narrative unfolds (Stockwell, 2002).

This type of repetition is originally termed as mnemonic device by traditional folklorists. They claimed that mnemonics help chanters retain memory of the narrative through the repetition of some lines and the rhythm (Bernad, 1980). On the other hand, other studies cited by Rubio (2015) states that neither philosophers nor psychologists have come to complete agreement on what imagery is or on what behaviors, if any, would necessarily support the claim that imagery aids memory. Thus, repetition is not merely a mnemonic device. It is incremental as it provides tension in the plot. It is a metaphor which propels the action to a higher level; situates the events on a higher plane; and, shows the grand design that perpetuates the psyche of the *Subanon*.

The characters' features are mostly exemplified through simile. As such, their presentation is based far from the realistic conception of the contemporary period. The use of simile creates a strong bond between the audience and what is heard or read, since it requires the reader to evaluate for himself what he is hearing or reading rather than telling him explicitly what the narrator wants him to think. This bond, in turn, makes the reader understand better what has been narrated (Scodel, 2014). In addition, their actions are exaggerated. They possess virtues, prowess and valor worth emulating. The narrative perpetuates the continuous struggle of the *Subanon* people against the aggression of the other indigenous people before and among Christians in the present time.

The narrative imparts universal themes. Like the characters in the narrative, man is always faced with natural or supernatural problems in life. Yet, hope remains as man is given capabilities to withstand troubles and to put everything in order. One ought never to underestimate the courage and strength of every individual. There is cause for celebration as there is rejuvenation of life.

The figurative language of the narrative portrays emotional resonances brought about by the language's perceptual properties (Cacciari in Katz, 1998). Reading through the narrative allows the reader to be vicariously involved in the arduous strife and sweet victory experienced by the heroes. The experience of literature is one rational decision-making and creative meaning construction…It is an imaginative projection that is both cognitive and emotional, integrated under the general notion of comprehension

(Stockwell, 2002). There are three factors to be considered: 1) the impact of the work; 2) the dominant narrative device; and 3) the contribution of the other elements in the development of the whole. In a previous study, this is given the term "emotional impact".

First, the narrative brings the reader to the height of the heroic age where man's courage and strength are tested in battle. This is made possible as the hyperbolic, simile and metaphoric expressions enable the reader to suspend his/her disbelief. The physical backdrop of the narrative is mainly a scene of war. It was caused by the enemies' desire to dominate. Hence, the small band of heroes was faced with the seemingly impossible task to defeat their enemies. With their sturdy strength and courage, and aided partly with their enchanted objects, they were able to win their battles and lived happily with their families. This leads the reader to desire for the ancient days where the possibility of vanquishing larger-than-life threats can be done.

Second, the overarching message of the narrative is that man constantly faces crisis. However, he is given the physical and supernatural capability to combat such problems. The narrative underscores the power of nature over the lives of men. As an irresistible force, it is both positive and negative. In addition, all heroes face hostile situations and are placed at a disadvantage. Their kingdoms are well-known, yet these are subjected to vulnerable circumstance. The narrative portrays the ideals of loyalty, honor, and skill in battle. Finally, there is the celebration of *buklog* inferring restoration of social and physical structures, a life of peace and prosperity after life's turbulent struggles.

Third, the plot is complicated by nature and the pride and avarice of men. It sets in motion the quest for preservation of lives, restoration of destroyed properties, as well as reconciliation of family rift. In the process of defeating their enemies, the heroes are reconciled with their lost relatives and returned to their kingdoms. Their victory proves that they are men of valor and worthy of respect. The major characters present values and virtues of the heroic age. The hero must undergo an adventure to be able to test his courage and valor in battle. They illustrate the values and mores of the *Subanon* people. They exhort the values of loyalty, respect, honor and skill in battle. The epic characters speak and act not as individual characters, but as mouthpiece of social discipline and ways. The psychological backdrop of the narrative lends an atmosphere contributing to its emotional effect. There emanates an atmosphere of wanting of peace because of the constant struggle the heroes need to face. Thus, the atmosphere was developed with the presence of enchantment coupled with the melancholic atmosphere, indignant aura, and raging fury.

Hyperbole, simile and metaphor project important worldviews. In other studies, Homer's *Iliad* and Virgil's *Aeneid* view on simile as a symbol of rejuvenation after a pandemonium that determines the tone of the rest of the poem. In general, the Homeric similes strategically orders the universality of the whole poem for they present a likeness of relationship between human beings and the natural world, which in turn gives the reader a likeness of the poem's relationship between order and disorder, chaos and harmony (Feeney, 2014).
Moreover, simile is deemed important in Indian religious thoughts. It is thought to have great scholarly value to make the listener immerse in the truth in a different way from the way in which logical arguments functioned. As such, similes in Indian epics, particularly the *Mahabharata*, are believed to portray important issues which produced religious knowledge. Likewise, the similes illustrate the relationship between self and matter (Jacobsen, 2006).

In the narrative, the reader can observe the dual nature of the lines. Some lines, for instance, are hyperbolic and simile in characteristics. For instance, lines 489-506 describe Datu Pomb'nwa and Datu Sampilak'n going to the ground to meet their enemies in combat. The description of the movement is exaggerated and is compared to the act of "dancing." Some hyperbolic lines are metaphoric as well. Lines 611-620 describe the unnamed princess fighting the enemies. The lines speak of unknown and unexpected heroes or heroines rising from the ranks to save their kingdom from foreign invasion. Szabo and Brdar (2010) claimed that constructions of hyperbole can be combined with other tropes namely, simile and metaphor; intensification based on similarity and metaphor-based hyperbole. Hence, a metaphorical layer seems to be necessary in order to work out the intended meaning in examples. In

cognizance of the multiplenatures of the utterances in the narrative, the functions of the utterances in the narrative as a trope are taken into consideration as this is not intended to dichotomize the narrative. On the other hand, the contention is that these expressions contribute to the aesthetics of the narrative.

The title *"The Guman of Dumalinao"* was originally entitled *"The Guman"* which the editors realized was a generic term for the epic (Bernad, 1980). It is a subjective naming of the epic as the appended name of the place refers to a town in Zamboanga del Sur where the chanter lived. Also, the term "epic" is now an issue among scholars as they believed that it is too foreign a word to be used to name the songs or chanted narratives in the Philippines (Angeles, 2018). Nevertheless, the title is a song or a chanted narrative of the *Subanon* people in an idealized placed which happened during a particular heroic age that continues to live through the long line of memory among chanters of the story and now in print and scholarly studies.

Finally, the narrative style of the epic *"Song of Dumalinao"* contains the tropes: hyperbole, simile and metaphor. These are the linguistic expressions which evoke sensory experiences and mental representations conveyed through the epic narrative conventions. Considering the narrative elements and narrative style, the epic presents a positive outlook which invigorates life and makes the whole world a better place to live in. The celebration of *buklog* denotes that after life's turbulent struggles, there is time for peace, reconciliation and celebration.

CONCLUSION

The emphasis is in lifting the hyperbolic, simile and metaphoric expressions in the narrative and elucidating their significance of the narrative's literariness as a literary study and as part of the folkloric milieu in the Philippines and the world at large.

The narrative consists of a rich catalogue of the figurative language namely: hyperbole, simile and metaphor which invoke the figurative synergy evoked in the text brought about by the epic convention and rendered in the poetic style of the unknown poet. Such findings could also be used in the study of grammar and figurative languages offered in Junior and Senior High Schools in the Philippines.

Finally, the use of hyperbole, simile and metaphor increased the evocative and communicative force, invigorating the meaning in the epic. Hence, it was able to display the perceptual and experiential density of figurative language in the English translated epic, *"The Song of Dumalinao."* More importantly, the findings of this study would be a resource in courses with multicultural settings that are offered in the tertiary level of Philippine education.

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The Influence of Marketing Mix Strategies on the Students' Choice to Enroll and Remain in DWCL

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ABSTRACT

Marketing is a critical process aimed at converting target customers into paying ones. It enables businesses to operate at their highest potential by attracting more customers and influencing their perceptions of the products and/or services offered. In the business context, marketing mix strategies are primarily employed to position products effectively, establish beneficial pricing strategies, manage distribution, and promote offerings through various advertising channels. The same are applied in the educational context. Utilizing a descriptive approach, the study determined the marketing mix strategies employed by DWCL in attracting students to enroll. It also explored which specific marketing strategies were influential in the students' choice to enroll and remain in the institution. A self-made questionnaire, which was initially pilot tested to 2nd year students enrolled across programs, was utilized in the study. The final validated instrument was distributed to 863 first-year student respondents enrolled in the second semester of School Year 2024-2025. Results revealed that the specific marketing strategies which attracted students to enroll in DWCL include the variety of programs offerings; the flexible payment options provided; the location accessibility & the well-equipped classrooms; and the conduct campaigns through social media and word-of-mouth under the product, pricing, place, and promotion mix strategies respectively. All 4Ps of the marketing are found influential in attracting students to enroll and to stay enrolled in DWCL however, the place, specifically, the accessibility of the school's location, is the topmost marketing strategy considered by the students.

Keywords: Divine Word College of Legazpi, marketing mix strategies, students' choice

INTRODUCTION

Marketing is a business's lifeblood. It is the core element ensuring smooth operations that allows businesses to function systematically and is vital for attracting clients. Additionally, marketing helps organizations determine where to invest their resources effectively, and its impact is felt across all facets of business operations. Kotler and Keller (2006), defined marketing as the art and science of choosing target markets and getting, keeping, and growing customers by creating, delivering, and communicating superior customer value. Marketing plays a valuable role in converting prospective customers into paying ones, serving as an essential function that positions a brand effectively in a competitive landscape (Kotler et al., 2013). It is a holistic approach rather than just a specific task, embodying the idea that "marketing is everything and everything is marketing," which primary goal is to own the market rather than simply sell a product and to empower companies to lead rather than just compete. As of technology evolves, so does marketing, allowing businesses to deliver promises of "anything, anyway, any time" (Europe PMC, n.d.).

The marketing mix, commonly known as the 4Ps—product, price, place, and promotion—is a vital element for successful marketing strategies. It serves as the foundation for marketing management, enabling businesses to effectively address the needs of their target customers. By utilizing the marketing mix, organizations not only create value and satisfaction for customers but also effectively navigate through competitive environments. The marketing mix offers an optimal blend of all marketing elements, enabling companies to achieve objectives such as profit, sales volume, market share, and return on investment. As emphasized by Singh (2012), the marketing mix is instrumental in guiding marketing decisions and ensuring organizational success. The integration of the 4Ps ensures a balanced approach that aligns product development with consumer expectations while optimizing pricing and distribution channels, leading to a robust market presence and competitive advantage.

Products are the foundation of all business operations and are crucial in planning and positioning services in the market. They not only initiate but also conclude business activities. A product is either a tangible item or an intangible service that consumers are willing to pay for, encompassing various material goods like furniture, clothing, and groceries, as well as services that users purchase (Singh, 2012).

Alongside products, pricing is another essential element of marketing mix, as companies, regardless of the kind of product or service they offer, develop pricing strategies and position themselves in relation to competitors. Price includes a fair assessment of the product, e.g., a good price for a good product (Ehmke et al., 2016).

Introducing the products offered to the market is necessary to generate sales. In which case, promotion is employed to reach the targeted buyers or consumers of the products. By utilizing distinct promotional strategies, businesses can influence target audiences and enhance brand visibility, fostering customer loyalty in the process (Tellis, 2006).

Selecting an appropriate location another element in the marketing mix that need to the given due attention by businesses in general to achieve their goals of generating sales and revenues. Aside from the actual location of the business, positioning of their products for sale is also of due importance if they wish to catch the attention of the market. Many businesses develop unique or specialized approaches to cater to their customers' needs.

Developing a marketing strategy informed by the principles of the marketing mix is essential for influencing and attracting prospective clients, shaping their purchasing decisions, fostering brand loyalty, and enhancing customer engagement. The relationship between marketing initiatives and consumer behavior can be elucidated through the framework of the Stimulus-Response Theory in Marketing, as articulated by Fripp (2023). This theory posits that various factors significantly impact an individual's decision-making process, with marketing serving as one of the most influential variables. The significance of marketing within educational institutions is particularly pronounced, as it plays a pivotal role in attracting students to enroll and ensuring their retention. By comprehending how various stimuli may affect the responses of targeted demographics, marketers can devise strategies that are not

only more potent but also resonate more profoundly with consumers. Furthermore, the application of the Stimulus-Response Theory enhances the understanding of the factors influencing consumer decision-making, thereby improving one's capacity to formulate successful marketing campaigns.

In higher education institutions (HEIs), the marketing mix or the 4Ps of marketing consists of product, represented by the academic programs available to students; the price charged attached to each program; the place or the location where the curricular programs are delivered; and the promotion, which pertains to ways and means of informing the public about the existence of the program offerings of the institution.

The products represented by the curricular program offerings, which include various study and degree options, are specifically designed to cater to the needs and preferences of prospective students (Nedbalová et al., 2014). The quality and variety of programs at such institutions are pivotal in attracting international students (Jiang et al., 2020). For instance, institutions that offer specialized programs, flexible learning options, and robust support services are more likely to attract students (Al-Dmour et al., 2024; Ismanto et al., 2022). Moreover, the perceived value of the educational product, including factors such as faculty expertise and research opportunities, plays a crucial role in the students' decision to enroll in their preferred academic program (Lestari & Miswan, 2022). As reported by Anane-Donkor and Dei (2021), a great majority of their respondents, 83.7%, considers the type of product offered—specifically, the academic program offering as a factor in choosing to enroll in the institution. Likewise, the initial contact with people at a particular creates an impact that influence the student's decision to enroll and that their likelihood to stay in the institution until program completion is attributed to the quality academic programs, supportive services, and a fulfilling educational experience (Febriansah et al., 2023).

The price, represented by the school fees like tuition, miscellaneous, and other fees implemented by educational institutions is also a major influence in their decision to enroll as they, including their parents, are concerned about the financial implications of attending a university (Hemelt & Marcotte, 2011). While tuition and other fees are a major consideration before enrolling in an academic program, students remain enrolled if they perceive that the cost education as a worthwhile investment in their future Anane-Donkor and Dei (2021). Therefore, academic institutions that communicate the value of their programs effectively can enhance student satisfaction and retention (Brkanlić et al., 2020; Fong et al., 2022). As such, universities need to ensure that their fees are competitive and reasonable, while still covering the costs of providing high-quality education (Jiang et al., 2020).

The place, on the other hand, refers to the location of the institution's classrooms, laboratories, and campus. This element of the marketing mix relates to the actual site of the school and is influenced by variables such as distance, comfort, security, and the suitability of the environment for teaching and learning activities. A study by Napitupulu et al., (2018) found that university quality-of-service facilities directly correlate with student satisfaction, with a strong positive relationship (correlation of 0.725) and a significant influence of 52.5% on satisfaction levels. Additionally, universities located in regions with a high standard of living, good infrastructure, accessible, safe and secure environment are also more likely to attract students (Liu & Chen, 2019). Proximity to home, urban versus rural settings, and the availability of transportation are key considerations (Febriansah, 2023). The quality of campus facilities, such as classrooms, libraries, and recreational spaces, can influence student satisfaction and retention. Institutions that invest in modern, well-maintained facilities create a more engaging and supportive learning environment (Brkanlić et al., 2020). Institutions that are conveniently located or offer flexible learning options can attract and retain a wider range of students (Febriansah et al., 2023). Hence, a well-maintained school building creates positive impression of the quality of education it provides to its clients, which is a big factor in enticing students to enroll. The building with posters of the curricular offerings, the scholarship programs it offers, the performance of their students in the board examination, the accreditation status all speak of the reputation of the school, which are material in mind setting would be clients to be part of the school community.

Promotion strategy, pertains to the university's ability to communicate with its publics, which may consist of six elements: advertising, public relations, sales promotion, direct marketing, personal selling, and sponsorship. Creating awareness among students is significantly important, as they must choose

a study destination from the best alternatives available. An effective strategy can be characterized by a well-planned and targeted approach that encompasses various elements such as utilizing digital marketing techniques, targeted online advertising, and engaging social media campaigns, to reach the intended audience (Al-Dmour et al., (2024). A study revealed that universities that effectively marketed their programs, services, and resources to international students were more likely to attract a larger number of international students (Liu et al., 2018). Additionally, ongoing communication and engagement strategies, such as social media interactions, email campaigns, and campus events, can foster a sense of community and belonging among students, which in turn, can improve retention rates (Adam & Gunarto, 2021; Ganesh, 2023).

Divine Word College of Legazpi (DWCL), is a private catholic educational institution operating in Legazpi City, Albay, Philippines since 1961. It has 17 curricular program offerings in the tertiary level, which students may choose from depending on their interests in qualification requirements. In June 1, 2021, the Office of External Relations, (OER) was established, which functions as the marketing and communication unit of the school. The office fosters effective communication with constituents, including students, faculty, alumni, and the local community. Its mission is to strengthen the presence of Divine Word College of Legazpi through targeted marketing campaigns and increased visibility on digital platforms. Intensifying research in one the areas stipulated in its strategic directions. Through the years, various studies about the institution have been conducted by faculty researchers focusing on program assessments, employability of graduate, performance in the board examination among others, but no study yet has been undertaken covering the marketing mix strategies implemented by the institution. Hence, the results of this study could be of material help to the Office of External affairs in crafting relevant marketing campaigns and in improving the existing marketing strategies employed by the institution.

OBJECTIVES OF THE STUDY

This study examined the influences of marketing mix strategies implemented by DWCL on the students' choice to enroll and remain in DWCL. Specifically, the study looked into the indicators under each marketing mix strategies currently employed by DWCL in promoting its academic programs along the four aspects of: product, price, place, and promotion as well the specific marketing mix strategies that are most influential in attracting students to enroll and stay in DWCL.

METHODS

The study adopted the quantitative approach to determine the influence of marketing mix strategies on the students' choice to enroll and remain in DWCL. Through quantitative data analysis, the influence of marketing strategies on recruitment and retention of students were identified. Qualitative data generated from the open-ended part of the questionnaire were also considered and thematized.

A self-made survey questionnaire was utilized in this study, which was subjected to a dry-run among 2nd year students in DWCL who are not actual respondents of the study. The final instrument was transformed in Google Forms and distributed to 863 first year student respondents enrolled during 2nd semester of SY 2024-2025 across the different college curricular programs. Complete enumeration was employed. The sharing of the link to the respondents was facilitated by the faculty advisers handling NSTP subjects, which lasted three weeks. Of the 863 respondents, 588 responded, a retrieval rate of 68.13 percent. The collected data were analyzed using frequency distributions, percentages, and weighted means.

RESULTS AND DISCUSSION

The marketing mix, in this study, pertains to the 4 Ps of marketing - product, place, price, and promotion, covering the following dimensions: p*roduct,* academic programs and services; the p*rice,* affordability and payment options; *place,* location, accessibility and, facilities; and p*romotion*, the marketing and campaign strategies employed by DWCL in attracting students to enroll and influencing them to stay enrolled until completion of their chosen academic programs.

Marketing Mix Employed by DWCL

Product - Academic Programs and Services

In an academic institution, the main products are represented by the academic programs and associated services offered to its clientele—the students. Table 1 presents the marketing strategies utilized by DWCL to attract students to enroll in their preferred academic programs and services. The results indicate that the top three factors considered by respondents in choosing to enroll in DWCL are: the variety of academic programs offered by the institution (65%); the availability of student services (55%); and the presence of a friendly school community. This suggests that the diversity of program offerings is a significant factor in enticing students to enroll. This means that the 17 distinct programs offerings of DWCL allow prospective students the opportunity to select a program that aligns with their interests and intellectual capabilities.

Table 1. *Product (Academic Programs and Services) * (N=588)*

Indicators	Frequency	Percentage
Offers a variety of academic programs	385	65
Ensures the availability of student support services (guidance, student affairs office, clinic, library)	322	55
Maintains a friendly school community	312	53
Offers scholarships and financial assistance programs	282	48
Employs highly qualified and competent faculty members	242	41
Has service-committed people (Admin, faculty, and staff)	240	41
Provides academic programs with accreditation	229	39
Implements a streamlined admission and enrollment process	177	30

*Multiple response

In addition to the program offerings, students highly value the availability of student service offices, such as the guidance office, the student affairs office, the clinic, and the library, within a welcoming atmosphere fostered by a friendly school community. Maybe when prospective students visited the campus when they took the entrance examinations, they noticed these essential service offices, conveniently located next to the guidance and admission office as well as the welcoming atmosphere accorded to them by the staff that made them feel at home implanted in them a positive first impression. These findings align with the research of Soedijati and Prominins (2011), who emphasized how initial interactions can significantly shape students' perceptions. Furthermore, the availability of scholarship programs and the presence of highly qualified and competent faculty members also play a critical role in attracting students to enroll.

***Price (Affordability & Payment Options*)**

The pricing structure at HEIs relates to the fees paid by students. Table 2 presents the pricing strategies employed by DWCL to attract students. The results show flexible payment terms (49%), scholarship programs (49%), and transparency in tuition fees and miscellaneous charges are among the top three indicators rated by almost half of the respondents. These findings highlight that the availability of installment options for preliminary, midterm, prefinal, and final periods is an effective pricing strategy that allows students to manage their financial obligations more efficiently. Apparently, the 19 scholarship options, both institutional and government-funded scholarships, is material in attracting students to enroll in DWCL, which not only serve as a marketing strategy but also provide support for able and qualified students, helping them complete their studies despite financial constraints.

Table 2. *Price (Affordability & Payment Options) * (N=588)*

Indicators	Frequency	Percentage
Provides flexible payment terms and installment options	290	49
Provides scholarships to the students in need	286	49
Ensures transparency in tuition fees and miscellaneous charges	256	44

Grants tuition discounts and financial aid for eligible students	246	42
Offers competitive tuition fees compared to other institutions	240	40

*Multiple Response

Place (Location & Accessibility)

In the context of Higher Education Institutions (HEIs), "*place*" refers to the campus and location where educational services are delivered. Table 3 presents the specific indicators that describe the place as a strategy in enticing student enrollment. The findings reveal the top three indicators that attract students to the institution include a well-maintained and modern school facilities (60%), an accessible location (57%), and an eco-friendly campus. This implies that the presence of modern school facilities plays a significant role in attracting students and encouraging them to stay in the institution, justifying that investment in modern infrastructure aligns with students' expectations for a conducive learning environment. The accessibility of the campus location is another major factor influencing students' enrollment decisions supports the findings of Febriansah et al. (2023), which emphasized that the physical location of an institution can impact student retention Maintaining an eco-friendly campus is evidently appreciated by the students especially the implementation of the 'No single use of plastic policy' in the in the campus, suggesting a high degree of commitment by the school in preserving the environment.

Table 3. *Place (Location & Accessibility) * (N=588)*

Indicators	Frequency	Percentage
Provides well-maintained and modern school facilities (smart classrooms, libraries, computer laboratories)	352	60
Maintains a campus that is accessible to students from different locations	337	57
Supports eco-friendly initiatives like adoption of "No Single Use Policy of DWCL"	328	56
Maintains a well-secured campus	287	49
Offers online learning options for flexible education	265	45
Makes available WiFi across the campus	183	31

*Multiple Response

Promotion (Marketing and Campaign Strategies)

Promotion in the context of HEIs like DWCL, relates to the manner by which an institution communicates its programs and services to prospective students through various channels. Table 4 presents the results on how students gathered information about DWCL, which were instrumental in their decision to enroll. Campaigns conducted in feeder schools (66%) and social media initiatives (66%) emerged as the strongest marketing tools in attracting students to enroll, maybe because the former allows DWCL representatives to personally engage with students, introduce the institution's academic programs, and highlight the school facilities and services; while the latter, specifically the DWCL's official Facebook page with 33,000 followers, showcases the best features of the institution with pictures, videos, reels of various activities, accomplishments, and advertisements plus the provision of real-time feedback on inquiries by prospective clients, fostering engagement with would be clients and other interested stakeholders, helps attract students to enroll and be part of the DWCL community.

Table 4. Promotion (Marketing and Campaign Strategies) * (N=588)

Indicators	Freq	Percentage
Conducts school campaigns and career orientation talks in various feeder schools	390	66
Utilizes social media platforms (Facebook, Instagram, YouTube) for promotion	391	66
Broadcasts products and services through *Serbisyong Divine Teleradyo* program	216	37
Engages in word-of-mouth marketing (students, alumni, and faculty referrals)	213	36

Distributes printed materials (Brochure, Tarpaulin, Calendar) to the community	176	30

*Multiple Responses

These findings align with the study of Liu et al. (2018), which emphasized that universities that effectively promote their programs, services, and resources are more likely to attract a larger number of students. Meanwhile, print advertisements received the lowest response, indicating that this area may require strategic improvements or a shift toward the use of more digital and interactive marketing approaches to maximize DWCL's promotional reach and effectiveness.

Most Influential Marketing Mix Strategies in attracting students to enroll and stay in DWCL

Table 5 presents the marketing mix strategies that influence the students' decisions to enroll and stay enrolled in in DWCL. The results show that generally all marketing mix strategies implemented by DWCL are equally influential in attracting and retaining students to stay enrolled in DWCL with 'place' getting the highest considerable influence among students as reflected in the weighted means, 3.98 and 4.02, respectively. DWCL's accessibility stands out because the location is easy to find, convenient for commuting students, and offers a very safe campus and location. These results align with research of Febriansah (2023), which revealed that proximity to home, urban versus rural settings, and the availability of transportation are key considerations. Likewise, same finding supports previous findings of Nacion, (2018); Nacion and Jenkin, (2021) which found that the location and accessibility of the school are among the main reasons why students chose to enroll in DWCL. This results further implies that the place per se where the school building is located is an influential marketing tool in attracting prospective clients suggesting that the school building need regular maintenance and refurbishing, as a well-kept building and well-maintained facilities projects a reputation of instilling high quality of education.

Table 5. Marketing Mix Strategies that are Influential in Attracting and Retaining Students (N=588)

Indicators	Influence Enrollment		Influence Retention	
	WM	***Int***	***WM***	***Int***
Product (Academic programs and services)	3.88	VI	3.93	VI
Price (Affordability and payment options)	3.75	VI	3.79	VI
Place (Location, accessibility, facilities)	3.98	VI	4.02	VI
Promotion (Marketing and campaign activities)	3.88	VI	3.96	VI

Legend: 1.00-1.49-Least Influential (LI); 1.50-2.49-Slightly Influential (SI); 2.50-3.49-Moderately Influential (MI); 3:50-4:49- Very Influential (VI); 4:50-5:00 Extremely Influential (EI)

Respondents' Feedback to Further Improve the Marketing Strategies

A range of themes emerged from the content analysis of the qualitative responses gathered from the open-ended questions. The suggestions provided by respondents were clustered and organized under relevant themes, with their exact recommendations presented verbatim as shown below.

Themes	Exact Comments from Respondents
Wi-Fi and Facilities	➢ Make Wi-Fi accessible to all students in every corner of the campus. ➢ The signal of Wi-Fi on the campus is weak, please fix the Wi-Fi. ➢ Improve the internet facilities (2x) and not accessible in the campus ➢ The aircon in some rooms are not functioning and also the electric fan ➢ Toilet flashes are always broken

Tuition Fees and Financial Assistance	➢ Please provide clear breakdown of the tuition and miscellaneous fee especially during inquiry ➢ Please provide more scholarship (3x) and make sure it is posted online on DWCL's page to inform everyone ➢ Tuition discounts please ➢ Miscellaneous and Athletics Fees: The assessment includes fees for PRISAA and Athletics, but not all students participate in athletics. Why are we charged for this? ➢ Laboratory Fees: We are charged laboratory fees, but we don't use the labs
Student Services and Policies	➢ If there are any suspension of classes, please tell the students earlier ➢ Please allow students to wear slippers during rainy days. It is a hassle to bring shoes and slippers at the same time ➢ Permit Exam must be easy access for the students; they should not need to go to DSWD just to get their Certificate of Disadvantage ➢ The security guards (South Campus) should be more respectable when dealing with students because most of the time, they raise their voices so loud that it becomes concerning ➢ Make sure that students are comfortable with the venue so they can listen and engage more rather than be busy dealing with the heat
Marketing and Promotions	➢ Strong social media presence is a must. Focus on posting essential information quickly ➢ The school-to-school visit is really good for students who can afford quality education but can't be updated because they live in a distant island ➢ Instead of brochures, you could distribute content through online means—it spreads quicker and has near zero cost to do ➢ Focus on digital engagement through social media campaigns, interactive content, and student testimonials to showcase the institution's strengths ➢ Establish collaborations with local businesses and alumni could help expand reach and credibility ➢ Continue the school's promotional campaigns, but also consider expanding outreach to the 1st and 3rd districts
Student Engagement and Well-Being	➢ Maybe enhance parental meetings for all parents in order for them to understand the importance of mental health to students ➢ Open more active clubs that will help students showcase and improve their hobbies or talents ➢ Hire more friendly staff like security guards because we often have problems with them as they are not practicing the values of a Christian
Academic Experience	➢ Improve the enrollment process; avoid several and sudden changes in professors because it is wastes time allotted for lectures and discussions ➢ Although I like studying here, they should consider the expertise of a teacher, especially if they are will handle major subjects ➢ Faster and more efficient ways to have attendance for different events and a faster process for enrollments ➢ Maybe we can make use of the CCTV inside the classrooms to warn those who mainly rely on cheating ➢ If you want an honest comment... Make your faculty more considerate and understanding, not making the students more pressured/stressed just because of their old style of discipline

CONCLUSION

The 4Ps marketing mix strategies -- product, price, place, and promotion -- are instrumental in the students' choice to enroll and stay enrolled in their chosen curricular programs, hopefully until they graduate. Their main considerations in choosing to enroll and stay enrolled in DWCL Were the various

academic program offerings and the comprehensive student services that are essential for enhancing their overall student experience; the accessible location and the friendly and safe school community; the friendly payment options implemented; and the promotional campaigns, particularly via social media and word-of-mouth strategies. However, there were specific aspects in the marketing mix strategies that need to be looked into by the administration such as the slow internet connection; defective air-conditioning units in some classrooms; the slow enrollment process; collection of laboratory fees, and some concerns with class scheduling and faculty handling major subjects. These concerns, if not attended to, at once may result in student migration in nearby HEI's.

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Short Stories as Potent Instructional Materials in Teaching Literature

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ABSTRACT

This study showcases the notion that the short stories can be an effective instructional material not only in Literature but also in other subjects specifically Values Education by using the inter-disciplinary approach. Scrutinized critically, the writer found out that these short stories, based on their themes contain built-in components of values which can be utilized as activities. Thus, these short stories can now be classified as instructional materials that deepen aestheticism and extract didacticism. With the thematic approach to the said short stories, three prevailing themes, (1) Love begets self-sacrifice, gullibility, tolerance, and understanding, among others; (2) One for all, all for one which characterizes clannishness among Filipino families; and (1) Calmness and patience pave ways to objective solutions to life's altering decisions. The short stories that are and selected include those, written by Filipino authors. Then these short stories initially are analyzed purposively on character delineation to elicit the attitudinal and behavioral attributes which apparently deduce moral values. Transposing these moral values, the writer comes up to a well-constructed sentence comprising as the theme of the short stories. Additionally, with the use of inter-disciplinary approach, the same short stories as instructional materials can serve as springboard in teaching Values Education. This study concludes with the findings that other literary genres may be utilized, provided that activities, may be amplified and varied. Moreover, a multidisciplinary approach to teaching may be applied not only in Literature and Values Education but also in Mathematics, History, technical subjects, to mention a few.

Keywords: Instructional Materials, Interdisciplinary Approach, Literature, And Short Stories

INTRODUCTION

Whenever and wherever a teacher plunges himself into the realm of the academe, jam-packed with students who may be "information hunger" [1], he gropes for instructional materials, over and above the varied pedagogies, techniques, and approaches, which he has acquired from his long years of formal training in the school - - all of which aim at igniting students' interest in order for them to grasp the lesson much easier. Eventually, he gains mastery in his major field of concentration which in this paper is *Literature.* And what he needs to exemplify his methodologies in teaching are instructional materials that are specified to be "tools used in educational lessons that include active learning and assessment (although) basically any resource a teacher uses to help him teach his students is an instructional material." [2] Evidently, instructional materials are the backbone by which students experience, learn and apply as they interact with one another in the classroom. How exciting and thought-provoking the instructional materials are, can be gauged by the degree of motivating or demotivating students, as the case may be. *Why Literature*, one might ask. First and foremost, Literature, which comprises genres of drama, essay, novel, and short story, to name some, all imbibed with" significant human experiences which acronym is (SHE), eventually makes Literature as a potent instructional material. [3] Consequently, this school of thought has been reinforced with the following passage, *Literature offers a bountiful and highly varied body of written material which is essential in learning fundamental human issue. Moreover, Literature, is an authentic material, enriches cultural awareness, (and) provides language enrichment: its relevance moves with passing of time when students may discover inner thoughts, feelings and customs (and) helps personal enrichment. (4)*

CONCEPTUAL FRAMEWORK

This paper is anchored upon the aesthetical –historical approach, advocated by Scott (1956) in his book, *Theory of Literature* (4), and localized by Hosillos (1984) in her book *Originality as Vengeance in Philippine Literature.* (5) Apparently, this approach to Literature is described as an integration of the experiential, the analytical and the contextual continua. However, only the experiential phase of the aesthetic –historical approach is utilized as the conceptual framework of the study in the sense that the experiential , which is labeled to be subjective and impressionistic, basically starts with the readers' interaction with the literary work and the "readers 'rapport and personal enjoyment (which become so dynamic) that criticism can only supplement the readers' enjoyment , understanding and knowledge of Literature" [6] In effect, the said author stresses that this experiential phase, otherwise called as the readers' aesthetic pleasure, is considered as the universal appeal of Literature. Yet no matter how personal and impressionistic the readers may be, they have some objective basis which is the "literary work itself. . .. (because) the proper study of Literature is the literary work. They can (therefore) transcend subjectivism and impressionism toward a justifiable critical interpretation and evaluative judgment of the literary piece." [7]

METHODOLOGY USED IN THE STUDY

Showcasing the instructional materials are the short stories of Daguio, A. (20210, Rotor, A. (20120, Garcia, V. (2021), Bulosan, C. (2020), and Roces, A. (1958). It should be noted that some of these short stories drive home didactic elements on honesty, fortitude, fidelity, resilience, and other values necessary for a child's character formation. Incidentally, the K to 12 Curriculum requires Edukasyon sa Pagpapahalaga subject (8) which is a fusion of Values Education and GMRC, an acronym of Good Manners and Right Conduct. Nonetheless, instructional materials "must be carefully planned, selected, organized (and) refined . . . for maximum effect and depth of content so that student-learning (process) is optimized." [9] To commence the critical analysis centered on character delineation, this researcher modified the qualitative method or descriptive method of research advocated by Portillo, et al (2003), (9) Calderon (2006), [10] Calmorin, L.P. & Calmorin, M.A.; (2012) [11] and Tiempo, E. (1980). Philippine Criticism. (1980). Manila: de la Salle University Press. [12 Modified because the qualitative method has been integrated with the thematic approach to Literature proposed by Hosillos (1984) (13) and Casuga (1972) (14) The aforementioned short stories have been lifted from different sources, which all together constitute the scope and limitation of the study. The process of character delineating lead

characters is geared towards identifying their moral values, Thus, the procedure of this method is arranged chronologically as follows: (1) grouping and describing the short stories based on themes, (2) stating in a complete sentence each theme, (3) eliciting the moral values equated with the themes, (4) illustrating attributes of the lead characters in the stories that depict the theme, and (5) suggesting activities and instructional materials that develop and deepened aestheticism and moral values.

FINDINGS

Themes and their built-in values

Theme 1: Love begets self-sacrifice, gullibility, tolerance and understanding, among others.
Daguio's Wedding Dance (15) brings home a discernment that love, at times, begets self-sacrifice. That is why Awiyaw, the husband, and his wife, Lumnay, even if they deeply love each other, sacrifice themselves by separation because tradition mandates that a couple has to sever their relationship from each other if and when after seven years of union, they remain childless. In juxtaposition, in the story, Zita, (16) the lead character, a teacher, for that matter. who is compelled to suppress his feelings of love because the object of her affection is his student, named Zita, who in requital falls in love with him too, but he prefers not to reciprocate, instead, submits himself to self-sacrifice. On the other hand, gullibility and tolerance happen when a person out of love accepts being fooled or tricked by his loved one. This observation is showcased by the stories *"Of Cocks and Kings," and "Of Cocks and Battle Cocks" (17)* (Dalisay, J. et al, 2000. [18] The former tale discloses the elder brother as gullible and tolerant in leaving his younger brother, being and inveterate gambler, creating illegal means and ways to win in the cockfight. The elder brother, too, is being persuaded and convince to validate his younger brother's lies and alibis that his cock will and can never lose because it is the king of cocks. In this connection, the younger brother manipulates his gamecock by letting it swallow an amulet which he believes can transpose his gamecock to be indefatigable and invulnerable from any harm. Ironically, the charm is inefficacious, for his gamecock is fatally hit by the opponent's gamecock. At this juncture, the elder brother asks why their cock has lost when the younger brother assures him it will not and never be defeated for the reason that their cock is the king of cocks. Amidst this disappointing scene, the elder brother sustains his gullibility and tolerance when during the mild confrontation the younger brother sarcastically underestimates his knowledgeability depicted in the following statements**,"** *For God's sake, don't tell me that you still believe in diving rights. This is already the century of the common man. The era of royalty is over. Haven't you heard of the revolt of the masses? Why don't you study your History more?"* **(**Rosenburg**, A.** 1958). (19]

Theme 2: One for all, all for one, characterizes clannishness among Filipino families.
True enough, the impoverished but strong and healthy children of the farmer-father in the story, *"The Laughter of my Father" [20]* all together all the time, smelling the aroma of the food coming from the tall house of the rich neighbor whenever the latter eats. Being poor, these children often go hungry and therefore feed themselves by sitting by their window, and looking up at the towering home of the rich man and inhaling the smell of the flavorsome food, cooked by their rich neighbor as they eat rice only. They then feel full. Happy and contented, the poor family works as one in exchanging jokes and making domestic mischiefs which end in boisterous and contagious laughter that passersby cannot help but stop and join the laughter, all of them, as if belonging to one family, unite as one in enjoying themselves. Meanwhile, in the story**,** *"Of Cocks and Super Cocks,"* (21) the elder brother, albeit resolved never again will he participate with his younger brother's inveteracy in gaming cocks, pities him in his being downtrodden spirit brought about by a series of losses in gaming cocks. Because of love and empathy for him, the elder brother invigorates his attitude by bending his promise and granting his request to borrow and use the government fund temporarily that he (elder brother) keeps as treasurer. The younger brother assures him that the money will be refunded after the fight, because he feels very confident of winning because his gamecock is a super chanticleer which can fight dauntlessly against two opponents at the same time. Be that as it may, there has been "an unexpected twist of fate (because the super chanticleer) stabs itself on its head and falls dead on the pit." [22] Amidst the misfortunes occurring and recurring, the elder brother has never deserted nor disowned him. All the time, the elder brother resembles the Three Musketeers, who lives up to their byword, "All for one, one for all," as he has been

a part of his younger brother's failures. Although at times he grows passive, nevertheless, he remains consistently tolerant, forgiving, waiting and watching his younger brother's gamecock activities, and consequently, providing him his shoulders to lean on in all his failures. This sibling's bond typifies the clannishness of Filipino families, a trademark tradition prominent among Filipinos. This peculiar trait has been manifested by the test of time immemorial.

Theme 3: Calmness and patience pave ways to object solutions in life's altering decisions.
*"Footnote to youth "[*23] is portrayed by the fathers, of the first and the second generations respectively. When Dodong, the son of the first generation, asks permission from his father to get married at the age of sixteen, the latter keeps momentarily quiet, but when the former has been insistent, his father calmly and patiently answers his question, "Must you marry this early?" His father implies his apprehensions and uncertainties of young marriage, but he respects his son's life-altering decisions. Similarly, when Blas, typifying the second generation, asks Dodong's blessing to marry at the age of eighteen, Dodong cannot bluntly negate, but calmly and patiently although doubtfully, approves Blas life's altering decision. In contrast with the real world of the early 90's, when this story was published, parents were known to be one-sided in communication. They were strongly opinionated and subjective in their ideas, and children had to bow in silence and obedience. Allied with the foregoing theme are the stories, *"Of Cocks and Hens," and "Of Cocks and Kites."* (Dalisay, J. et al, 2000) (24) In the former story, the elder brother, who is the author himself, is described to be calm and patient towards the younger brother's persistence about the questionable gender of his chicken until such s time that he (younger brother) decides to subject his chicken to one-on-one fight against a Texan gamecock. And when the bettors grow mad because they consider the fight was deceitful, the elder brother has not lost his common sense. This time, he actively grapples his younger brother's arms, and both run for their lives and hide between thick bushes. The same theme holds true in the story, *"Of Cocks and Kites".* (Dalisay, J. et al (2000) (25), which presents the elder brother who has not lost his temper nor becomes impulsive for his younger brother's inveteracy in gambling, by training his gamecock to swallow bits of lead in preparing it to be defeated in the fight, and then making secret connivance to bet a large amount on the opponent's gamecock, while he bets small money on his own gamecock. Anticipating the shame and embarrassment that his younger brother might encounter if and when his bettors discover his deceit, the elder brother 's calmness and patience enable him to plan wisely and execute the plan into action by casting his bet on his younger brother's gamecock publicly. As expected, the younger brother's discreetly wins while his elder brother openly loses. Over and above the elder brother's course of action is the crystallization of his calmness and patience that pave the way to objective solutions to his life's altering decisions.

Suggestive activities and instructional materials deepening aestheticism and moral values

The relevance of instructional materials in the teaching of Literature via the short stories is considered near-fetched once suggestive activities are identified, outlined, and illustrated in particular , continuing the story, transforming the ending of the stories into an open ending or hanging ending, composing summaries with wrongly constructed sentences or with incomplete sentences and drawing or sketching [26] are some recommended instructional materials with varying activities in all literary genres , but in this paper only the short stories. To concretize the interdisciplinary approach are the facts that the activities are done by groups, and eventually, this approach is used to teach values in Values Education subject by using the same short stories. [26]. One illustration of the activity to actualize the values of calmness and patience, conveyed in the stories, "Footnote to Youth", "Of Cocks and Hens," and "Of Cocks and Kites", is the instructional on continuing the report (27). Here the teacher reads the paragraph or paragraphs of the story which present the action of the lead character. Consequently, the students, working by groups, continue the report based on their creativity for a possible, meaningful and logical continuation, and they see to it that in doing so, they are able to unveil calmness and patience in the actions, facial expressions, body movements, and body movements of the lead character. Each group then reads his// her output, while the other groups listen intently; after which they interact with one another regarding the strengths and weaknesses of the production presented. The same instructional material and activity on continuing the story [28] can be applied to the remaining stories understudy. Another illustration to materialize the instructional material which transform s the ending of the story

into an open ending is the activity by which the teacher, in the process of careful planning and organizing his lesson, cuts on a one-on-one basis the part or parts of the story, " Wedding Dance", or "Zita", or "Of Cocks and Kings" or "Of Cocks and Battle Cocks" that reflect either one or two or all of the values of love, self-sacrifice, gullibility, tolerance and understanding. And then, the students, still working by groups, compose their own ending, containing built-in components of the aforementioned values, hand in hand with explanations of their implications. Eventually, the group compares and contrasts one another's work and discusses improvements in the arrangement and flow of the organization of their composition. The teacher observes in silence how the exchange of ideas prospers but is ready to evaluate and give feedback and recommendations to mark the end of the activity. Still another illustration to bring about the instructional calls for the teacher to compose in written form summaries with wrongly constructed sentences or with incomplete sentences which imbibed the values of clannishness and solidarity or unity in the family. As a follow-up, the students still working by groups, hold a brainstorming examination of the given summary and spot the wrongly constructed sentences in the summaries. Right then and there, students revise the summary by focusing on the wrongly constructed sentences and supplying appropriate words or phrases, at the same time including the values of clannishness and unity in a family. Once finished, the group representative reads to the class the product for the class to react and proact. Repeatedly, the said values of calmness, patience, love and self-sacrifice, gullibility, clannishness, tolerance and understanding, in Values education subject can be used as lessons by adapting the interdisciplinary approach. Therefore, all the stories analyzed will be the same instructional materials in Values Education subject, and to avoid monotony, teachers should vary the activities in order to gain momentum of interest and hunger for information of the students. The rationale for working by groups is the development of social relationships or interrelationships among students. And one variation that can be adapted here is working individually, the target of which is nurturing intra-relationships.

SUMMARY AND CONCLUSION

In recapitulation, this paper has successfully and comprehensively elucidated the instructional materials for the teaching of Literature through the use of short stories. The selection and collation of the short stories have been rooted in imbibed moralistic elements with built-in components of the values of calmness, patience, love, self-sacrifice, gullibility, tolerance, and understanding. Part of careful planning and organizing, which is the intentional choice of the said values in order for the exemplification of the interdisciplinary approach to Values Education subject via Literature in short stories genre can be achieved. In conclusion, other literary genres may be tried as instructional materials to demonstrate more values to be instilled in the hearts and minds of the Millennials.

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The study of stakeholders' needs for curriculum development in science education, in Bachelor's Degree, Faculty of Education, Ramkhamhaeng University

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ABSTRACT

This study investigated stakeholder needs for developing the science education curriculum (Biology, Physics, and Chemistry) for the Bachelor of Education program at Ramkhamhaeng University. Stakeholders were categorized as internal (faculty members, students) and external (employers, educational institutions). Data were collected from 43 stakeholders via a four-part questionnaire and from 6 through in-depth semi-structured interviews. The questionnaire assessed: (1) 21st-century skills for science teachers, (2) essential specialized subjects, (3) preferred instructional methods, and (4) expected graduate learning outcomes. The Likert-scale instrument demonstrated strong content validity, with Item-Objective Congruence (IOC) values ranging from 0.67 to 1.00.

The results revealed the most crucial skills for 21st-century science teachers are ICT for learning management and building relationships with students, parents, and the community. Regarding instructional methods, stakeholders prioritized the use of diverse technology, instructional media, and Problem-Based Learning. For specific subjects, top-rated courses included Principles of Biology, Teaching Professional Practice (Subject Specific), and Biology Laboratory, while Calculus and Analytical Geometry received the lowest rating. The most valued graduate learning outcomes were subject matter expertise and research skills, ethical awareness, adaptability to social change, and the embodiment of core teacher characteristics with a commitment to lifelong learning. This study offers valuable insights into stakeholder expectations for developing a science education curriculum at the bachelor's level.

Keywords: Needs, Secondly School, 21st-Century Kills, Curriculum Development, Learning Management

INTRODUCTION

In response to Thailand's rapid economic, social, and technological changes, higher education must adapt curricula to meet evolving societal and labor market demands. Curriculum development should incorporate not only academic perspectives but also input from key stakeholders—such as employers, alumni, students, professional bodies, government agencies, and communities—to ensure relevance and foster sustainable national development. Stakeholder needs analysis thus becomes a strategic requirement to bridge the gap between education and employment.

To guide this process, the study draws on two complementary curriculum theories: Outcome-Based Education (OBE) and Backward Design. OBE emphasizes the formulation of clear, measurable learning outcomes that reflect societal and professional expectations, ensuring that graduates possess the competencies required by the labor market (Spady, 1994). International frameworks such as the ASEAN University Network Quality Assurance (AUN-QA) reinforce this approach by promoting stakeholder involvement in defining program outcomes (Ministry of Higher Education, Science, Research and Innovation, 2022; Rajamangala University of Technology Isan, 2023). Backward Design complements OBE by structuring curriculum development in three stages: identifying desired learning outcomes, determining acceptable evidence of achievement, and designing instructional activities to support those outcomes. This model ensures that stakeholder input is not only acknowledged but systematically embedded into the curriculum planning process from the outset (Wiggins & McTighe, 1998).

Together, these frameworks provide a coherent theoretical foundation for curriculum refinement. They enable the translation of stakeholder feedback into targeted learning outcomes, instructional strategies, and assessment methods—ensuring that the curriculum is both academically rigorous and professionally relevant.
The Bachelor of Science Education program at Ramkhamhaeng University exemplifies this integrated approach by aiming to produce science teachers who meet Thailand's educational needs. Stakeholder needs analysis informs curriculum refinement, ensuring alignment with labor market expectations while maintaining academic integrity and professional standards.

METHODS

Research Design and Data Collection

This study employed a mixed-methods approach to assess stakeholder needs related to the Bachelor of Education Program in Science Education. Data were gathered through structured questionnaires and semi-structured interviews, aiming to inform curriculum development and enhance teaching and learning practices that showed in conceptual framework (Figure 1).

Conceptual Framework

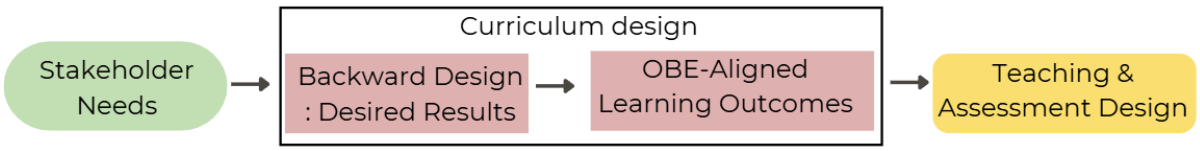

Figure 1: Conceptual framework finking stakeholder groups to curriculum components.

Population and Sample

The research population consisted of stakeholders involved in the Bachelor of Education Program in Science Education. This included university lecturers in science and technology-related fields, educational institution/university administrators, current students, alumni, science teachers, professionals in both public and private educational organizations, and individuals interested in

becoming teachers. The sample was selected through purposive sampling. The researcher coordinated and invited participants to join the research project, totalling 43 individuals. Participation was entirely voluntary, with respect for privacy and without pressure or discomfort, ensuring participants had full autonomy to accept or decline the invitation to participate in the study.

Research Instruments

Two primary instruments were utilized that developed in alignment with the Thai Qualifications Framework for Higher Education (TQF:HEd, 2022), covering four domains—Knowledge, Skills, Ethics, and Character (The Commission on Higher Education Standards, 2022):

Questionnaire

The development process included the following steps: Reviewing relevant theories and previous research; Analyzing research objectives, conceptual framework; Defining variables to construct the questionnaire; Creating items to comprehensively cover all variables under the conceptual framework; Consulting the curriculum administrative committee to ensure content validity. The instrument underwent rigorous validation, including expert review and Item-Objective Congruence (IOC) analysis (IOC range: 0.67–1.00). Reliability was confirmed via Cronbach's alpha, with coefficients ranging from 0.88 to 0.93 across domains and an overall reliability of $\alpha = 0.94$.

Semi-Structured Interview

The semi-structured interview was developed using the following steps: Reviewing relevant theories and previous research; Analyzing research objectives and the conceptual framework; Defining variables to construct interview questions; Developing the interview questions to comprehensively cover variables according to the framework; Consulting the curriculum administrative committee to ensure content validity; Revising the interview guide based on committee feedback.

Data Collection

Participants were invited via direct coordination, with clear communication of research objectives and ethical safeguards. Questionnaires were distributed online via Google Forms, while interviews were conducted in person or remotely, with prior consent for recording. Participants retained the right to decline or withdraw at any point.

Data Analysis

For the process of analyzing data obtained from stakeholder needs questionnaires regarding the curriculum, the questionnaire utilized a 5-level Likert scale to measure respondents' stakeholder. The interpretation of mean scores for each item and domain followed the standard classification used in educational and behavioral research (Best, 1977; Likert, 1932; Boone & Boone, 2012). The five-point scale was interpreted as follows: 4.50–5.00 = Very High, 3.50–4.49 = High, 2.50–3.49 = Moderate, 1.50–2.49 = Low and 1.00–1.49 = Very Low. These cut-offs provide a consistent benchmark for interpreting Likert-scale means and are widely used in needs assessment studies in higher education. For qualitative data from interviews were transcribed and analyzed using content analysis, categorizing responses based on the study's conceptual framework and objectives.

RESULTS

Analysis of General Information from Questionnaire and Interview Respondents.

Data were collected from 60 individuals via an online Google Form questionnaire and responded 43 completed questionnaires that 71.67% response rate, which is considered acceptable (Malhotra &

Grover, 1998). Respondents included university lecturers in Biology/Physics/Chemistry 6 individuals (13.95%), university administrators 1 individual (2.33%), current students 5 individuals (11.63%), science teachers 13 individuals (30.23%), alumni 8 individuals (18.6%), science-related organizations (e.g., NRCT, IPST, NSM, POSN, etc.) 1 individual (2.33%), organizations related to basic education 3 individuals (6.98%). The overall showed government agencies 34 individuals (79.10%), while private organizations 9 individuals (20.90%). Work experience including 1-5 years 18 individuals (41.90%), 6-10 years 14 individuals (32.60%), 10-15 years: 8 individuals (18.60%), 16-20 years 3 individuals (7%). In addition, six stakeholders were interviewed in-depth using semi-structured interviews including 1 individual science-related organization, 3 science teachers, 1 university lecturer in science, and 1 university lecturer in education.

Findings on Stakeholder Needs from the Questionnaire

1) Stakeholder Needs Regarding the Development of Curriculum Quality in Essential Knowledge and Skills for 21st-Century Science Teachers

Stakeholder feedback revealed a strong consensus on the essential competencies required for 21st-century science teachers, with the overall average score reaching the highest level. The most valued skills included the use of modern and reliable ICT tools for learning management and the ability to build meaningful relationships with students, parents, and the community (M = 4.72). Teamwork and adaptability were also highly rated (M = 4.70), reflecting the importance of collaboration and flexibility in dynamic educational environments (Table 1). Qualitative insights emphasized the need for science teachers to possess deep academic knowledge across core scientific disciplines and the ability to connect this knowledge to real-life contexts. Stakeholders stressed the importance of fostering scientific thinking—such as hypothesis development, experimentation, and data analysis—to ensure students engage in authentic scientific learning. The curriculum should also promote digital literacy, including the use of AI and ICT tools, to enhance instructional design and classroom management. In addition to academic and technological competencies, stakeholders highlighted the importance of lifelong learning, continuous self-improvement, and responsiveness to global change. Ethical values, social responsibility, and the development of a strong professional identity were seen as critical to preparing well-rounded educators. These findings underscore the need for a comprehensive, future-oriented curriculum that equips science teachers with the knowledge, skills, and character to thrive in the 21st century.

Table 1: Needs for Curriculum Development for Undergraduate Science Teachers in Terms of 21st Century Teaching Skills.

21st Century Skills for Science Teachers	Mean	SD	Interpretation
1. Ability to connect scientific content with daily life and current issues	4.67	0.64	Highest
2. Understanding of fundamental scientific principles and concepts	4.60	0.62	Highest
3. Ability to utilize reliable and modern ICT in teaching and learning	4.72	0.59	Highest
4. Lifelong learning skills	4.65	0.61	Highest
5. Critical thinking and data analysis skills	4.60	0.66	Highest
6. Problem-solving and rational decision-making skills	4.56	0.70	Highest
7. Innovation and creative development of learning materials	4.63	0.66	Highest
8. Teamwork and collaboration skills	4.70	0.60	Highest
9. Communication skills for exchanging knowledge and ideas, including the ability to clearly and accurately present information	4.67	0.57	Highest
10. Relationship-building skills with students, parents, and the community	4.72	0.55	Highest
11. Adaptability to changes in roles, contexts, and environments with flexibility	4.70	0.60	Highest

2) Stakeholder Needs Regarding Learning Management Models in the Curriculum

Stakeholders strongly favored the adoption of innovative, technology-driven learning management models in the science education curriculum. The highest-rated priority was the use of diverse instructional technologies and media (M = 4.81), followed closely by Problem-Based Learning (M = 4.74), Collaborative Learning, STEM Education, and varied assessment methods (M = 4.72) showed in Table 2. These preferences reflect a clear endorsement of active, student-centered pedagogies that foster engagement and deeper learning. Qualitative feedback further emphasized the importance of learner autonomy through inquiry-based, project-based, and peer-to-peer learning activities. Stakeholders advocated for the integration of modern digital tools—including Artificial Intelligence and online platforms—to enhance instructional design and effectiveness. They also stressed the value of experiential learning tied to real-world and community contexts, recommending internships, field trips, and extracurricular science activities. Additionally, they called for diverse, authentic assessment practices such as portfolios and product-based evaluations to better capture students' true capabilities and support the development of essential 21st-century skills.

Table 2: Needs for Curriculum Development in Terms of Instructional Models

Instructional Models	Mean	SD	Interpretation
1. Flipped Classroom	4.42	0.63	High
2. Inquiry-Based Learning	4.70	0.51	Highest
3. Problem-Based Learning	4.74	0.49	Highest
4. Project-Based Learning	4.63	0.58	Highest
5. Collaborative Learning	4.72	0.55	Highest
6. Blended Learning	4.51	0.74	Highest
7. STEM Education	4.72	0.55	Highest
8. STEAM Education	4.65	0.57	Highest
9. Use of diverse educational technologies and teaching media	4.81	0.45	Highest
10. Various assessment approaches (e.g., observation, assignments, self-reports, stakeholder records, diverse tests, portfolios)	4.72	0.59	Highest

3) Stakeholder Requirements for Curriculum Quality Development Regarding

Stakeholders identified a high-priority set of competencies for graduates of the science education program, with all attributes receiving top average scores showed in Table 3. The most critical expectations (M = 4.77) include subject-specific expertise in teaching and curriculum design, proficiency in digital technologies for learning management and assessment, and the ability to conduct research to support learner development. Equally important are digital literacy for educational purposes and a strong ethical foundation aligned with the Teachers' Council of Thailand's professional standards. Graduates are also expected to demonstrate public-mindedness, a sense of volunteerism, and a deep awareness of their role as educators in a rapidly changing global landscape. Additional key attributes (M = 4.74–4.70) include creativity, collaboration, leadership, and a commitment to lifelong learning (Table 3). Stakeholders emphasized the importance of applying pedagogical and scientific knowledge through the integration of digital tools (TPACK), designing innovative learning experiences, and conducting ethical educational research. Practical teaching experience—through internships and placements in specialized institutions—is essential for developing professional competencies in classroom management, instructional design, and community engagement. These findings underscore the need for a curriculum that holistically prepares graduates to meet the demands of modern education with both technical expertise and a strong professional identity.

Table 3: Needs for Curriculum Development Regarding Graduate Knowledge, Skills, and Attributes

Graduate Attributes	Mean	SD	Interpre =tation
1. Awareness of global, social, and sufficiency economy changes	4.58	0.63	Highest
2. Knowledge in developmental, educational, and counseling psychology	4.67	0.57	Highest
3. Content, curriculum, assessment, digital technology, and educational research knowledge in the major field	4.77	0.48	Highest
4. Thai and English language communication skills	4.60	0.58	Highest
5. Digital literacy skills for education	4.77	0.48	Highest
6. Knowledge of educational quality assurance and relationships with parents and the community	4.65	0.57	Highest
7. Ability to explain key theories and principles in teaching and learning, assessment, classroom research, and educational innovation	4.65	0.57	Highest
8. Ability to apply teaching and science knowledge using TPACK to design instruction and conduct ethical research	4.70	0.56	Highest
9. Ability to contextualize learning with community, society, and the philosophy of sufficiency economy and science PLC	4.60	0.62	Highest
10. Professional ethics, social awareness, and adaptation to societal and technological changes	4.77	0.48	Highest
11. Attributes of a professional teacher with creativity, leadership, responsibility, and a growth mindset	4.74	0.49	Highest
12. Professional teaching practice in schools according to national standards	4.70	0.51	Highest

4) Stakeholder Needs for Specific Courses in the Bachelor of Education Program in Science Education

Stakeholders expressed strong preferences for specific subjects to be included in the Bachelor of Education Program in Science Education, with consistently high average scores across all three majors. Core courses such as Principles of Biology, Teaching Professional Practice (Subject Specific), and Biology Laboratory were rated highly (M = 4.56–4.77) showed in Figure 2. For the Chemistry major, the most valued courses were General Science Curriculum and Learning Content (Lower Secondary Level) (M = 4.74), Innovation in Science Learning Media (M = 4.70), and Physical Chemistry in Schools (M = 4.63). In the Physics major, Physics Lab 2, Physics Lab 1, and Physics 2 were prioritized (M = 4.58, 4.53, and 4.51 respectively). Biology major stakeholders emphasized Science Project and STEM Education Activities, Ecology (M = 4.65), and Basic Biology Teaching 1, Biology Instructional Media, and General Science Curriculum (M = 4.58), with Basic Biology Teaching 2 and Zoology also noted (M = 4.56) showed in Figure 3.

Conversely, courses such as Calculus and Analytical Geometry 1 and 2 received the lowest importance ratings, with average scores ranging from 3.77 to 4.07 (Figure 3.), particularly within the Physics major. These findings suggest that stakeholders prioritize subject-specific pedagogical and practical science courses over general mathematics content, emphasizing the need for curriculum alignment with hands-on teaching competencies and innovations in science education. This input provides valuable guidance for refining course offerings to better meet the expectations of future educators and the evolving demands of science instruction.

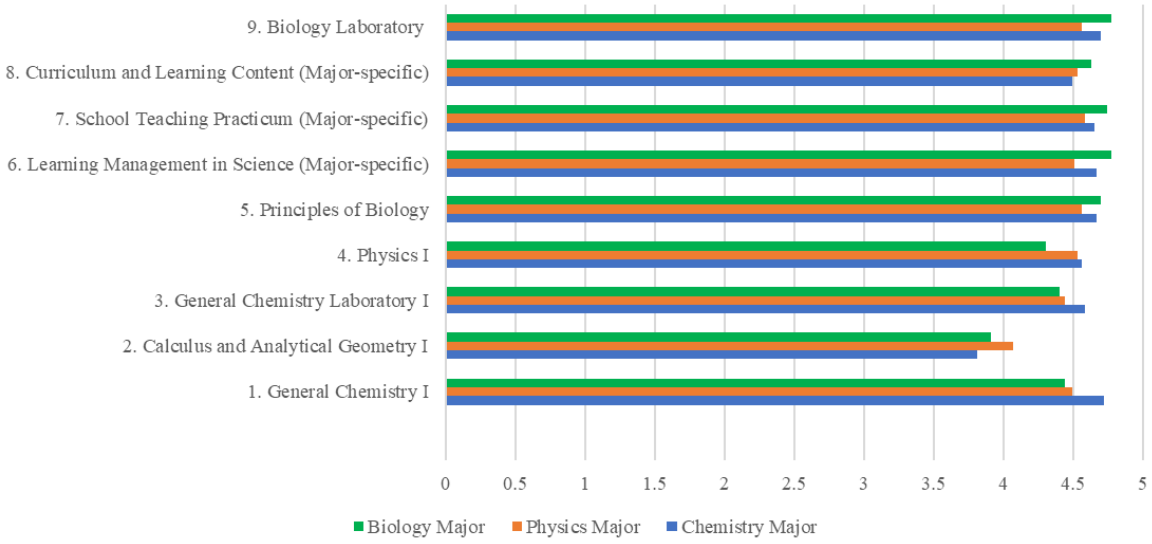

Figure 2: Core Subjects Recommended Across All Three Majors in the Bachelor of Education Program in Science Education

Stakeholders recommend a curriculum that includes core scientific content, active learning strategies, and real-life application of scientific processes. Emphasis is placed on diverse teaching methods, psychology, learner development, and educational technology to support student understanding and digital integration. Courses in professional ethics, assessment, and teaching experience are also essential. This well-rounded approach aims to prepare science educators with the knowledge, skills, and ethical grounding needed for effective, flexible, and future-ready teaching in the 21st century.

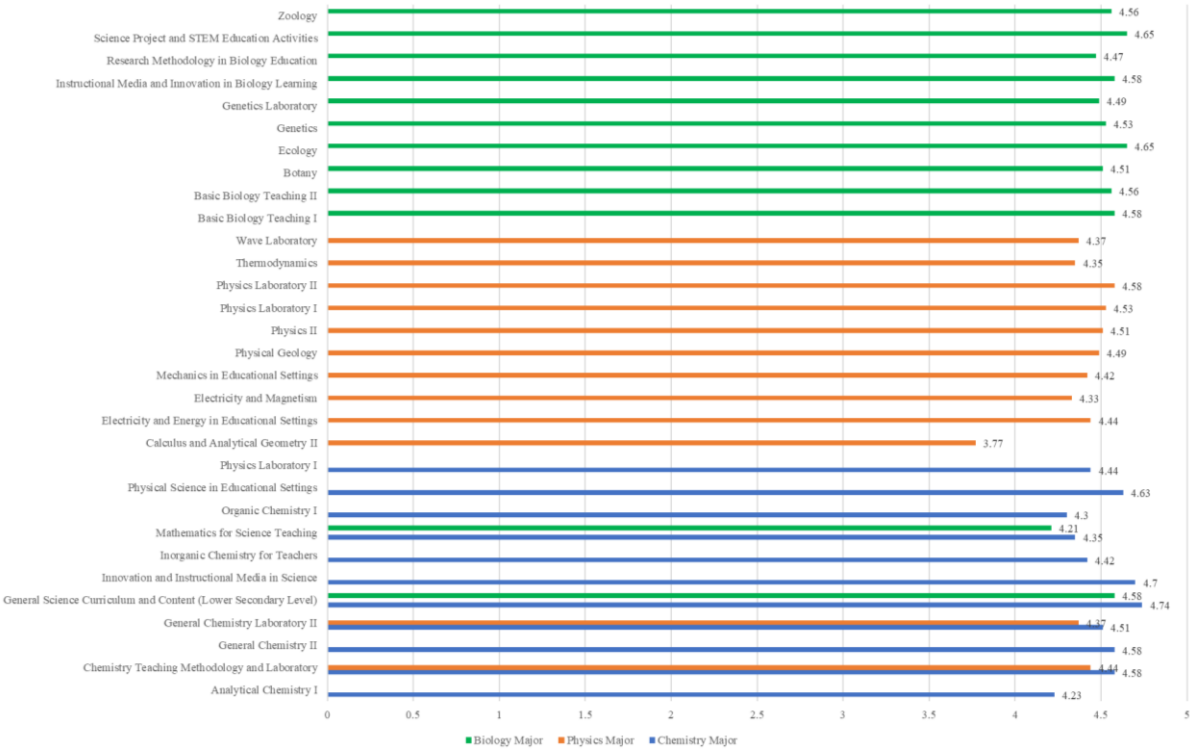

Figure 3: Specialized courses for each major in the Bachelor of Education Program in

DISCUSSION

program in Science Education using a mixed-methods approach. This involved collecting quantitative data from questionnaires and qualitative data from interviews with stakeholders from various sectors, including educational institutions, scientific organizations, and teaching professionals.

Quantitative data highlights that stakeholders prioritize ICT skills for learning management and relationship-building with students, parents, and communities (M = 4.72), followed closely by teamwork and adaptability (M = 4.70). These findings reflect the global shift toward digital integration in education, accelerated by the COVID-19 pandemic, and align with the TPACK framework (Koehler et al., 2013), which underscores the integration of technological, pedagogical, and content knowledge. The emphasis on interpersonal relationships also resonates with culturally responsive pedagogy (Gay, 2018), which promotes student engagement through strong community ties.

Qualitative insights reinforce these priorities, with stakeholders stressing the need for science instruction that is clear, relevant to everyday life, and grounded in scientific thinking—such as hypothesis formulation, experimentation, and analysis. This approach aligns with the Scientific Literacy model (National Research Council, 2012), advocating for real-world application of scientific knowledge. Additionally, the call for lifelong learning and adaptability reflects New Pedagogies for Deep Learning (Fullan & Langworthy, 2014), which emphasize critical thinking, technological fluency, and responsiveness to change as essential traits for modern educators.

Stakeholder feedback from both quantitative and qualitative data strongly supports the integration of diverse technologies and instructional media (M = 4.81), alongside active pedagogies such as Problem-Based Learning (M = 4.74), Inquiry-Based Learning, Project-Based Learning, Collaborative Learning, and STEM Education. These preferences align with the OECD (2018) framework, which advocates for Learner-Centered Pedagogy and Authentic Learning to cultivate critical thinking, collaboration, and technological fluency. Qualitative insights emphasize the importance of experiential learning environments that foster practical skills, real-world application, and student self-assessment. This approach is consistent with Geithner & Menzel (2016), who highlight the value of action-oriented and trial-and-error learning through authentic project scenarios. Together, these findings underscore the need for a curriculum that empowers students to engage deeply with scientific content through meaningful, hands-on experiences.

Stakeholders expect graduates to demonstrate integrated expertise in science content, digital technologies, learning assessment, and classroom research (M = 4.77), reflecting the TPACK framework's call for combined content, pedagogical, and technological knowledge (Koehler et al., 2013). They also emphasize the ability to create instructional media that enhances learning quality (Bakri et al., 2021) alongside professional attributes such as ethical conduct, public-spiritedness, a growth mindset, curiosity, and leadership—hallmarks of the "transformative teacher" described by Kwok (2021). Survey and interview data reveal strong demand for practice-based courses—laboratory methods, innovative science media design, secondary-level curriculum studies, and STEM/STEAM modules—that bridge theory and real-world teaching (Grossman et al., 2009).

Calculus and Analytical Geometry were identified as the lowest-ranked courses, suggesting the need to reorient these advanced mathematics subjects toward applied skills relevant to lower-secondary science for Biology majors. By contrast, the requirements remained for Chemistry and Physics majors, where Calculus and Analytical Geometry are regarded as essential for enhancing mathematical problem-solving competencies. Collectively, these findings underscore the necessity of curriculum reform that emphasizes digital pedagogy, community engagement, and applied scientific skills, while streamlining specialized mathematics in contexts where it is not directly aligned with disciplinary teaching demands.

Recommendations for Curriculum Development

Based on stakeholder input, the following recommendations are proposed to enhance the Bachelor of Education Program in Science Education:

1. Development of Targeted Modules
Introduce new modules that address emerging needs: 1) Digital Pedagogy for Science Education: Apply the TPACK framework and integrate technologies such as AI for instructional design and assessment. 2) Community and School Partnerships: Equip future teachers with strategies to collaborate with parents, local organizations, and science initiatives. 3) STEM/STEAM Integration: Design interdisciplinary, problem-based units tailored to lower secondary education and real-world challenges. 4) Science Education Research and Innovation: Foster classroom-based research skills to support evidence-informed teaching practices.

2. Enhancement of Pedagogical Approaches
Embed active, learner-centered methodologies—such as Problem-Based, Inquiry-Based, and Collaborative Learning—into core courses. Emphasize real-world application to deepen student engagement and practical understanding.

3. Diversification of Assessment Strategies
Balance traditional exams with authentic, performance-based assessments: 1) Portfolios to showcase teaching competencies and reflective growth. 2) Capstone projects focused on science outreach or instructional innovation. 3) Structured rubrics for practical teaching and microteaching. 4) Digital tools for formative assessment and feedback.

4. Curriculum Streamlining
Revise or remove low-priority courses: 1) Calculus and Analytical Geometry should be restructured to emphasize applied mathematical skills relevant to science teaching. 2) Consolidate overlapping theoretical content in pedagogy courses to allow for expanded practicum and experiential learning.

CONCLUSIONS

This research aimed to investigate the needs of stakeholders for the development of a Bachelor of Education program in Science Education. A mixed-methods research approach was employed, yielding comprehensive quantitative and qualitative data. The findings of this study provide clear, actionable directions for strengthening the Bachelor of Education Program in Science Education in alignment with stakeholder expectations, the principles of Backward Design, and the Outcome-Based Education (OBE) framework. The recommendations are organized can serve as policy guidelines for improving the curriculum's quality, ensuring its alignment with contemporary societal contexts, and effectively preparing science teachers to manage learning in the modern world.

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Unraveling Learning Barriers: Identifying the Difficulties Met by Senior High School Students in Blended Learning of Divine Word College of Legazpi

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ABSTRACT

This study examined the difficulties encountered by Senior High School students of Divine Word College of Legazpi in a blended learning environment. It aimed to identify the barriers that hinder learning and to assess their impact on students' academic performance and motivation. This study sought to answer the following research problems: (1) What is the demographic profile of the respondents in terms of (a) Age, (b) Year Level, and (c) Strand? (2) What are the difficulties met by the Senior High School students in blended learning in terms of: (a) Subjects (Core, Applied, and Specialized), (b) Academic Competencies (Learning Style, Language and Communication Skills, Mathematical Skills, Reading Comprehension), (c) Use of Digital Tools, and (d) Teacher-related? (3) How do the difficulties met affect the academic performance and overall achievement of Senior High School students? The study used a descriptive research design to gather data on the students' experiences in blended learning. The study targeted the entire population; however, only 368 of 389 students responded (94.60%).. The results of the study revealed that students generally adapt moderately well, showing adequate skills in digital tool usage, independent learning, and reading comprehension. However, they face significant challenges in collaborative learning, mathematical proficiency, and oral communication, especially in online settings. Emotional and cognitive difficulties—such as frustration, memory retention issues, and stress—emerged as key factors that negatively affected academic performance, highlighting the varied effects of blended learning on students' experiences.

Keywords: blended learning, learning barriers, senior high school, digital challenges, academic achievement, instructional improvement

INTRODUCTION

Education remains a vital component of societal transformation. Social progress and economic development have been rooted in the foundations of learning and knowledge. As an indispensable social institution, education provides an avenue for individuals to develop the skills necessary for training and shaping the future workforce. The substantiality of education and ensuring that the quality keeps up with the ever-changing landscape of society in the face of rapid global and technological advancements is essential for maintaining a steady stride for economic growth and social development.

In 2015, the United Nations launched the Agenda 2030 for Sustainable Development, commonly known as the SDGs. This framework outlines 17 clear goals designed to serve as a blueprint for promoting peace, eradicating poverty, and fostering a more sustainable future. One of the goals is Quality Education (Goal 4), and as outlined in the Agenda 2030 (United Nations Organization, 2015), where educational financing is considered a national investment priority, ensuring free education, improving basic school infrastructure, and embracing digital transformation are essential. This ensures that education remains a fundamental human right where learners are given opportunities to cultivate their skills and potential, becoming catalysts for change in hopes of breaking the cycle of poverty. This significant influence on a global scale is also evident in countries' efforts toward nation-building through national policies and programs addressing trends in globalization and global citizenship. From the global perspective of sustainable education, we now turn to the Philippine context, shaped by colonial history and reforms.

In the Philippine setting, the educational system is a product of years of colonization and reformations. During the Spanish colonial period, Spanish Missionaries such as friars and priests replaced the tribal tutors, as education in the pre-Spanish times was more informal and vocational. Education was religion-oriented (Department of Education, 2024). Against the backdrop of American occupation, significant reforms in the education system were established by introducing a public school system aimed at providing education to Filipinos with the English language as the medium of curriculum and instruction (Philippine Institute for Development Studies). Throughout the Japanese occupation, the Japanese–sponsored Republic created the Ministry of Education under which the teaching of Tagalog, Philippine History, and Character Education was reserved for Filipinos (Department of Education, 2024). Several reforms have been made in the succeeding years until the present time.

The Philippine education system has adopted the K to 12 curriculum under the Republic Act No. 10533 or the Enhanced Basic Education Act of 2013. This policy outlines the Enhanced Basic Education Program, encompassing at least one (1) year of kindergarten education, six (6) years of elementary education, and six (6) years of secondary education, in that sequence. Secondary education includes four (4) years of junior high school and two (2) years of senior high school education (Official Gazette, 2013). The Senior High School (SHS) curriculum is designed to prepare graduates for these exits: Employment, Entrepreneurship, Skills Development (Technical-Vocational training), and Higher Education (College). Nearly twelve (12) years since its rollout, the challenges and opportunities brought about by this enhanced education remain an important point of discussion for improvements and development.

One of the most significant challenges in education to date has been the COVID-19 pandemic, which, since December 2019, has resulted in over 778 million cases and 7 million deaths (World Health Organization, 2025). This pandemic has disrupted the education of more than 1.6 billion students and youth worldwide (UNESCO, 2024). The progress toward providing quality education was already challenging before the pandemic (United Nations Organization, 2024), but COVID-19 made it even more difficult, causing losses and disruption in schools, universities, and learning institutions worldwide due to the closure of schools and universities, prompting a transition from traditional learning delivery to digital and hybrid modalities. In particular, the Department of Education's response to the emerging challenges in education amidst the pandemic is designing and adopting the Basic Education Learning Continuity Plan (BE-LCP) which covers essential requirements such as most essential learning competencies, multiple learning delivery modalities for teachers, school leaders and learners, required

health standards in schools and workplaces, and special activities like Brigada Eskwela, Oplan Balik Eskwela, and partnerships (BE-LCP, 2024). To achieve this, schools can adopt one or a combination of the following learning modalities: Face-to-face learning modality in low-risk areas, distance learning (modular distance learning/online distance learning/TV or Radio-based instruction), blended learning, and homeschooling. Post-pandemic, schools and universities are still employing hybrid learning models.

Before the pandemic, the Philippines had been experiencing a relatively low score and rank in the Programme for International Student Assessment (PISA) tests. In a report published by the Congressional Policy and Budget Research Department under the House of Representatives for the PISA results in 2022, the Philippines scored an average of 355 in Mathematics, 356 in Science, and 347 in Reading. These scores barely showed an improvement compared to the Organization for Economic Cooperation and Development (OECD) average scores for 2018. These data put the Philippines in a way below average standing and a bottom ranking of 77/81 in 2022. Moreover, according to the results of PISA on the Creative Thinking Assessment 2022, Filipino students got a mean score of 14, which is way below the OECD's average score of 33. This result underscores the urgent need to enhance learners' problem-solving and critical-thinking skills while also refining the curriculum and educational policies to ensure a more effective and adaptive learning framework. This raises the question of whether there is a gap between curriculum expectations and actual learning outcomes.

Although teachers play an important role in the learning process and delivery of instruction, students' behavior, attitudes, and learning styles affect how they learn and contextualize their learning. This view aligns with the principles of Lev Vygotsky's Social Constructivism – emphasizing that an individual's ability growth is shaped by a collaborative environment, interaction, and practical activities. The classroom setting, motivation, peer influence, health, digital tools, and cultural background are some specific circumstances that may influence their academic success. Specific difficulties in comprehension, problem-solving, and critical thinking, access to learning resources, and internet access, as well as learning disabilities, impact learners at all levels of education, be it public or private.

In support of the Department of Education's efforts to innovate basic education, Divine Word College of Legazpi Senior High School has adopted a blended learning modality and offers the Academic Track with strands in Science, Technology, Engineering and Mathematics (STEM), Accountancy, Business and Management (ABM), and Humanities and Social Sciences (HUMSS). This study aims to identify the challenges SHS students face in blended learning and how these affect their academic performance. As a result, this will help the institution, particularly the SHS, to improve teaching methods, instructional strategies, and curriculum alignment to better address educational challenges and develop critical, creative, and globally competent learners.

Statement of the Problem

This study focused on identifying the difficulties met by Senior High School Students in the Blended Learning of Divine Word College of Legazpi. This study sought to answer the following research questions:

1. What is the demographic profile of the respondents in terms of:
    a) Age
    b) Year Level
    c) Strand
2. What are the difficulties met by the Senior High school students in blended learning in terms of:
    a) Subjects (Core, Applied, and Specialized)
    b) Academic Learning Styles and Competencies (Learning Style, Language and Communication Skills, Mathematical Skills, Reading Comprehension)
    c) Use of Digital tools
    d) Teacher-related

3. How do the difficulties met affect the academic performance and overall achievement of Senior High school students?

Conceptual Framework

This study is based on the idea that students' backgrounds and the difficulties met influence how well they perform in school. Their age, year level, strand, and the digital tools they use affect their way of learning and their ability to cope with schoolwork.

The study looks at the difficulties met by students, such as challenges in subjects (core, applied, and specialized), learning styles, language and communication skills, mathematical skills, reading comprehension, digital tools, and teacher-related concerns. During the COVID-19 pandemic, these learning aspects became a significant scale for identifying difficulties, particularly in how students interpret visual and textual context, self-manage their learning, ask for support from others, and learn the digital tools needed for blended learning.

Moreover, these difficulties can make it harder for students to understand lessons, complete school tasks, and participate in class activities. The research also examines how these difficulties affect students' grades and overall school performance. Academic performance refers to students' grades and test results, while overall achievement includes their ability to learn effectively and prepare for higher education or future careers. By understanding these connections, the study aims to identify strategies that can enhance students' learning experiences and improve their academic outcomes, particularly in blended learning environments.

Through this framework, the research provides valuable insights for teachers, schools, and students to address learning challenges, enhance digital learning, and improve students' academic performance.

Figure 1. Conceptual Framework Model

METHODOLOGY

This study used a descriptive research design to gather data on the difficulties met by Grades 11 and 12 students of Divine Word College of Legazpi in a blended learning setup. The study employed complete enumeration, targeting the entire population. However, only 368 of 389 students responded (94.60%). Data were collected through primary sources (structured survey questionnaires) and secondary sources (published/unpublished research and credible online references). The design is appropriate for identifying patterns in what, where, when, and how difficulties occur, helping contextualize the findings.

The survey questionnaire, administered via Google Forms, collected data on the demographic profile, difficulties met, and how these affect academic performance and overall achievement. The questionnaire items were adapted from existing literature and refined using AI-based grammar and phrasing tools to ensure clarity and contextual appropriateness. Content validity was established through expert review and pilot testing with a sample of SHS students. The instrument demonstrated

excellent internal consistency (Cronbach's α = 0.957). The survey employed a six-point Likert scale, ranging from 1 ('Strongly Disagree') to 6 ('Strongly Agree'). All responses from the 2024–2025 SHS students will be kept confidential and anonymous, with findings analyzed systematically to improve blended learning strategies.

Table 1. 6-point Scale Interval Range and Interpretation

Range	Interval	Interpretation
1.00-1.83	0.83	Strongly Disagree
1.84-2.66	0.83	Moderately Disagree
2.67-3.49	0.83	Mildly Disagree
3.50-4.32	0.83	Mildly Agree
4.33-5.15	0.83	Moderately Agree
5.16-6.00	0.84	Strongly Agree

RESULTS AND DISCUSSIONS

Table 2. Demographic Profile of the Respondents (n=368)

AGE	FREQUENCY	PERCENTAGE
15	1	0.27%
16	73	19.84%
17	167	45.38%
18	112	30.43%
19	14	3.80%
21	1	0.27%
Total	**368**	**100%**
YEAR LEVEL	**FREQUENCY**	**PERCENTAGE**
Grade 11	174	47.28
Grade 12	194	52.72
Total	**368**	**100%**
STRAND	**FREQUENCY**	**PERCENTAGE**
ABM	79	21.47
HUMSS	70	19.02
STEM	219	59.51
Total	**368**	**100%**

Table 2 presents the demographic profile of the 368 respondents. Most respondents were 17 years old (45.38%), followed by 18 years (30.43%) and 16 years (19.84%). Only a small number were aged 15, 19, or 21. This distribution reflects the typical age range of Senior High School students.

In terms of year level, the distribution is nearly balanced, with 47.28% of the respondents in Grade 11 and 52.72% in Grade 12. This balance allows for a fair representation of students across both year levels of senior high school.

Regarding academic strands, the majority of respondents are from the STEM strand, making up 59.51% of the total. Students from the ABM strand account for 21.47%, while those from the HUMSS strand comprise 19.02%. This suggests that STEM students are the most represented group in the sample.

Difficulties Met by the Senior High School Students in Online Learning in Their Core, Applied, and Specialized Subjects (n=368)

The results of the survey present the difficulties experienced by Senior High School students in online learning across core, applied, and specialized subjects. Students reported moderate agreement across all items, suggesting generally positive but cautious experiences. Understanding lessons through digital materials scored highest in core subjects (M = 4.65, SD = 0.90), with slightly lower means in applied (M = 4.64) and specialized (M = 4.58). This indicates greater ease in core subjects compared to specialized ones. This is in agreement with the students' experience in managing the pace of online learning, with applied subjects scoring highest (4.52, SD = 1.00), followed by specialized (4.49, SD = 1.05) and core (4.44, SD = 1.02). Maintaining focus was most difficult in core subjects (M = 4.42), while applied subjects scored slightly higher (M = 4.62). Despite sufficient materials, students struggled with distractions during online classes, highlighting the need for strategies to sustain attention. A study by Ching and Gingon (2023) highlights that online fatigue and problematic internet use can disrupt students' attention and retention, impacting their perceived learning effectiveness, particularly when lessons are primarily screen-based and lack varied interaction between students and teachers. Problems with internet connections, power supply availability, multitasking, and environmental noise can also contribute to difficulties in focusing during online sessions.

Difficulties Met by the Senior High School Students in Face-to-face Learning in Their Core, Applied, and Specialized Subjects (n=368)

The results indicate that Senior High School students generally moderately agreed with the clarity, pacing, sufficiency of resources, focus, and application of concepts in face-to-face learning, with core subjects consistently receiving the highest weighted means as seen in understanding lessons (5.15, SD = 0.88), managing lesson pace (5.02, SD = 0.83), sufficiency of learning resources (5.08, SD = 0.88), maintaining focus throughout lessons (5.01, SD =0.86), and applying concepts (5.04, SD = 0.81). This suggests that core subject instruction aligns more effectively with students' learning readiness, offering scaffolding within their Zone of Proximal Development (Vygotsky, 1978). Scaffolding consists of the activities provided by the educator, or more competent peer, to support the student as he or she is led through the zone of proximal development (Simply Psychology, 2025). Since face-to-face setup offers more ways of exploring the dynamic process of collaborative work and completing tasks from basic to more complex, students can effectively manage and advance their scope of learning.

Additionally, applied and specialized subjects may benefit from more targeted collaborative learning opportunities to bridge the gaps between complexity and students' learning readiness.

Academic Learning Styles and Competencies in Online and Face-To-Face Learning

The COVID-19 pandemic brought disruptions to the traditional classroom dynamics, including instructional delivery and the teaching-learning process. The sudden shift to blended learning environments that combine online (synchronous and asynchronous) and face-to-face modalities required the students to be more flexible in terms of adapting to new modes of instruction and specific learning aspects such as learning styles and competencies. Bay Atlantic University (2024) classifies these learning styles into four main types, namely, visual, auditory, kinesthetic, and reading/writing. Other styles include logical learners, social learners, solitary learners, and nature learners. This study underscores specific learning styles such as Visual Learning, Independent, and Collaborative Learning, as home-based/asynchronous learning uses primarily visual aids (diagrams, graphs, videos, infographics) to help with comprehension, encourages the students to manage their time and study independently, and work with peers through collaborative platforms. Academic competencies in language and communication, mathematical skills, and reading comprehension are also highlighted in this study, as these are critical in online environments where students rely heavily on textual materials, participation and presentations are means of engagement, and problem solving and numerical reasoning are challenging both in online and hands-on practice.

Table 3. Comparative Summary of Academic Learning Style and Competencies in Online and Face-to-Face Learning (n=368)

COMPETENCY AREA	ONLINE LEARNING	FACE-TO-FACE LEARNING
Visual Learning Style	Strong in interpreting visual aids (WM = 5.14) and note-taking (WM = 5.09); weaker in creating digital visual organizers (WM = 4.35).	Equally strong in understanding visuals (WM = 5.11) and note-taking (WM = 5.08); slightly lower in creating visual outputs (WM = 4.45).
Independent Learning Style	Strongest competency (WM = 4.82–4.98); consistent self-regulation and autonomy in managing tasks.	Equally strong (WM = 5.01–5.05); students value time for reflection and self-paced analysis.
Collaborative Learning Style	Weaker performance (WM = 4.29–4.80); lowest in solving problems with peers (WM = 4.29).	Higher performance (WM = 4.85–5.04); strong peer exchange and group problem-solving.
Language and Communication Skills	Lower confidence in video presentations (WM = 4.02); limited spontaneity in virtual speaking.	Higher confidence in live discussions (WM = 4.61); benefits from audience presence and real-time feedback.
Mathematical Skills	Moderate performance (WM = 4.16–4.41); high variability suggests skill gaps.	Slightly favorable performance (WM = 4.30 – 4.61); somewhat better in concept understanding and visual data interpretation.
Reading Comprehension	Consistently strong (WM = 4.65–4.99); stable across students.	Equally strong (WM = 4.82); minimal variability.

The results in Table 3 signify that Senior High School students "Moderately Agreed" with their academic competencies in online and face-to-face learning, reflecting adaptability but also highlighting specific gaps. Independent Learning emerged as the strongest area in online learning (WM = 4.82-4.98), indicating that students develop confidence in managing tasks autonomously. A study by Barrot et al. (2021) noted that independent learning was a critical skill needed to survive remote learning education. Visual Learning was also relatively strong, both in online and face-to-face learning, with materials using visual aids (WM = 5.14, SD = 0.89) and note-taking strategies (WM = 5.09, SD = 0.88), understanding teacher-led visuals (WM = 5.11, SD = 0.89), and writing down notes (WM = 5.08, SD = 0.98). However, using digital visual organizers scored the lowest (WM = 4.35, SD = 1.20), and creating visual outputs had slightly lower agreement (WM = 4.45, SD = 1.14), implying that although students can interpret visual materials, they are less adept at creating them. This aligns with Bay Atlantic University's (2024) article on Learning Styles, which emphasizes that although visual learners thrive on charts and diagrams, they may require further training to transfer data into digital materials.

Collaborative learning was weakest online (lowest in problem-solving with peers, M = 4.29, SD = 1.17). In contrast, it scored higher in face-to-face settings (M = 5.04, SD = 0.86), showing that physical classrooms foster stronger teamwork and shared learning. According to Vygotsky, peer interaction is vital in the co-construction of knowledge and benefits from the challenges inherent in collaborative dialogue (Simply Psychology, 2025). This further affirms the Social Constructivist's standpoint that learning is fundamentally social and in the context of collaborative learning, those with a high level of understanding can help those less advanced to learn within their zone of proximal development (Hoose, 2020), thus creating better support for in-person contexts and meaningful dialogues.

Language and Communication Skills presented a slightly weaker confidence in video presentation (WM = 4.02, SD = 1.28), indicating difficulty in oral expression online. This is parallel with Ching and Gungon's (2023) findings that online fatigue and lack of real-time audience feedback weaken

expressive confidence and spontaneity. Conversely, students showed higher confidence in live discussions (WM = 4.61, SD = 1.01), benefiting from richer peer interaction and immediate feedback from teachers.

Across both modalities, Reading Comprehension demonstrated consistent strength for online learning (WM = 4.65–4.99) and stable performance in a face-to-face setup (WM = 4.82). These results suggest that this competency is less likely to be influenced by modalities. However, as Barrot et al. (2021) caution, online reading demands higher self-discipline to manage distractions, as even competent readers may face attention challenges. Additionally, teacher-led discussion and peer interaction can help reinforce comprehension.

As for the Mathematical Skills, this competency had the lowest overall scores (WM = 4.16 to 4.41) and high standard deviations (up to 1.29) for online setup, while responses for face-to-face settings are slightly favorable but with lower means in performing mental calculations during classroom exercises (WM = 4.30, SD = 1.22), showing both skill gaps and wide variation in experiences. As Singh et al. (2024) noted, even top-performing students lack the ability to effectively use previously learned mathematical concepts to solve mathematical problems. Furthermore, Singh et. al (2024) also pointed out that students seldom check their answers and rarely use strategies in approaching fundamental math problems to solve them efficiently.

The comparative analysis highlights that students' performance varies by skill area and by delivery modes. Online learning showed favorable results for Independent Learning, Visual Learning, and Reading Comprehension, reflecting students' confidence in autonomous work and self-regulation. In contrast, face-to-face learning fostered Collaborative Learning, Visual Learning, and Language and Communication Skills, suggesting that proximity and social interaction led to a cooperative and effective scaffolding needed for learning, thus reinforcing Vygotsky's approach to cognitive development. The results in Mathematical Skills emerged as a shared area of improvement in both modalities, although slightly favorable in face-to-face due to teachers' immediate feedback. Targeted reinforcement in math fluency and computation skills is necessary to address these difficulties. These finding underscores the need for creating and revisiting blended learning strategies to maximize learning and address the limitations of the respective modalities.

Difficulties Met by the Senior High School Students in Blended Learning in Their Use of Digital Tools (n=368)

The results show that students generally feel confident in their ability to use digital tools for academic purposes, as indicated by the high weighted means ranging from 4.59 to 5.00, all interpreted as "Moderately Agree." The highest weighted mean of 5.00, with a relatively low standard deviation of 0.91, shows that students are most comfortable with basic digital interactions such as submitting assignments and communicating online. Meanwhile, the lowest mean of 4.59 in learning new digital tools suggests a slightly lesser, though still positive, ease in adapting to new technologies. The standard deviations, ranging from 0.91 to 1.02, reflect consistent responses across all items, indicating a generally uniform perception among students. These findings imply that students possess a functional level of digital literacy, essential for navigating modern learning environments. It is concurrent to the study of Jaya and Nurqamarani (2023), emphasizing that digital literacy is a critical factor in creating student engagement in blended learning and how this affects students' academic self-efficacy. Nevertheless, given the students' confidence in digital literacy, there may be a need for continuous support in mastering new tools.

Difficulties Met by the Senior High School Students in Online Learning with Their Teacher (n=368)

The data from the survey demonstrate that Senior High School students "Moderately Agree" that their teachers effectively support online learning, as reflected in the weighted means ranging from 4.50 to

4.70. The highest weighted mean of 4.70 (SD = 0.99) indicates that students generally perceive their teachers' video lectures, recorded explanations, and digital presentations as clear and well-structured. Similarly, the provision of adequate digital resources received a high rating (WM = 4.62, SD = 0.95), suggesting consistent support in terms of learning materials. However, slightly lower ratings in opportunities for participation (WM = 4.54, SD = 1.04) and strategies to keep students engaged (WM = 4.50, SD = 1.06) indicate that fostering online interaction remains a challenge. These results align with the study of Samson et al. (2023) that while teachers are doing well in delivering content, there is a consistent need to improve strategies in fostering interactive and engaging online environments to ensure more consistent and active student participation. Using Vygotsky's Zone of Proximal Development (ZPD), though online learning still delivers content effectively, it often limits peer collaboration and teachers' immediate feedback, among other opportunities for scaffolding, that can help the students' progress in terms of skills and content mastery.

Difficulties Met by the Senior High School Students in Face-to-Face Learning with Their Teacher (n=368)

The results present that students "Moderately Agree" that their teachers are effective in face-to-face learning environments, with all weighted means ranging from 4.85 to 4.97. The highest mean of 4.97 (SD = 0.94) reflects strong agreement that clear explanations and classroom demonstrations aid in understanding lesson content. Similarly, engagement in class is rated highly (WM = 4.95, SD = 0.81), suggesting that interactive and hands-on strategies are effective in maintaining student interest. Class participation (WM = 4.91, SD = 0.86) and provision of learning resources (WM = 4.85, SD = 0.92) also received strong positive feedback with low standard deviations, indicating consistent student experiences. These results reflect Samson et al. (2023), who noted that teacher-to-learner interaction showed a highly effective association, especially with academic motivation. Within Vygotsky's ZPD framework, face-to-face classes provide wider opportunities for richer peer interactions, immediate assessment of students' needs, and teacher-guided activities. The direct interaction helps students more effectively in terms of class engagement and academic motivation.

These findings further imply that face-to-face instruction remains highly effective due to direct interaction and dynamic teaching methods, which foster better comprehension, participation, and engagement among students. Moreover, these results bring attention to creating an optimal blended learning environment where there is an integration of a structured learning model, access to better online learning platforms, and socially rich interaction among teachers and students.

Difficulties Met and How They Affect the Academic Performance and Overall Achievement of Senior High School Students (N=368)

The results of the survey show that the most common difficulties affecting the academic performance and overall achievement of Senior High School students in blended learning are of an emotional and cognitive nature. The most frequent difficulties were emotional and cognitive: frustration and helplessness (f = 239), difficulty retaining information (f = 235), and procrastination due to workload stress (f = 231). These findings show that emotional stress and cognitive overload significantly hinder academic engagement. In contrast, difficulties such as "increased dependency on classmates or tutors" (f = 77), "struggles with multiple-choice tests" (f = 99), and "difficulty understanding figurative language" (f = 101) are less common, suggesting they have a lesser impact but may still affect specific groups of students. The shift in learning modalities impacted the learners in one way or another. Navarro et al. (2024) noted that in online learning, students experience psychological and technological difficulties. Psychological issues include stress, anxiety, and depression. These results back up the study of Ching and Gungon's (2023). Additionally, these emphasize the difficulty of blended learning and its varied effects on student learning experiences. These issues mainly resulted from the lack of interaction and socialization with other students and teachers

These results imply that addressing students' emotional well-being and providing structured academic support are essential in improving performance and reducing learning barriers in a blended learning environment.

CONCLUSIONS

Blended learning remains a part of the new normal in the educational landscape around the world today and is still subject to constant modifications to address the persisting challenges in education. The study found that Senior High School students at Divine Word College of Legazpi adapted moderately well to blended learning, showing adequate digital, independent, and reading skills, but persistent gaps in collaboration, mathematics, and oral communication—particularly in online settings. While students perceive their teachers as supportive in both online and face-to-face modalities, face-to-face instruction is consistently rated more favorably in terms of clarity, engagement, and participation. Emotional and cognitive difficulties—such as frustration, memory issues, and stress—emerged as the primary barriers to academic performance and achievement. These findings highlight the need for blended learning models that integrate the flexibility of online platforms with the interactivity of face-to-face instruction to ensure balanced skill development and improved outcomes.

RECOMMENDATIONS

The Senior High School Department should strengthen emotional and academic support by implementing: (a) regular counseling sessions, (b) peer-support circles, and (c) structured workload management workshops for both students and teachers. Teachers should undergo quarterly training on interactive methods such as gamification, adaptive learning tools, and differentiated instruction for both online and face-to-face classes. Programs to strengthen mathematical reasoning (e.g., weekly problem-solving clinics), communication skills (e.g., debate and oral presentation workshops), and collaboration (e.g., project-based group tasks) should be prioritized. The school should establish peer-mentoring programs (pairing senior and junior SHS students) and regular teacher-student feedback loops (monthly reflection surveys) to proactively address learning difficulties. Strengthening these areas can lead to more effective blended learning outcomes and better academic performance among Senior High School students.

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Perceived Stress among Teachers: its relationship with positive thinking skills and adversity quotient

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ABSTRACT

This study explored the relationships among perceived stress, Adversity Quotient (AQ), and positive thinking in a sample of 151 Filipino educators from a private basic education institution. Using standardized instruments—the Perceived Stress Scale, the Adversity Quotient Scale, and the Positive Thinking Skills Scale—the findings show that while educators generally report moderate levels of stress, they also tend to demonstrate frequent positive thinking and a moderate degree of resilience. Statistical analysis revealed a modest negative correlation between perceived stress and both positive thinking ($r = -0.20$ to -0.40) and AQ ($r = -0.10$ to -0.30), suggesting that higher stress levels are associated with lower optimism and diminished capacity to adapt to adversity. A weak positive correlation between positive thinking and AQ ($r = 0.001$ to 0.20) further suggests these constructs, though related, operate somewhat independently. These findings underscore the need for targeted interventions addressing each psychological domain separately, rather than assuming improvement in one will enhance the others. Finally, while individual strengths such as optimism and resilience are very important in stress management, they are most useful when placed within larger institutional mechanisms designed to promote educator well-being.

Keywords: Perceived Stress, Positive Thinking, Adversity Quotient, Filipino educators, Psychological Well-being

INTRODUCTION

The global transition of tertiary education to remote instruction in the pandemic interfered with academic operations and put a strain on instructional staff, who were compelled to quickly transform curricula for distant delivery. Mosleh et al. (2022) indicated that such an unexpected shift increased psychological load and stress among instructors with little time to prepare. In turn, Chen, Lo, and Lin (2024) detailed "digital anxiety," whereby 358 elementary school teachers experienced low technological self-efficacy and hybrid-teaching stressors, although stress decreased when in-class teaching resumed.

Within a broader educational framework, recent investigations have revealed the complex sources of stress that educators have faced during the pandemic. Cavallari et al. (2024) found that 94% of educators identified stressors originating from their educational institutions or districts, with 91% specifically citing escalated demands and diminished resources as significant challenges. Personal stressors were also acknowledged by 62% of educators, encompassing matters related to personal or domestic life (41%), self-imposed expectations (18%), and financial difficulties (18%). Additional stressors were associated with the pandemic itself (26%), concerns regarding safety (9%), and external pressures from parents (24%), communities (12%), students (12%), and overarching national policies (9%). While it is necessary for professional development, continuing education programs can paradoxically contribute to increased workload, stress, and burnout if the time commitment is excessive or if support mechanisms are insufficient, as noted by Nava-Manzo et al. (2025).

In the context of the Philippines, the impact of the pandemic on educators has been particularly pronounced. Cammayo et al. (2023) investigated the experiences of 219 Filipino online educators from pre-school to tertiary and reported concerns about levels of stress and emotional fatigue. Educators were observed to be engaged in an average of 12.17 hours of work daily, frequently managing multiple classes and an excessive number of students. Around Asia, other factors contributing to this intensified stress included gender (Punia & Rjan, 2024) and educational attainment level (Pakdee et al., 2025). In a US study, the unique conditions of their work environment, among other factors, also contribute to stress (Greenberg et al., 2016).

Theoretical Background and Review of Related Literature

The recent global health crisis has altered the educational landscape, not solely in terms of instructional modality but, more critically, concerning the well-being of educators. The abrupt and extensive transition to digital learning precipitated an array of unprecedented challenges. Educators at all educational tiers encountered substantial pressure to transform extensive curricula into digital formats within limited timelines, frequently without sufficient training or technological support (Mosleh et al., 2022). Consequently, psychological burdens escalated, and stress levels heightened, particularly among Filipino educators, who were reported to be working an average of over 12 hours daily, managing multiple class preparations, accommodating large student cohorts, and balancing overlapping responsibilities (Cammayo et al., 2023). However, stress among educators is not exclusively a phenomenon engendered by the pandemic. Even prior to the onset of COVID-19, stress originated from a complex interplay of institutional demands, personal circumstances, and external pressures. A recent investigation indicated that 94% of educators recognized their institutions as a predominant source of stress, primarily attributed to increasing demands and diminishing resources (Cavallari et al., 2024). Furthermore, personal life stressors (including familial and financial challenges) and external influences, such as parental expectations, student conduct, and evolving national education policies, further exacerbated the psychological burden (Cavallari et al., 2024; Kennell, 2024).

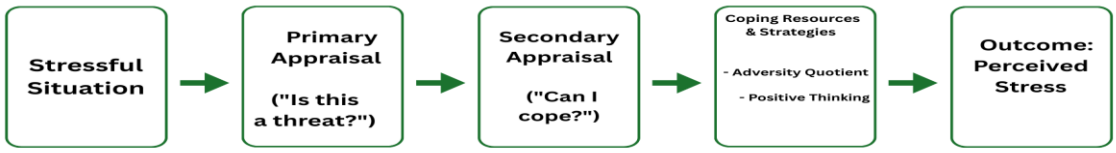
To comprehend how stress materializes and is experienced by educators, psychological frameworks offer essential insights. The Transactional Model of Stress and Coping, proposed by Lazarus and Folkman (1984), conceptualizes stress as a fluid process of appraisal: individuals assess their resources in relation to perceived demands. This framework is important when examining educator stress, as the perception of control and self-efficacy significantly influences one's emotional and behavioral responses. Complementarily, the Stimulus–Organism–Response (SOR) Model (Yen, 2024) elucidates that job demands function as external stimuli, while internal psychological strain (such as technological overload) acts as the organism's processing mechanism, culminating in stress responses. These theoretical frameworks underscore that stress is not merely a consequence of external pressures but also a product of internal interpretations and coping strategies.

Nevertheless, the inquiry persists: What mechanisms enable educators to persevere and perform in spite of these stressors? Psychological resources such as Adversity Quotient (AQ) and positive thinking, or Optimistic Intelligence Quotient (OQ), have emerged as critical determinants of individual coping and resilience. AQ, articulated by Stoltz (2000), is delineated through four dimensions—Control, Ownership, Reach, and Endurance—and epitomizes an individual's ability to confront and surmount adversity. A multitude of studies corroborate that elevated AQ levels correlate with enhanced performance, increased motivation, and reduced stress levels across diverse populations, including nurses, NGO personnel, single mothers, and educators (Luo et al., 2025; Solis & Lopez, 2015; Kumari & Arora, 2023). Likewise, positive thinking, rooted in Martin Seligman's theory of learned optimism, posits that individuals can cultivate the tendency to anticipate favorable outcomes even in the face of challenging circumstances. Interventions designed to foster positive thinking have demonstrated efficacy in diminishing anxiety, alleviating perceived stress, and augmenting overall well-being (Shokrpour et al., 2021).

To understand how stress develops and is experienced by educators, psychological models provide valuable insights. Lazarus and Folkman's (1984) Transactional Model of Stress and Coping frames stress as a dynamic process of appraisal, in which individuals evaluate whether they have the resources to meet perceived demands. This perspective is essential when considering educator stress, as the perception of control and self-efficacy plays a significant role in determining one's emotional and behavioral responses. Their coping responses depend on personal traits like **adversity quotient (AQ)**—their capacity to withstand and overcome difficulties—and **positive thinking**, which can reframe stressors into manageable challenges. Figure 1 illustrates the use of Lazarus and Folkman's model.

Figure 1.

Stress and coping in Lazarus and Folkman's model



Complementing this, Stimulus–Organism–Response (SOR) Model (Yen, 2024) further explains that job demands are external stimuli, internal psychological pressure (i.e., technology overload) is the organism's processing mechanism, and stress responses are the result. These models highlight that stress not only occurs due to external pressure but also due to internal processing and coping strategies. In this research, the stimulus is educator workload (the organism), and the stress response is the resulting effect.

The query is: What enables teachers to endure and work in the presence of these sources of stress? Psychological resources such as Adversity Quotient (AQ) and positive thinking, or Optimistic Intelligence Quotient (OQ), are central to coping and resilience. AQ, as defined by Stoltz (2000), is defined on four dimensions—Control, Ownership, Reach, and Endurance—and is an individual's capacity to overcome adversity. Higher AQ scores correlate with improved performance, higher motivation, and lower levels of stress in various populations, such as nurses, NGO staff, single mothers, and teachers (Luo et al., 2025; Solis & Lopez, 2015; Kumari & Arora, 2023). Similarly, positive thinking, as proposed by Seligman's theory of learned optimism, is expecting positive outcomes even in the presence of adversity. Positive thinking interventions reduce anxiety, perceived stress, and enhance well-being (Shokrpour et al., 2021).

Stress has been found to interact dynamically with AQ and adaptive coping. Tu et al. (2024) found that perceived stress has an inverse correlation with professional identity but a positive correlation with adaptive coping, indicating the significance of perceived stress to professional engagement. Zhang et al. (2024) found that AQ and OQ mediate the effect of psychological resilience on stress to some extent, lowering—but not eliminating—risk for burnout. Orines et al. (2023) advise that these qualities are not enough to prevent burnout from long-term systemic stressors.

Hence, stress reduction interventions must combine personal coping abilities with institutional practice. Teachers can be resilient and ethically driven (Magtalas & Eduvala, 2024), but structural support is unavoidable. Chronic stress harms teachers and students, as stress contagion increases students' cortisol levels through teachers' distress (Oberle & Schonert-Reichl, 2016). Work–life balance (Batiancila & Monteroso, 2025) and supportive leadership uphold teacher efficacy. Digital interventions hold promise to maximize coping abilities, reduce burnout, and promote self-efficacy (Taylor et al., 2021; Ansley et al., 2021), while mindfulness programs improve teacher well-being and classroom performance (de Carvalho et al., 2021).

In short, teacher stress is determined by systemic determinants, personal values, and psychological hardness. AQ and positive cognition serve as buffers but are best used within integrated models that mobilize personal and institutional resources. This research investigates the interaction among stress, AQ, and positive cognition in teachers and aims to inform evidence-based interventions that are responsive to individual strengths as well as systemic demands in the profession.

Objectives of the Study

The study aims to find out the interrelationships of Perceived stress, Adversity Quotient, and Positive thinking among the educators. It also aims to propose activities and programs that can support the educators' well-being. Below are the specific research questions:

1. What is the level of perceived stress among Filipino teachers in the post-pandemic setting?
2. What are the levels of Adversity Quotient (AQ) and positive thinking among these teachers?
3. Is there a significant relationship between AQ and perceived stress?
4. Is there a significant relationship between positive thinking and perceived stress?
5. To what extent do AQ and positive thinking predict perceived stress levels?

METHODOLOGY

The study employed descriptive and correlational analysis on 151 respondents, who are current educators from a private, sectarian, co-educational basic education institution. The self-report data are supplemented with interviews with 11 respondents. All respondents are full-time educators occupying administrative posts, teaching faculty, and non-teaching faculty (librarian, registrar, and counselors).

The participants were recruited via email and/or Facebook Messenger. Included in the Google Form is also a section on data privacy consent. A sample is taken from the Google form completed by the participants (invitations were sent to 290 targeted participants), with informed and voluntary consent, and their rights to privacy, confidentiality, and withdrawal are fully respected. It also showed transparency in method and additional protection for vulnerable populations to prevent harm or exploitation. Three scales were compressed into a questionnaire to measure: Perceived Stress (10 items), Adversity Quotient (20 items), and Positive Thinking Skill (8 items). The Perceived Stress Scale (PSS), developed by Cohen, Kamarck, and Mermelstein (1983), is a widely used psychological assessment tool formulated to evaluate the extent to which individuals perceive their lives as erratic, unmanageable, and burdensome. The 10-item version (PSS-10) is administered, although alternative 14- and 4-item formats are also available (Cohen et al., 1983). The eight Positive Thinking Skill items also correlate positively with one another, though less tightly (upper 0.40s to low 0.60s). The PSS-10 employs a 5-point Likert scale for response options, ranging from "Never" to "Very often". Following the adjustment for these reverse-scored items, the comprehensive score is obtained by aggregating all item responses. While the PSS is not constructed for diagnostic objectives, Cohen and associates offered general interpretative frameworks: scores ranging from 0–13 denote low stress, 14–26 signify moderate stress, and 27–40 indicate high perceived stress (source: das.nh.gov; pmc.ncbi.nlm.nih.gov). This scale has emerged as a crucial instrument in both clinical settings and scholarly research, offering critical insights into an individual's assessment of stress and coping mechanisms. All ten Perceived Stress Skill items intercorrelate strongly (r = 0.65). The Adversity Quotient (AQ) Scale, developed by Paul Stoltz (2000), is primarily assessed through the Adversity Response Profile (ARP), which systematically examines individuals' responses to obstacles across four principal dimensions: Control, Ownership, Reach, and Endurance (CORE). Each dimension encompasses five situational items, evaluated using a 5-point Likert scale that ranges from 1 (not at all) to 5 (entirely). To derive the AQ score, the responses for each of the CORE dimensions are calculated individually, and the resulting totals are subsequently aggregated and multiplied by two. This process yields a conclusive AQ score that typically spans from 20 to 100, wherein elevated scores signify enhanced resilience and an increased ability to confront adversity. The scoring paradigm accentuates not only the degree of control and accountability individuals perceive regarding challenging circumstances but also their capacity to mitigate the spread (reach) of adversity and their perception of its duration. Adversity Quotient Scale (AQ) used High AQ (200-178), Moderately High AQ (177-161), Moderate AQ (160-135), Moderately Low AQ (134-118), and Low AQ (117 & below) to interpret given score ranges. In this study, Adversity Quotient indicators form the loosest network, with many pairings having a correlation coefficient (r) of around 0.25 in most literature; it has high internal consistency values ranging from 0.8 to 0.9 (Venkatesh et al, 2015; Stoltz, 2000). The Positive Thinking Skills Scale (PTSS) by Bekhet & Zauszniewski (2013), further honed by Bekhet and Garnier-Villarreal (2017), is a psychometrically validated self-report instrument designed to screen for the use of positive thinking strategies, particularly to aid in the early identification of depressive thoughts. The scale aims to measure how frequently individuals use specific cognitive-behavioral skills that promote optimism and reduce negative thinking patterns. It consists of 8 items, each reflecting a distinct positive thinking skill, such as transforming negative thoughts, identifying positive aspects of situations, and breaking down problems into manageable parts. Respondents rate each item using a 5-point Likert scale, where 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always. The PTSS has demonstrated sound reliability and validity across clinical and non-clinical populations and is considered a practical tool for nurses, counselors, and researchers aiming to support mental wellness through cognitive-behavioral interventions.

RESULTS

The respondents' most significant proportion belongs to the 46–50 years old group (31 individuals or 20.5%), followed closely by the 51 years old and above group (29 individuals or 19.2%). The 26–30-year-old group is 17.2% (26 individuals), while the 41–45 years old group represents 13.9% (21 individuals). Smaller age groups are in the 31–35 years old (11.9%), 20–25 years old (11.3%), and 36–40 years old (6.0%) categories. The sample is generally composed of middle-aged and older adults, and fewer younger age groups.

Figure 2.

Respondents' Gender and Civil Status

The above figure shows the gender distribution of the 151 respondents in the study. A majority of the participants were female, comprising 87 individuals or 57.6% of the total. Meanwhile, 64 participants were male, accounting for 42.4%. This indicates a slightly higher representation of females in the study population. Among the findings of Cammayo et al (2023), female educators have higher stress, with a civil status of 151 respondents. A slight majority, or 78 individuals (51.7%), identified as single, while 67 respondents (44.4%) reported being married. The remaining participants consisted of a small minority: 4 individuals (2.6%) were separated, and two individuals (1.3%) were widowed. This indicates that most of the participants are either single or married, with very few in other civil status categories. This demographic information may help contextualize the findings, as both single and married individuals are well-represented in this study. Estrella (2014) found that civil status and age do not have a significant effect on job stress.

Table 1. Distribution of Frequency for Perceived Stress

	Frequency	Percent	Valid Percent	Cumulative Percent
Almost Never	1	.7	.7	.7
Sometimes	97	64.2	64.2	64.9
Fairly Often	49	32.5	32.5	97.4
Often	4	2.6	2.6	100.0
Total	151	100.0	100.0	

The above table reveals that the majority of respondents, 97 individuals or 64.2%, reported experiencing perceived stress as "Sometimes", indicating that stress is a moderate and occasional part of their daily experiences. This suggests that while stress is present, it is not overwhelmingly frequent for most individuals. There are 49 respondents, or 32.5%, who reported experiencing stress as "Fairly Often", suggesting a higher but still manageable level of stress. These individuals may face recurring challenges that contribute to a more consistent feeling of pressure or tension. Only four individuals (2.6%) indicated experiencing stress "Often", reflecting that high levels of stress are uncommon in the group. Conversely, just one respondent (0.7%) reported experiencing stress "Almost Never", showing

that very few are entirely stress-free. Overall, the findings imply that perceived stress is a shared experience among participants, though for most, it occurs only occasionally or moderately, rather than at a chronic or severe level. This may point to a need for preventive stress management strategies, especially for those in the "Fairly Often" category, to prevent escalation into more serious stress-related issues.

Table 2. Distribution of Frequency for Positive Thinking

	Frequency	Percent	Valid Percent	Cumulative Percent
Rarely	2	1.3	1.3	1.3
Sometimes	32	21.2	21.2	22.5
Often	97	64.2	64.2	86.8
Always	20	13.2	13.2	100.0
Total	151	100.0	100.0	

The distribution of responses on the Positive Thinking Scale reveals notable trends in how participants perceive and engage in positive cognitive patterns. 64.2% of respondents indicated they "Often" engage in positive thinking, while an additional 13.2% reported doing so "Always." Together, this suggests that more than three-quarters (77.4%) of the sample frequently practice positive thinking, which may reflect adaptive coping mechanisms, emotional resilience, or effective stress management strategies within the group. In contrast, only 1.3% of participants selected "Rarely," and 21.2% chose "Sometimes," highlighting that infrequent positive thinking is relatively uncommon among respondents. These findings suggest a generally optimistic cognitive orientation among the participants, which may have beneficial implications for their psychological well-being, particularly with stress regulation, life satisfaction, and mental health.

Table 3. Distribution of Frequency for Adversity Quotient

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderately Low AQ	33	21.9	21.9	21.9
Moderate AQ	98	64.9	64.9	86.8
Moderately High AQ	17	11.3	11.3	98.0
High AQ	3	2.0	2.0	100.0
Total	151	100.0	100.0	

The majority of respondents in the study land right in the middle when it comes to bouncing back from setbacks: roughly two-thirds fall within the “moderate” range of Adversity Quotient. In everyday terms, they can handle stress relatively easily. About one in five score lower; these educators may find challenges more formidable to navigate and could gain from extra support or simple resilience-building tools. On the other hand, only around one in ten registers slightly above average, and a tiny 2% stand out with truly high scores, demonstrating an impressive ability to turn obstacles into opportunities. So, while most participants manage okay, there is a noticeable group who might welcome strategies, such as workshops, coaching, or self-help resources, to strengthen their ability to deal with adversity.

Table 3. Summary of Hypothesis Testing Results

Hypothesis	R	P	Result	Interpretation
H1: Perceived Stress and Positive Thinking are negatively correlated	-0.1018	.030	Supported	Statistically significant; weak negative correlation
H2: Perceived Stress and Adversity Quotient are negatively correlated	-0.1326	.005	Supported	Statistically significant; weak negative correlation
H3: Positive Thinking and Adversity Quotient are positively correlated	0.2875	< .001	Supported	Highly significant; moderate positive correlation

Table 3 presents the results of three hypotheses examining the relationships among perceived stress, positive thinking, and adversity quotient (AQ) among teachers.

H1: Perceived Stress and Positive Thinking

Correlation: r = -0.1018, p = .030 (Statistically Significant)

This weak negative correlation suggests that as teachers engage in more positive thinking, their levels of perceived stress tend to decrease, albeit slightly. While the relationship is modest in strength, it aligns with studies showing that optimistic cognitive strategies, such as reframing or hope-focused thinking, reduce emotional burden and promote stress resilience (Garland et al., 2010; Fredrickson, 2004). In the context of the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), this finding highlights the protective role of cognitive appraisal. Teachers who view stressors as manageable may experience reduced emotional strain. Strengthening teachers' positive thinking skills through coaching or SEL (social-emotional learning) programs could modestly buffer their experience of stress in the classroom.

H2: Perceived Stress and Adversity Quotient (AQ)

Correlation: r = -0.1326, p = .005 (Statistically Significant)

A weak but statistically significant negative correlation was observed between perceived stress and AQ. This suggests that teachers who score higher in AQ—reflecting their ability to endure and adapt through difficulty—tend to experience less stress. This supports the Stimulus–Organism–Response (S–O–R) model (Mehrabian & Russell, 1974), where AQ functions as an internal psychological filter that modulates how external stressors are experienced. Individuals with high AQ are more likely to interpret challenges as temporary and manageable, rather than overwhelming. Professional development programs that foster traits such as grit, control, and responsibility could help teachers improve their AQ and reduce stress over time.

H3: Positive Thinking and Adversity Quotient (AQ)

Correlation: r = 0.2875, p < .001 (Highly Significant)

This moderate positive correlation is the strongest relationship observed in the study and indicates that teachers who are more inclined to think positively also tend to possess higher levels of resilience. The relationship supports a growing body of evidence in positive psychology (e.g., Seligman, 2011) which emphasizes that optimistic thinking patterns are closely linked to perseverance, goal setting, and adaptive coping. This finding suggests that positive thinking is not only a stress buffer but also a

catalyst for the development of enduring personal resilience traits like those measured in AQ. Counseling interventions and school wellness programs that teach teachers to cultivate hope, self-affirmation, and gratitude may simultaneously increase their resilience and capacity to manage professional demands.

The present study aimed to examine the lived experiences of educators concerning stress and their coping mechanisms within the context of a private educational institution. Through the qualitative data obtained from the eleven (11) participants, eight (8) principal themes emerged, elucidating the complex nature of stressors and the adaptive strategies utilized by teachers.

1. Workload and Time Constraints. A predominant source of stress was identified as the excessive teaching load coupled with administrative duties. Educators noted that the extensive duration of instructional periods, particularly the all-day schedules in Senior High School, contributed to their physical and mental fatigue. The limited time allocated for lesson preparation, report compilation, and technical duties (e.g., data entry and documentation) further intensified their workload. One educator remarked, "1 to 5 period in SHS is very stressful," while another highlighted, "Not enough time to develop teaching materials."

2. Lack of Institutional Support. Participants expressed apprehensions regarding a perceived lack of support from school administration. Observations regarding supervisor insensitivity, inadequate relevant training, and imbalanced workload distribution were frequently articulated. Teachers expressed discontent over the absence of equitable acknowledgment for augmented responsibilities, with one stating, "Give teachers what is more equitable for their function and or added function." This deficiency in systemic support fostered feelings of isolation and professional disenchantment.

3. Interpersonal Struggles. Collegial relationships represented another significant source of stress. Numerous educators cited instances of unkind communication, limited collaboration, and interpersonal discord within their departments. Utterances such as "Teachers who are not supportive and disrespectful…" and "Unfiltered and unkind words towards fellow teachers" indicated emotional distress stemming from workplace interactions.

4. Emotional and Psychological Coping. Notwithstanding the challenges, many educators exhibited proactive coping strategies through personal practices. Prayer, meditation, introspective reflection, and deliberate emotional regulation were frequently mentioned. For example, one educator shared, "I meditate every morning," while another disclosed, "My optimism about life is helpful and 'I want to live this life.'" These findings underscore the significance of spirituality and mindset in sustaining psychological well-being.

5. Personal Life and Family Stressors. The demarcation between professional and personal life was often indistinct. Participants indicated that familial obligations, financial difficulties, and extensive commutes intensified their stress levels. Assertions such as "Take care of family during emergencies…" and "My travel from home to school is 500+ a day" accentuated how extrinsic stressors exacerbated their professional exhaustion.

6. Internal Motivation and Resilience. In spite of adversities, numerous participants exhibited intrinsic motivation and resilience grounded in their passion for teaching. Their coping mechanisms included collaborative endeavors, problem-solving techniques, and student-inspired motivation. One participant articulated, "Talk to students and use their experience…" while another remarked, "I try to solve them on a daily basis," illustrating purposeful engagement with challenges.

7. Resources and Support Systems. Several educators attributed their ability to cope to the institutional and peer-based support systems available to them. Spiritual development programs (e.g., LMO

morning prayers), friendships, and team solidarity emerged as indispensable sources of encouragement. Remarks such as “Friends in school, my motivation to teach” and “Team mates are good source of support” highlight the importance of a nurturing school culture.

8. Recommendations for Improvement. Lastly, the participants gave positive recommendations on how to minimize stress in the school environment. These included more empathetic leadership, wellness activities, and greater access to resources. One teacher suggested, "More understanding of each teacher's context," and another suggested, "More fun and bonding activities." The statements indicate the necessity for systemic and relational interventions for the promotion of teacher well-being.

CONCLUSION

The present research explored the correlative relationship between perceived stress, adversity quotient (AQ), and positive thinking among Filipino teachers during the post-pandemic era. Findings showed that most participants self-rated the perception of stress as moderate, and this indicates that stress is neither ubiquitous nor disabling among most of the teachers. Positive thinking was utilized most often, and the majority of the participants were at the mean AQ scores in the moderate category, which signifies a state of functional resilience.

Statistically significant but negative low correlations for perceived stress and both AQ and positive thinking were obtained, and it was discovered that greater positive cognitive styles and resilience correlate with reduced levels of stress. A moderately highly significant and positive correlation between positive thinking and AQ indicates that positive cognitive styles can enable effective coping mechanisms needed in order to cope with professional adversity.

Qualitative results also underscored that sources of stress are multi-dimensional and vary from institutional lag in support and demands of workload to family duty and conflict with others. In the midst of such adversity, teachers reported the use of social support, religious behavior, and intrinsic motivation as coping mechanisms. These results underscore the dynamic and multi-dimensional interplay of individual and structural determinants of teacher well-being.

In general, evidence confirms that while most teachers demonstrate psychological flexibility, a high proportion would require special support to strengthen their resilience and stress coping. The study contributes to the evidence base for the use of integrated teacher well-being interventions that encompass cognitive, emotional, and organizational interventions.

RECOMMENDATIONS

Based on the findings of this research, the following are presented as recommendations:

1. Integrate Resilience-Building Programs into Professional Development. Institutions may also organize training modules and workshops on the CORE areas of AQ (Control, Ownership, Reach, Endurance). These programs may have the potential to enhance the capacity of teachers to handle adversity more effectively.

2. Promoting Positive Thinking through Cognitive-Behavioral Interventions. Schools would have counseling programs emphasizing positive reframing, gratitude practice, and solution-focused thinking. These interventions can act as a buffer against teachers from emotional exhaustion and enhance long-term well-being.

3. Encourage an Encouraging Organizational Culture. School administration must invest in creating emotionally intelligent supervisory styles, equitable workload distribution, and increased avenues of communication to reduce systemic stressors.

4. Implement Peer Support Systems and Wellness Programs. Creating peer mentoring teams, well-being days, mindfulness breaks, and other such practices of community building can create a care and connectedness culture in the organization.

5. Tailor interventions to at-risk subgroups. Low AQ scorers or chronically high perceived stress levels may require special interventions such as one-on-one counseling, coaching, or time management training to prevent burnout.

6. Encourage Institutional Policy Review and Reforms. These teachers' regular assessments of teacher well-being, mental health, and colleague relationships should be conducted in order to inform policies that prioritize worker well-being and organizational sustainability.

LIMITATIONS

Although this study provides valuable insights into intercorrelated associations between perceived stress, adversity quotient, and positive thinking among Filipino teachers, some limitations need to be taken into consideration. Firstly, the use of a non-random, convenience sample from one sectarian, private school limits the generalizability of the findings to the wider population of teachers from different types of schools, regions, or cultural backgrounds. Secondly, the use of self-report measures may have produced response bias, such as social desirability or underreporting of stress-related behavior, that can affect the validity of the findings. Thirdly, although the study utilized validated scales, the cross-sectional design limits the potential to demonstrate causality among the variables in question. Fourthly, although the use of qualitative interviews provided richness to the findings, the sample of 10 interviewees may not represent the diversity of experience among the wider teaching population. Future research should take into account the use of a more representative and diverse sample, longitudinal designs, and mixed-methods designs to improve the validity and applicability of the findings.

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Our Trash, Our Art: Bottle Up Creativity for a Greener Community Engagement

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ABSTRACT

The Commission on Higher Educations (CHED) in the Philippines challenges higher education institutions to platforms of innovation and stepping out linkages with community to unleash innovations for business opportunities to benefit society. This reflective practice action research paper highlights the promotion of environmental sustainability and the strengthening of community ties through creative recycling. It documents a community engagement project titled *"Bottle Up Creativity,"* which involves transforming used glass bottles into functional, decorative, and artistic crafts. The project is part of GE 6: Art Appreciation, where students are tasked with collecting and repurposing discarded bottles into unique works of art. Spanning four weeks, the initiative emphasizes hands-on community involvement, artistic expression, and environmental consciousness, culminating in a public exhibition of the students' creations. The paper also explores students' experiences throughout the project, focusing on their engagement with sustainability practices, creativity, and community interaction. Ultimately, this initiative aims to raise awareness of the value of creative recycling, foster stronger community connections, promote sustainability education, and contribute to reducing waste sent to landfills.

Keywords: Bottle Up, Creativity, Community Engagement

INTRODUCTION

In an era where environmental sustainability has become an urgent global concern, creative approaches to waste reduction are gaining momentum within educational and community contexts. One such initiative is the "Bottle Up Creativity" project, a community engagement endeavor rooted in the General Education course GE 6: Art Appreciation. This project empowers students to repurpose discarded glass bottles into innovative and expressive art pieces, highlighting the intersection of ecological responsibility and artistic exploration.

By encouraging participants to collect and creatively transform waste materials, the project fosters not only artistic skills but also a deeper awareness of environmental issues and the impact of recycling. Over a four-week period, students engage directly with their communities, collaborating on the transformation of ordinary waste into functional and decorative items. This hands-on experience culminates in a public exhibition, showcasing the students' craftsmanship and environmental commitment.

Melgarejo-Torralba et al. (2022) state that the generation of original and innovative ideas is a challenge for any professional. They add that, there are several studies that demonstrate how the capacity to explore creativity is reduced until reaching educational levels where it is hardly experienced, and for this reason it is necessary to introduce it in the classroom to complement students' academic training before their incorporation into the labor market.

Existing literature on creative sustainability projects—ranging from upcycled art installations to community-based eco-design initiatives—indicates several consistent patterns in student learning outcomes that are directly relevant to the current investigation on community engagement. Studies in art-integrated environmental education show that when students are involved in hands-on, creative projects addressing local sustainability issues, they exhibit higher levels of engagement, critical thinking, and systems awareness compared to traditional classroom instruction (Heinrich, et al., 2015).

In addition, research suggests that projects like this can foster environmental literacy and action competence—the capacity to not only understand ecological problems but also to take informed, purposeful action to address them (Mogensen & Schnack, 2010, in Sass et al., 2023). For instance, place-based recycling art initiatives have been shown to deepen students' understanding of waste systems while inspiring tangible waste reduction behaviors. This aligns with the aim of the present study to explore how art-based engagement with sustainability can translate into community-level impact.

However, much of the prior evidence is drawn from short-term interventions with limited follow-up, and often relies on self-reported reflections rather than validated performance measures. This creates a gap that the present investigation seeks to address by systematically documenting not only immediate learning outcomes but also the social and environmental ripple effects of community-engaged creative projects. By situating the project within real community partnerships, the current study extends earlier work by embedding student creativity within an authentic, reciprocal framework—where artistic expression, sustainability practice, and civic engagement are mutually reinforcing.

Through this initiative, "Bottle Up Creativity" aims to cultivate a culture of sustainability, nurture community connections, and promote the value of art as a powerful tool for social and ecological change. This paper reflects on the project's process and outcomes, particularly emphasizing student engagement, the educational potential of creative recycling, and the broader implications for community-driven environmental advocacy.

The Problem

The paper also explores students' experiences throughout the project, focusing on their engagement with sustainability practices, creativity, and community interaction. Ultimately, this initiative aims to

raise awareness of the value of creative recycling, foster stronger community connections, promote sustainability education, and contribute to reducing waste sent to landfills.
Therefore, this reflective paper seeks answers to the following questions:

1. What is the GE 6 students' engagement with sustainability practices through the Bottle-Up Community Engagement culminating project?
2. What is the GE 6 students' creativity opportunity through the Bottle-Up Community Engagement culminating project?
3. What is the GE 6 students' community interaction through the Bottle-Up Community Engagement culminating project?
4. What were their thoughts and feelings about the Bottle-Up Community Engagement culminating project?
5.

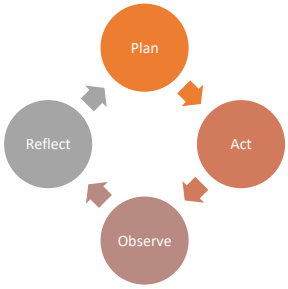
Theoretical & Conceptual Frameworks

Action research is inquiry or research designed and conducted by teacher with the aim of examining teaching and learning in their own classrooms and improving their individual practice. Action research generally addresses a specific or immediate problem and supports the reflective process of progressive problem-solving. Therefore, this research design goes for the improvement of professional practice through continual learning and progressive problem solving; a deep understanding of practice and the development of a well specified theory of action; and an improvement in the community in which one's practice is embedded through participatory research.

The study on creativity for greener community engagement can be theoretically strengthened by aligning its action research framework with established models of experiential and community-based learning. Action research, with its cyclical process of planning, acting, observing, and reflecting (Kemmis & McTaggart, 1988), naturally complements experiential learning theories such as Kolb's Experiential Learning Cycle (1984), which emphasizes learning through concrete experience, reflective observation, abstract conceptualization, and active experimentation. In the context of creative environmental projects—such as repurposing materials for sustainable art—participants actively engage in hands-on tasks (concrete experience), reflect on their environmental impact (reflective observation), conceptualize improved or alternative approaches (abstract conceptualization), and test new creative solutions (active experimentation).

Furthermore, embedding the study within community-based learning models, such as the Service-Learning framework (Eyler & Giles, 1999), reinforces its social relevance by situating creative activities in authentic, real-world contexts that address community needs. This model promotes reciprocal benefits: students enhance their creativity, problem-solving, and civic responsibility, while the community gains tangible environmental and cultural value. By integrating these frameworks, the study positions creativity not merely as an artistic skill but as a transformative tool for environmental sustainability, collaborative problem-solving, and strengthened community ties. This theoretical integration ensures that the research is both methodologically rigorous and socially impactful, grounding its outcomes in tested educational and engagement paradigms.

Figure 1
Action Research Framework

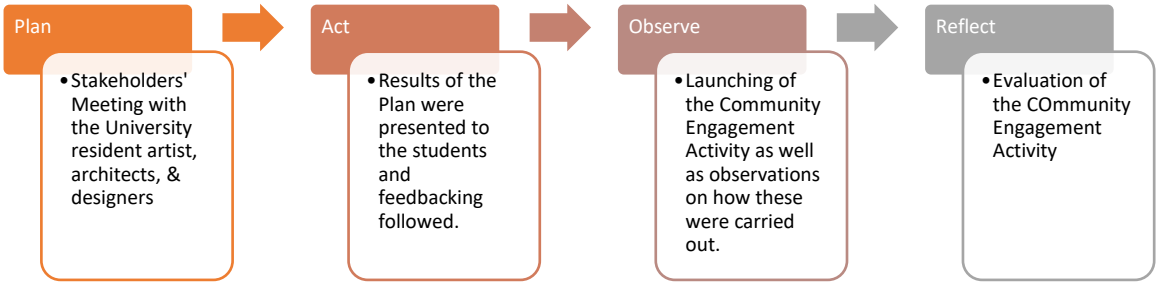


In this study, the researcher considered the action research framework as the basis. The researcher and the other teachers teaching the same general education subject planned what culminating community involvement activity will be done at the end of the semester. This culminating activity has been consistently done every semester among college students enrolled in General Education 6 (GE 6), which is Art Appreciation. Then, together with the GE 6 students, plans are laid out with the University resident artist, together with the university architects and designers. After that, the final activity decided by the stakeholders assigned, was relayed to the GE 6 students. A series of discussions took place for this purpose.

The Culminating Activity was then announced to the stakeholders concerned and each section planned what their contribution will be. Each of the teachers presented their themes for the big community engagement culminating activity. This researcher and the GE 6 students planned their share in this community engagement. The details of the planned output is found in the methodology below. The Bottle-Up was done for a period of three (3) weeks and then the outputs were displayed in their designated area. After the exhibits were put up, came the Reflective activity that included the evaluation survey. Below is the Conceptual Framework of the study.

Figure 2

The Schematic Presentation of the Study



Limitations of the Study

This action research, conducted as a reflective investigation at the University of San Agustin, involved five General Education classes handled by the researcher (BSPsych 2B, BSA 2A, BSHM 2B, BSTM 2A, and BSArch 1), totaling 192 students, with 129 actual participants. The study focused solely on GE 6 students' engagement in sustainability practices, creativity, and community interaction, using an expert-validated evaluation tool. This did not involve other classes in the same subject. Future studies may be conducted to validate the results of this investigation and also assess long-term impacts of this academic endeavor.

METHODOLOGY

Action research is a systematic, reflective study of one's actions, and the effects of these actions, in a workplace or organizational context. It involves deep inquiry into one's professional practice. . . . Action researchers examine their interactions and relationships in social setting seeking opportunities for improvement. In this research design, researchers work with their colleagues to propose new courses of action that help their community improve work practices." (Margaret Riel, 2017).

Along with the Action research design, this study dwelt on reflective research as a qualitative approach that reflected the researcher's introspection, critical self-awareness, and continuous engagement with the research process. Finlay (2021) emphasizes reflexivity as a layered process involving both introspective (looking inward) and intersubjective (relational) awareness, especially in phenomenological research. Trahar et al. (2021) argue that narratives foreground the researcher-participant relationship and the co-construction of meaning. However, Pillow (2020) discusses

"uncomfortable reflexivity" as a necessary stance in reflective research, advocating for disruption of normative assumptions. Schön's model of the "reflective practitioner" continues to underpin new models, including critical reflective practice frameworks explored in work by Fook & Gardner (2020).

GE 6 students were the respondents of this study. There were five (5) sections assigned to this researcher: BSPsych 2B, BSA 2A, BSHM 2B, BSTM 2A, and BSArch 1. There was a total of one hundred ninety two (192) students. However, only 129 participated in this study. Attached in the Appendix is the flyer stipulating how the Community Engagement Culminating Activity was done.

To determine GE 6 students' engagement with sustainability practices, creativity, and community interaction, an Evaluation tool, validated by experts, was utilized. This consisted a 15-item instrument in four (4) parts. Part 1 was on Engagement with Sustainability Practices. Part 2 was on Creativity, and Part 3 was on Community Interaction. Part 4 contained an open-ended question on their thoughts and feelings about the Bottle-Up Community Engagement Culminating Activity.

Each of the item is was rated as follows 1, 2, 3, 4, and 5 with the following responses: Strongly Disagree, Disagree, Uncertain, Agree, and Strongly Agree. Strongly disagree means that the respondent does not conform to the idea expressed in the item. Disagree means that the respondent slightly conforms to the idea expressed in the item. Uncertain means that the respondent is not certain about the idea expressed in the item. Agree means that the respondent conforms to the idea expressed in the item. And strongly agree means that the respondent strongly conforms to the idea expressed in the item.

The scale below shows engagement with sustainability practices, creativity, and community interaction among the students, the following scale and their interpretation were utilized:

Scale	Engagement with Sustainability Practices	Creativity	Community Interaction
4.21 - 5.00	Highly Engaged	Highly Creative	Highly Interactive
3.41 – 4.20	Engaged	Creative	Interactive
2.61 – 3.40	Moderately Engaged	Moderately Creative	Moderately Interactive
1.81 - 2.60	Less Engaged	Less Creative	Less Interactive
1.00 – 1.80	Not Engaged	Not Creative	Not Interactive

Only the mean was utilized to determine the level of their engagement to the community culminating activity. The mean or the arithmetic average is calculated by adding all the values together and dividing the total by the number of observations (Jones & Goldring, 2021).

Thematic Analysis (TA) was utilized to make sense of the qualitative data. This is a widely used qualitative research method for identifying, analyzing, and interpreting patterns of meaning (themes) within textual data. It is especially valuable in exploring participants lived experiences, perceptions, and reflections in a flexible, yet rigorous way. Originally articulated in detail by Braun and Clarke (2006, 2021), TA has evolved and been further clarified in their more recent work (Braun & Clarke, 2021), which has become the standard guide in modern qualitative research. This method was deemed appropriate to make sense of the narratives generated from the GE 6 students.

To assure credibility and trustworthiness, Member Checking and peer debriefing were utilized. – Preliminary interpretations and thematic summaries were shared with participants for feedback, allowing them to verify accuracy, clarify meanings, and correct any misinterpretations. While peer debriefing assured that findings and analytical processes were discussed with academic peers to provide an external check on the research process, encouraging critical questioning and alternative perspectives.

Ethical considerations were also looked into. The GE 6 students were made to read the Informed Consent Form (ICF) requesting them to participate in the study. The researcher made sure that the

students voluntarily signified their intention to take part in the study and that they can withdraw at any time the deem necessary. They were also assured that confidentiality of their reflective responses was only limited to the present study.

RESULTS AND DISCUSSION

This section presents the data gathered during the conduct of the study. It includes an analysis and interpretation of the results based on the problem. The data were gathered through and Evaluation tool given at the end of the project. Each part corresponds to a specific research question or objective and is analyzed in relation to the existing literature.

GE 6 students' engagement with sustainability practices through the Bottle-Up Community Engagement culminating project

Results in Table 1 showed that GE 6 students were Highly Engaged with sustainability practices through the Bottle-Up Community Engagement culminating project M = 4.56 as a whole. And when identified through sustainability practices, "Bottle crafting promotes environmental awareness in our school M = 4.61. Then, "I believe that bottle crafting helps reduce waste in my community M = 4.59, came next and "I feel that crafting bottles can help solve waste management" M = 4.56.

Table 1
GE 6 students' engagement with sustainability practices through the Bottle-Up Community Engagement culminating project

Sustainability Practices	Mean	Interpretation
Bottle crafting promotes environmental awareness in our school	4.61	Highly Engaged
I believe that bottle crafting helps reduce waste in my community	4.59	Highly Engaged
I feel that crafting bottles can help solve waste management	4.56	Highly Engaged
I am motivated about recycling because of this project	4.53	Highly Engaged
I try to reuse bottles instead of throwing them.	4.51	Highly Engaged
As a whole	4.56	Highly Engaged

Legend: 1.00-1.80 Not Engaged, 1.81 -2.60 Less Engaged, 2.61 – 3.40 Moderately Engaged, 3.41 – 4.20 Engaged, 4.21 – 5.00 Highly Engaged

GE 6 students' creativity opportunity through the Bottle-Up Community Engagement culminating project

Result in Table 2 showed that GE 6 students' creativity opportunity was high through the Bottle-Up Community Engagement culminating project M = 4.54 as a whole. And when identified through creativity opportunity, "I think bottle crafting encourages imaginative thinking M = 4.60. Then, "I believe that bottle crafting allows me to express my creativity M = 4.55, and "I enjoy sharing my creative ideas with others" M = 4.55.

Table 2
GE 6 students' creativity opportunity through the Bottle-Up Community Engagement culminating project

Creativity Opportunity	Mean	Interpretation
I think bottle crafting encourages imaginative thinking	4.60	Highly creative
I believe that bottle crafting allows me to express my creativity	4.55	Highly Creative
I enjoy sharing my creative ideas with others	4.55	Highly Creative
I feel inspired creating beautiful things from waste materials	4.52	Highly Creative
I enjoy the creative process of bottle crafting	4.48	Highly Creative
As a whole	4.54	Highly Creative

Legend: 1.00-1.80 Not Creative, 1.81 -2.60 Less Creative, 2.61 – 3.40 Moderately Creative, 3.41 – 4.20 Creative, 4.21 – 5.00 Highly Creative

GE 6 students' community interaction through the Bottle-Up Community Engagement culminating project

Results in Table 3showed that GE 6 students were highly interactive in their community interaction through the Bottle-Up Community Engagement culminating project M = 4.36 as a whole. And when identified through community interaction, "I contribute to the beautification of my community through bottle crafting" M = 4.50. "I think crafting helps strengthen community ties M = 4.47. Then, "I enjoy sharing my craft with others M = 4.37.

Table 3
GE 6 students' community interaction through the Bottle-Up Community Engagement culminating project

Community Interaction	Mean	Interpretation
I contribute to the beautification of my community through bottle crafting.	4.50	Highly Interactive
I think crafting helps strengthen community ties.	4.47	Highly Interactive
I enjoy sharing my craft with others.	4.37	Highly Interactive
My bottle crafting creates a sense of belonging.	4.26	Highly Interactive
I feel connected with my classmates through this project.	4.21	Highly Interactive
As a whole	4.36	Highly Interactive

Legend: 1.00-1.80 Not Interactive, 1.81 -2.60 Less Interactive, 2.61 – 3.40 Moderately Interactive, 3.41 – 4.20 Interactive, 4.21 – 5.00 Highly Interactive

Thoughts and Feelings about the Bottle-Up Community Engagement Culminating Project

Thoughts and feelings of GE 6 students reflected their experiences while participating in this community engagement project. Majority expressed that the culminating activity was a rewarding, fulfilling, and a meaningful experience, fun, happy, freedom, and a stress reliever, bringing out creativity in us, a connect with my community.

Table 4
Thoughts and Feelings about the Bottle-Up Community Engagement Culminating Project

Themes	Responses	Interpretation
Rewarding, Fulfilling, and a Meaningful Experience	*Crafting my Bottle Up project made me feel fulfilled as I was able to share my creativity through recycled materials, turning simple waste into something meaningful. (S3, S12,* *I felt a strong sense of purpose, like I was part of something bigger than myself.(S11)* *A deeply rewarding experience, (S8)* *It fostered a sense of purpose, (S10)*	Crafting the Bottle Up project with their friends was a fulfilling experience, as it allowed them to engage with the community while strengthening their bond. Reflecting on their shared efforts, they have appreciated how rewarding and fulfilling were their act done together. This journey deepened their sense of responsibility and gratitude for meaningful connections that shape their collective understanding of doing crafting together.
Fun, Happy, Freedom, and a stress reliever	*I felt happy and find the activity fun*.. S1 *Working with others on a shared goal made the experience meaningful and fun.* (S5, S12, S17, S55, S78) *I felt a profound sense of purpose and excitement as I crafted my Bottle Up project, knowing it would contribute to both the community and the university.* (S100, S115, S127, S128)	Crafting their bottles was a fun experience to do. They considered the activity as a stress reliever and a chance to showcase everyone's creative juices while also promoting to reuse the bottle into something useful. It strengthened their community ties in a happy and free expression and have become a collective experience especially with their classmates.
Bringing out creativity	*Through the bottle art, it allowed us to express our creativity while simultaneously teaching us to recycle and take care of our surroundings* (S4, S5, S34, S69) *I enhanced my creativity (S6, S8, S13, S15, S17,S19)* *I feel it is a majestic piece of art that allows me to define my creativity not only for beautification but also as a meaningful expression of environmental awareness and personal identity. (S7, S22, S34, S99, S78)* *Allowed for creative expression (S10, S11, S15, S18, S35, S39, S54)* *Seeing others around me expressing their own creativity made me feel inspired and proud to contribute my voice through my art.(S12, S87, S89, S114)*	It gave them a chance to share a piece of who they are, and appreciate the diversity and passion of everyone involved. More than anything, it reminded them that creativity can bring people together, and that even small things—like an upcycled bottle—can carry powerful messages when shared with the heart. For them, Crafting my Bottle Up project felt like more than just completing a requirement—it genuinely gave them a sense of purpose and connection. Being part of something that aimed to make a positive impact, even in a small way, was both humbling and exciting. There were moments of doubt and trial and error, but seeing the idea come to life and realizing how it could touch others made it all worth it.
Connect with the community	*The experience deepened my connection with the university and the people around me, making me feel like a part of something bigger***.** (S17, S19, S32, S33, *Provided valuable opportunities for collaboration and problem-solving. (S10, S22, S36, S43, S67)* *It felt rewarding to be part of a project that brought people together and sparked conversations. Overall, the experience deepened my appreciation for community S 14, S78, S89, S91, S102, S115)* *Creating my Bottle Up project made me feel more connected to both my community and university. It was fulfilling to contribute to a cause that promotes sustainability and raises*	For them, tt allowed them to step outside my comfort zone and truly understand the value of collaborative work in a community-focused setting. While initially they felt overwhelmed by the prospect of creating something meaningful, they shared that they quickly realized the importance of listening to the community's needs and incorporating their feedback. As the project evolved, they found themselves becoming more confident in their abilities and more connected to the people around them. Creating the Bottle artwork project was a meaningful way to connect with the community and contribute to the university's creative spirit.

Themes	Responses	Interpretation
	*awareness.*S32, S45, S65, S76, S89, S113, S124, S128)	Bottle Up was not just about the product; it was about the people, the collaboration, and the feeling that they were contributing to something bigger than themselves.
Valuing the environment	*This project really taught me the importance of valuing our environment. Though it may be a small gesture, but I hope it sends out the right message and ripple to larger movements that would help preserve our home.(S4,S5, S9, S12, S34, S46, S56, S68)*	The students enjoyed the opportunity to express their ideas through a visual medium while highlighting sustainability and unity. Collaborating with peers and seeing everyone's different interpretations was both inspiring and motivating. art and its power to make a positive impact.
	It simultaneously teachesg us to recycle and take care of our surroundings (S4, S8, S13, S20, S40, S54,S60)	sustainability came together to make a real impact.
	I felt proud creating the Bottle Up project because it allowed me to help both the environment and my community.(S5, S77, S89, S90, S91, S100, S112, S114)	It provided a platform to not only to collaborate with peers and local organizations, but fostering a sense of shared responsibility toward environmental sustainability. Witnessing the tangible impact of their efforts reinforced the importance of collective action in addressing environmental global challenges.
	Bottle Up project, I was able to contribute something unique to the community while embracing sustainability and creativity. (S7, S9, S90, S111, S114, S117)	

The GE 6 students' reflections revealed that the Bottle-Up Community Engagement Culminating Project was a deeply transformative and holistic learning experience. Through this initiative, students not only contributed to sustainability efforts but also underwent significant personal and communal growth. The project gave them a rewarding and fulfilling experience Many students expressed that the project brought a strong sense of accomplishment and fulfillment. They felt that their participation had tangible impact — both environmentally and socially — making the effort feel worthwhile and personally significant.

It also provided them with emotional and mental well-being. The activity was described as fun, freeing, and a stress reliever. It allowed them to temporarily detach from academic pressure and reconnect with their inner creativity and joy. For many, the experience was therapeutic and revitalizing. It also ushered creative empowerment. Students noted that the project brought out their creativity, allowing them to explore new ways of reusing materials, particularly discarded bottles. This encouraged a more innovative mindset and inspired confidence in their artistic and problem-solving abilities.

Another is a sense of community connection. The project fostered a strong sense of belonging and connection with the community. Students appreciated the opportunity to engage with others — classmates, mentors, or local citizens — toward a common goal. This participatory approach enhanced their understanding of social responsibility and collective action.

It also achieved meaning and purpose. Words like *"meaningful," "purposeful,"* and *"connected"* reflected how students internalized the project as more than just a requirement. It became a channel for environmental advocacy, creative contribution, and community building, aligning with personal and societal values.
The Bottle-Up Project was more than just an academic requirement — it was a learning journey that activated students' creativity, social awareness, and emotional well-being. Their reflections signal the power of experiential and community-based learning in shaping not just minds, but also their values and character.

Implications of the Research Outcome in Higher Education

In line with the Commission on Higher Education's mandate on community extension, this study can have relevance in the aspects of: 1) integration of Sustainability into Curriculum Design. This project

illustrates how creative, sustainability-focused initiatives can be successfully embedded within general education or design programs. Institutions can integrate environmental stewardship and material consciousness into their curricula, encouraging students to think beyond conventional academic outputs and address real-world ecological challenges. 2) Calls for the development of interdisciplinary, project-based learning modules that foster environmental awareness, design thinking, and civic responsibility across fields such as fine arts, interior design, architecture, and education. 3) Promoting Reflective and Experiential Learning whereby students' reflections show that engaging directly with community issues and materials (e.g., trash) led to personal growth, deeper learning, and emotional well-being. Afdal (2021) assert that teachers need to reflect on what they need and have to offer. The project exemplifies how reflective practice and hands-on activities enhance critical thinking and learner engagement. This can reinforces the value of experiential learning frameworks within institutional research and pedagogy, advocating for more community-linked, student-led projects. 4) Fostering Creativity as a Tool for Environmental Action by transforming waste into art, students practiced creative reuse and learned to see materials differently. This mindset shift is vital for fostering innovative problem-solvers in a world facing climate and waste crises. This can encourages higher education institutions to treat creative expression not just as art, but as a method for sustainability advocacy and material experimentation in research and community service programs. 5) Encouraging Student Agency and Civic Engagement by empowering them to act as change agents in their communities, bridging the gap between academic learning and social involvement. This aligns with global goals for Education for Sustainable Development (ESD) and community-based research. Higher education institutions can prioritize civic engagement metrics in student outcomes, promoting participatory research and community outreach as valid academic pursuits. 6) A Model for Institutional Research and Outreach whereby the success of this initiative provides a replicable model for other universities seeking to combine environmental action, arts-based methods, and community involvement. It demonstrates how creative sustainability projects can produce measurable educational, social, and environmental impacts. This model can inform institutional research in areas such as: Sustainable campus initiatives, Student development outcomes, Arts-based research methods, and Community-university partnership studies

FINDINGS

1) Result showed that GE 6 students were Highly Engaged with sustainability practices through the Bottle-Up Community Engagement culminating project M = 4.56 as a whole.
2) Result showed that GE 6 students' creativity opportunity was high through the Bottle-Up Community Engagement culminating project M = 4.54 as a whole.
3) Result showed that GE 6 students were highly interactive in their community interaction through the Bottle-Up Community Engagement culminating project M = 4.36 as a whole.
4) Thoughts and feelings of GE 6 students reflected their experiences while participating in this community engagement project. Majority expressed that the culminating activity was a rewarding, fulfilling, and a meaningful experience, fun, happy, freedom, and a stress reliever, bringing out creativity in us, a connect with my community.

CONCLUSIONS

1) The findings of the *Bottle-Up Community Engagement Culminating Project* strongly indicate that the initiative was a highly impactful and transformative experience for GE 6 students. Quantitative data revealed that students demonstrated a high level of engagement with sustainability practices, suggesting a deepened awareness and commitment to environmental responsibility fostered through hands-on, community-based learning.
2) Moreover, the project provided significant opportunities for creative expression, allowing students to explore innovative ways of transforming waste materials into purposeful art, thereby enhancing their design-thinking skills and problem-solving abilities.
3) The students also reported a strong level of community interaction, indicating that the project successfully facilitated meaningful engagement with peers and the local community, reinforcing values of collaboration, empathy, and civic responsibility.

4) Complementing these quantitative findings, qualitative reflections revealed that students perceived the experience as rewarding, fulfilling, and emotionally enriching. The project was described as fun, liberating, and therapeutic—providing stress relief while simultaneously enabling personal growth, creativity, and a sense of purpose. Students felt more connected to their community and environment, demonstrating the project's success in integrating emotional, intellectual, and social dimensions of learning. Overall, the *Bottle-Up* project stands as a compelling example of how community engagement, sustainability, and creative practice can be effectively woven into higher education, fostering holistic student development while promoting real-world impact.

RECOMMENDATIONS

Based on the findings and conclusions, the following are recommended.

1) There is a need to institutionalize sustainability-focused community engagement projects. Given the high engagement with sustainability practices, similar projects should be formally embedded in the general education curriculum. Encouraging students to apply environmental concepts in real-life contexts enhances both ecological awareness and social responsibility. A design and implementation of regular, project-based sustainability initiatives across disciplines that will foster environmental literacy and action-oriented learning is hereby recommended.
2) Creative Learning Environments are encouraged. With a strong rating for creativity opportunities, it is evident that students benefit from activities that stimulate imagination and innovation. Hands-on art-based interventions like Bottle-Up encourage design thinking and non-traditional problem solving. It is encouraged therefore to incorporate arts-integrated and material-based learning into general education programs to nurture creativity, especially in addressing real-world issues like waste management and environmental degradation.
3) Enhancing of Community-Linked Learning Experiences. The project's success in cultivating meaningful community interaction demonstrates the value of experiential and participatory learning. Students connected deeply with local communities, which helped develop empathy, civic engagement, and communication skills. The university should strengthen university-community partnerships by integrating more service-learning models and collaborative community projects within the curriculum.
4) Supporting Emotional and Reflective Dimensions of Learning. Student feedback described the project as fulfilling, joyful, and a source of stress relief and personal growth. These emotional outcomes are essential for holistic education and student well-being. Providing space for reflective practices such as journaling, group sharing, and student exhibitions. These methods reinforce emotional learning and allow students to process their experiences meaningfully.
5) Document and Disseminate Best Practices are encouraged. With such positive outcomes, this project can serve as a model for similar initiatives in other academic institutions. Conduct of formal evaluations and disseminate findings through academic publications, workshops, or conferences to encourage replication of best practices in sustainability education and community engagement.
6) More Professional Development for Faculty to sustain these types of projects, faculty must be equipped with the right tools and mindset. By providing training for instructors on facilitating community-based, interdisciplinary, and sustainability-centered projects using creative pedagogies is also recommended.

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The Internationalization Challenge in Interior Design: Practices and Prospects

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ABSTRACT

Internationalization in interior design has been the point of discussion among interior designers in the country. The education of interior designers requires the highest levels of creativity and skills in designing complex structures in a technologically-driven society. This qualitative research explores how the internationalization process is translated into the interior design program as manifested by the curricular and co-curricular activities as mandated by the curriculum. This paper addressed two fundamental questions: 1) What university practices address the internationalization challenges? 2) What prospects are observed in facing the challenges of internationalization? This paper utilized the case study approach to allow in-depth, multi-faceted explorations of the issue in real life. The researchers explored the practices in the University to shed light on the questions advanced by this study. Document analysis was done to gather the data needed in this case study. Results revealed five concrete examples juxtaposed to illustrate situations in addressing the complex and dynamic environment in response to internationalization. These internationalization efforts include hiring international professors, student mobility, joint programs/initiatives, international exhibitions and material exposures, and research presentations. Prospects and challenges include sustainability, lack of support, turnover of ID professors, professional upgrading, and student mobility. Results addressed the diversified nature of the program and met the standards of quality and accreditation, encouraging the integration of knowledge, application, and discovery of professional knowledge. It is recommended that the University sustain internationalization to develop quality education and innovative collaborations, cross-border academic exchanges, expanding engagement in international relationships, and a more holistic approach to developing and implementing a university internationalization strategy.

Keywords: internationalization, interior design, practices, and prospects

INTRODUCTION

The University of San Agustin, or San Ag, is a private catholic institution in Iloilo City, Philippines, operated by the Augustinian Province of Santo Nino de Cebu, Philippines, belonging to the Order of Saint Augustine. It was founded in July 1904, making it 119 years old. This is the first university in Western Visayas.

The University of San Agustin offers a wide range of academic programs, from Basic Education to post-graduate studies. These programs cover fields such as Law, Business, Education, Computer Studies, Arts and Sciences, Performing Arts, Music, Engineering, Medical Technology, Nursing, and Pharmacy. The university celebrated its 60th anniversary in 2023. as an institution of higher learning. The Commission on Higher Education recognizes it as a Center of Development in Teacher Education.

The Bachelor of Science in Interior Design course started in AY 2004-2005 as one of the new courses offered by the university in time for its centennial celebration. Twenty-one (21) students were enrolled, with one full-time professional Interior Design faculty handling all significant subjects. Enrollment gradually increased in the succeeding academic years, which initiated the hiring of additional licensed Interior Designers in the roster of the ID faculty. The department had six (6) pioneer graduates in March 2008. The department produced a 100% passing rate in the Professional Regulations Commission (PRC) Board of Interior Design the same year. The department has also maintained an excellent overall performance in the national board exam, with 100% in 2014 (3 new takers and one repeater) and 73.73% in 2015 (8 out of 9 new takers), above the national passing average. The Program has produced successful Alumni in different fields here and abroad.

With the CHED Memo. No 46, the Department of Interior Design has started implementing Outcome Based Education (OBE) and applied for Accreditation to improve its services and attain the Program Educational Objective (PEO) aligned with the Mission and Vision of the University.

CMO No. 44 of the Commission on Higher Education (CHED) stipulates the Policies, Standards, and Guidelines for the course Bachelor of Science in Interior Design (BSID) Program. Based on the Guidelines for the Implementation of the CMO No. 46 s. 2012, the PSG implements the "shift to learning competency-based standards/outcomes-based education." It specifies the competencies expected of the Bachelor of Science in Interior Design (BSID) graduates.

Interior Design graduates must demonstrate comprehensive knowledge, skills, and professional attitudes in the practice of Interior Design. In sum, they must strive for excellence and professionalism. On this basis, this PSG is developed under the shift to Outcomes-Based Education (OBE), industry needs, technology, and the latest trends in interior design and compliance with global and international requirements.

Along with this requirement, the researchers believe that internationalization changes how the goals of interior design education are achieved. *Internationalization* of higher education is defined as incorporating an international, intercultural, and global dimension into the goals of the university's teaching and learning, research, and service function in the higher education system (Knight, 2018).

However, it has to be remembered that there is no recipe or one set of indicators for an internationalized university. *Internationalization* is a change process tailored to meet each higher education entity's individual needs and interests. Consequently, there is no 'one size fits all' model of internationalization (Knight, 2018).

Statement of the Problem

The study determined the practices and prospects in the university to address the internationalization challenge. It addressed the following questions:

1) What university practices address the internationalization challenges?
2) What prospects are observed in facing the challenges of internationalization?

Internationalization in Higher Education

Naic (2020) advances the benefits of internationalization in education, stating that engagement with the idea of internationalization has taken a stronghold within higher education worldwide in the last few years. He adds that its development is typically seen as a response to the pressures of a changing world, in diverse conceptualizations reflecting a reaction to globalization, to financial exigencies, to radically different communication technologies, and towards gaining first-hand experience of cultural exposure through the exchange. Inhabiting the same discourse is the concept of culture. Internationalization then implies for many the necessity for cultural and intercultural transformation.

In this context, taking part in international cultural exchange as a process of internationalization increases the students' chances of employability, helps them gain their future jobs, and develops virtues of adaptability, cultural awareness, tolerance, and the so-called "transversal skills, Naic (2020 emphasizes. In the words of Knight (2018), internationalization stresses the relationship between and among nations, people, cultures, institutions, and systems. She adds that there is no question that internationalization has transformed the world of higher education, but it has also undergone fundamental changes. The critical question is whether the changes have been for better or worse. For instance, twenty-five years ago, could anyone have imagined that international student mobility in 2014 would be big business and more closely aligned to recruiting brains for national innovation agendas than helping developing countries build human capacity?

In her observation, she stresses that recent national and worldwide surveys of university internationalization priorities and rationales show that establishing an international profile or global standing is becoming more critical that reaching international standards of excellence. Capacity building through international cooperation projects is being replaced by status-building initiatives to gain world-class recognition and higher rankings. Awarding two degrees from institutions in different countries based on the workload for one diploma is being promoted through some rather dubious double-degree programs. Nevertheless, these negative observations are issues that experts must address.

Soule, Parmaxi, & Nicolaou (2025) discuss "internationalization at home" in higher education that highlight designable practices such as collaborative tasks, intercultural dialogue, and globally framed learning outcomes—approaches that map cleanly onto interior design studios.

Likewise, Hidayat (2024), highlights in his study during recent conference research in interior design education documents on cross-cultural design learning boosting awareness of cultural context, empathy with users from different backgrounds, and reflective practice—outcomes central to internationalization. Interior design education, in this case, must educate students to be creative in producing hybrid design innovations due to cultural dialogues that vary from the backgrounds of the occupants of the living space in internationalization situations.

Despite the issues attached to internationalization, countless examples of positive initiatives illustrate how collaborative scholarship, cross-border education exchange, and campus-based internationalization strategies have contributed to the development of individuals, institutions, nations, and the world. The benefits of internationalization vary, as do the potential risks and unintended consequences.

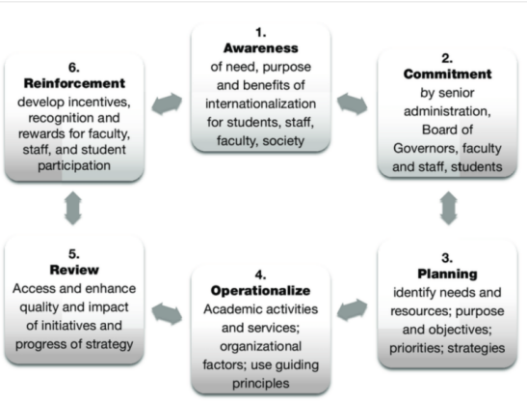
The Theoretical Underpinning

Universities worldwide engage in internationalization efforts within higher education contexts to enhance the university's quality of education, research, and service function (Perez-Encinas, 2018). The Internationalization Cycle was thus conceived to facilitate the process of internationalization among

higher education institutions. Jane Knight (1994, 2004, 2008), one of the most cited scholars in internationalization asserts that it is *"the process of integrating an international, intercultural, or global dimension into the purpose, functions, and delivery of postsecondary education."* (Knight, 2004). Her theory emphasizes that internationalization is not just about student mobility or exchange, but about embedding global and intercultural perspectives into teaching, research, and service. Hans de Wit's collaboration with Knight expanded internationalization as values-based, emphasizing social responsibility, inclusion, sustainability, and the ethical dimensions of global engagement. In this context, institutions guided by Knight & De Wit's perspectives move beyond "numbers" (international student counts, mobility statistics) and focus on curriculum reform, intercultural learning, and global competencies. Their theories encourage universities to see internationalization as both a means of academic enrichment and a vehicle for social responsibility in a globalized world. This framework is therefore useful in evaluating whether internationalization efforts are truly advancing education or simply serving economic goals. Figure 1 reflects the different variables incorporated in the internationalization process. Each of these variables is discussed in the illustration that follows.

Figure 1

Internationalization Cycle



Source: Knight & De Wit (2007). Strategies for Internationalization in Higher Education. Historical and Conceptual Perspectives

METHODOLOGY

This investigation utilized the case study research design. It is a type of qualitative research design that looks into a particular situation. The case study method allows a researcher to examine the data closely within a specific context. Most cases show that a case study method chooses a small geographical area with a minimal number of individuals as the study subjects. The true essence of case studies is that it explores and investigates current real-life phenomenon through a detailed contextual analysis of events or conditions and their relationships.

Yin (1984:23) also states that the case study research method involves an empirical inquiry investigating a present phenomenon within its real-life context. This means that this can be utilized when the boundaries between the phenomenon and context may not be evident, multiple sources of evidence are used." A case study is a unique approach to observing any natural phenomenon in a data set (Yin, 1984). This means only a small geographical area or subjects of interest are examined in detail. A case study's unique strength is "its ability to deal with a full variety of evidence—documents, artifacts, interviews, and observations" (YIN, 2003a, p.8).

Zainal (2007) defines case study research through reports of past studies that allow for the exploration and understanding of complex issues. This research design is considered a robust method. This can also be particularly when a holistic, in-depth investigation is required. This is also recognized as a tool in social science studies. In this setting, the role of the case study method in research is more prominent in issues concerning education (Gulsecen & Kubat, 2006), sociology (Grassel & Schirmer, 2006), and community-based problems (Johnson, 2006). These issues cover poverty, drug addiction, unemployment, illiteracy, etc. As a research method, a case study is where researchers were more concerned about what quantitative methods delimit in providing holistic and in-depth explanations of social and behavioral problems.

This study uses an exploratory case study to explore internationalization as a phenomenon in the data interesting to the researchers. For instance, the researchers ask how internationalization was done in the university and explore university policies and practices. These documents and other data sources open the door for further examination of the phenomenon observed.

Document analysis provides the research pieces of evidence into which the research questions were assessed. University issuances, policy manuals, practices, strategic plans, scorecards, syllabi, and other documents were sources of the analyses from which the findings were drawn. Experts contend that the data in case studies may then be organized around certain topics, key themes or central questions, and finally the data need to be examined to see how far they fit or fail to fit the expected categories. Data analysis in this context dealt with finding a pattern, and once it was identified, the researcher moves to its interpretation to determine meanings. To borrow Babbie (2001), this study started with coding the qualitative responses, and followed the coding tradition "coding forces the researcher to make judgments about the meanings of contiguous blocks" and that coding is "the heart and soul" of (whole) text analysis Babbie, 2001).

Thematic analysis (TA) is was utilized for analyzing qualitative data. This offered a structured yet flexible framework for identifying, analyzing, and interpreting patterns of meaning within datasets. This paper utilized Braun and Clarke's six-phase thematic analysis framework (1) familiarization with data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) writing the report (in Sirwan et al., 2025).

RESULTS AND DISCUSSION

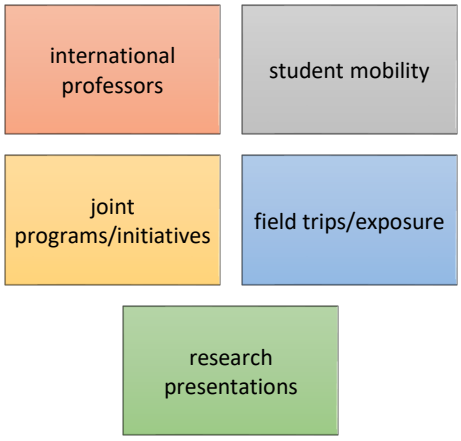
University practices that address the internationalization challenges

Five University practices addressed the internationalization challenges. These include hiring international professors to the academe, academic mobility, joint programs, field trips, and research presentations.

The first illustration is the arrangement where the university **employs professors in other countries.** These professors are practitioners in the field of interior design who are currently abroad either for work or another reason. Because of the new standard set-up of education, inviting international interior designers has become a reality. In the last two years, the Interior Design program has two invited international designers.

Figure 2

University practices addressing the internationalization challenges



It has been observed that internationalization will become increasingly important in higher education, specifically in interior design. In the approaches to internationalization by (Aigner et al., 1992; Arum & Van de Water, 1992; De Wit, 1995; Knight, 1994, 1996, 1997), one approach points to the competency approach, which emphasizes the development of skills, knowledge, attitudes and values in students, faculty, and staff.

According to these experts, the issue central to this approach is how generation and transfer of knowledge help to develop competencies in the personnel of the higher education institution so that they become more internationally knowledgeable and interculturally skilled. Thus, in this approach, the international professors can transfer their expertise to the interior design students to expose them to the trends of the internationalized curricula and programs to develop the appropriate competencies in the students.

The second illustration is **student mobility.** In this context, *student mobility* is when students cross geographical borders to obtain a portion or all of their education in a country other than their own due to family reasons like transfer or work of their parents and migration. The advantage of this setup in the University is for students to exchange academic-related discussions depending on where they are situated and the trends in the respective places where they are located. Hunter (2015) adds that internationalization fosters an immersive and inclusive academic environment for students. It goes beyond recognizing an international student's culture. It understands, embraces, and integrates diverse cultures into the educational experience.
The third illustration is the **joint program/initiatives.** In the University, the students are engaged in a professional affiliation as a junior organization. These joint programs provide opportunities for students to interact with other students in other universities and interact with professional interior designers. This undertaking intends to provide students with a rich and comparative academic experience and improve their employment opportunities. It is also important to point out that these programs bring about collaborative advocacies for student exposure and orient them to work ahead of them.

The fourth is **field trips to international venues.** Field trips are essential in further exposing students to non-formal learning opportunities through their exposure to state-of-the-art interior design applications in the country where they are dispatched. Furthermore, interior design students can explore contemporary interiors and spaces. In this respect, the field trip plays a vital role, as it allows them to experience interior space through their movement and their senses and in a natural environment where they are exposed. The field trip experience that the interior design student gain differs from their everyday experience of moving through space. This also exposes them to international interiors, and they will be able to develop their perceptions of the discipline they are in vis-a-vis their actual exposure during this internationalization exposure.

International exhibitions and material exposures. These experiences provide interior design students and interior designers with the opportunity to gain international recognition. As Santayana & Tanyelin (2022) highlight**,** international exhibitions are pivotal in providing students with: Exposure to Global

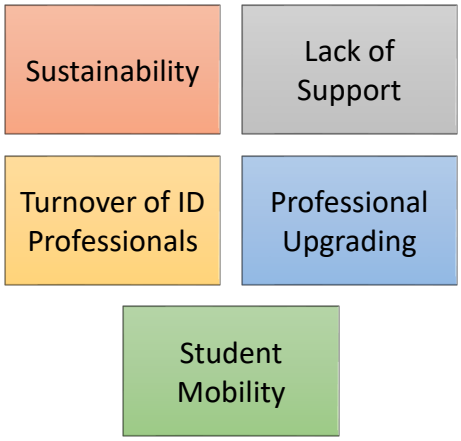
Trends where they encounter cutting-edge design practices, technologies, and aesthetics from around the world. Networking Opportunities where events create platforms for interaction with professionals, educators, and peers globally; and Cultural Literacy: that serves as immersion in diverse cultural expressions enhances students' sensitivity to cultural context and user diversity in design.

The fifth is **research presentations.** The most up-to-date information is made available through research presentations, especially at international levels. Interior design students can make better-informed decisions and create better environments for the inhabitants. Attending international fora through a research engagement provides interior design students the exposure to international enough exposure to the importance of research in the design process at the undergraduate level. Interestingly, those students believed in the importance of evidence-based design in interior design and still needed more willingness to learn about research.

Prospects in Facing the Challenges of Internationalization

Interior designers face internationalization as challenging in several dimensions. In their discussions, these dimensions include:

Figure 3
Prospects in Facing the Challenges of Internationalization



Sustainability. The University has to strategize how internationalization will be sustained. There is an imperative need to create a culture of internationalization in higher education in the academe to improve the implementation and evaluation of internationalization efforts and guarantee its sustainability. An internationalization culture in place assures that the quality of education is enhanced and ensured regardless of the challenges.

Lack of support. This dimension can become a challenge to the University. With the change of administrators every three years, there is a threat to how the University processes are carried out. Leadership support is crucial in this respect. However, if the new administrator shares the vision of the previous administration, there is no doubt that internationalization efforts will fail. Otherwise, if a lack of support from the new administrator may happen, internationalization will take a different route.

Turnover of ID Professionals. A practicing interior designer can make money twice or thrice from what they get in teaching. This is a challenge that is affecting not only interior design courses but as well as engineering professions. Even with young interior designers, the probability of staying long in the academe is slim.

Professional Upgrading. While internationalization brings about challenging opportunities for both students and interior designers, professional upgrading sometimes hinders some practitioners from continuing teaching. The demands of accreditation, standardization, and statutory requirements may force some practitioners to stop teaching.

Student Mobility. Internationalization may cause student mobility. Sometimes, an institution's internationalization efforts may increase or decrease student mobility. Towards a more positive perspective, internationalization brings about internationally oriented students who will become assets to the University. More mobile students are more exposed to internationalization practices.

LIMITATIONS OF THE STUDY

While this study provides valuable insights into the internationalization of the interior design program, certain limitations must be acknowledged as the following:

1) The study concentrated on one university, which limits the generalizability of findings. Practices and challenges in internationalization may differ across institutions with varied resources, policies, and global linkages.
2) The study primarily relied on document analysis, which, while useful for capturing institutional practices, may not fully reflect the lived experiences of faculty, students, or administrators. The absence of direct interviews or focus groups reduced the depth of personal perspectives.
3) Internationalization efforts are influenced by external variables such as national education policies, economic resources, and global partnerships. These contextual factors may have shaped the findings and limit their transferability to other settings.
4) Since internationalization is a continuously evolving process, the data gathered reflects practices during a specific period. Rapid changes in higher education policies or global circumstances (e.g., post-pandemic adjustments, technological advancements) may render some findings time-bound.
5) As a qualitative case study, analysis and interpretation were researcher-driven. Although steps were taken to ensure credibility, the possibility of interpretive bias remains.
6) The research did not systematically incorporate voices of students, industry partners, or alumni, who could provide broader insights into the effectiveness and impact of internationalization initiatives in interior design education.

CONCLUSION

Internationalization provides the University an opportunity to enhance its teaching and learning quality from advanced exposure to institutions and organizations abroad. While the University takes baby steps in its internationalization efforts, such strategies offer valuable insights not only to the institution but also to its clientele.

The result of this investigation highlighted the institutional engagement, albeit its novice strides to sustain the professional commitment of future and professional interior designers to internationalization endeavors. While the concept of internationalization is not relatively new, this phenomenon has been included in the University's strategic plans.

RECOMMENDATIONS

It is recommended that the University must sustain internationalization to develop quality education and innovative collaborations, cross-border academic exchanges, and expanding engagement in international relationships.

Likewise, there is a need for a holistic approach to develop and implement a university internationalization strategy instead of 'one-off, random activities.'

Along with it, the support on internationalization goals has to be supported positively to deliver good practices, strategies, leadership efforts, and internationalization programs that deliver on fulfilling sustainable goals.

Further studies on internationalization efforts and their impact on the organization and the respective colleges, in particular, may be conducted.

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Reading and Writing Attitude and Competence among Senior High School Students: A Correlational Analysis

Marisa Petalla and John LloydBelbar

ABSTRACT

Effective communication relies on strong reading and writing abilities, as proficiency enables clear and accurate information exchange. Further, positive student attitudes toward reading and writing in English enhance language proficiency. While several studies have explored reading and writing, limited research has addressed attitudes and competence in these areas among senior high school students. Thus, this study was conducted using a quantitative research design, employing descriptive and correlational research approaches among 238 sampled senior high school students in a Catholic university in the Philippines, grouped according to strand and school of origin. The study utilized a standardized questionnaire for reading attitude and researcher-made questionnaires for writing attitude and reading and writing competence. Mean and standard deviation were used for descriptive analysis, ANOVA for comparative analysis, and Pearson Product-Moment Correlation for correlational analysis. Results showed a more positive reading and writing attitude and moderate reading and writing competence among the students. When grouped by demographics, no significant differences were found in reading and writing attitudes. However, when grouped by strand and school of origin, significant differences were observed in reading and writing competence. Finally, statistically significant but weak positive relationships existed between reading attitude, writing attitude, and reading and writing competence. These findings provided baseline data for developing supplementary instructional materials to support reading and writing instruction.

Keywords: Quality Education, Reading Attitude, Writing Attitude, Reading and Writing Competence, senior high school students, Quantitative Research, Philippines

1.0 INTRODUCTION

English is dominant in almost all fields in the globalized world (Rao, 2019). Given its status as an international language and common medium of instruction, English serves as a crucial tool for acquiring knowledge and enhancing communication skills (Ghazali et al., 2009). Effective communication skills are closely linked to strong reading and writing abilities, as proficiency in these areas enables individuals to understand and convey information clearly and accurately. Furthermore, it is important to emphasize students' attitudes toward reading and writing in English to increase proficiency in the language (Guthrie & Wigfield, 2000). This is anchored in Sustainable Development Goal (SDG) 4: Quality Education, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. By focusing on foundational literacy skills such as reading and writing, this research directly contributes to the targets of SDG 4, particularly those related to ensuring that all learners acquire the knowledge and skills needed to promote sustainable development. However, Nootens et al. (2019) emphasized a significant change in students' attitudes, especially towards reading and writing, as they transition from elementary to higher levels. On the other hand, the study by Balan et al. (2019) indicated that while students might have a positive reading attitude, their lower reading habits affect their reading performance.

English is dominant in almost all fields in the globalized world (Rao, 2019). English serves as a crucial tool for acquiring knowledge and enhancing communication skills, given its status as an international language and common medium of instruction (Ghazali et al., 2009). Effective communication skills are closely linked to strong reading and writing abilities, as proficiency in these areas enables individuals to understand and convey information clearly and accurately. Further, it is important to emphasize students' attitudes toward reading and writing in English to increase proficiency in the language (Guthrie & Wigfield, 2000). However, Nootens et al. (2019) emphasized a significant change in the students' attitudes, especially on reading and writing, as they transition from elementary to higher levels. On the other hand, the study by Balan et al. (2019) indicated that while the students might have a positive reading attitude, their lower reading habits affect their reading performance.

Several studies have also noted the effects of reading and writing attitudes on academic achievement and language proficiency. The study by Udu (2021) shows that students' reading and writing attitudes greatly influence their achievement in the English language in senior secondary schools. The study concludes that students with a sustained positive attitude towards reading and writing are more likely to excel in English language proficiency. Abid et al. (2023) also concluded that reading habits, including attitude, are a factor that correlates with academic achievement in English and are somewhat predictive of students' academic success.

In the Philippines, the Department of Education (DepEd) enforced DepEd Order No. 39, s. 2012, known as the Policy Guidelines on Addressing Learning Gaps and Implementing a Reading and Writing Program in Secondary Schools, effective from the school year 2012-2013. This policy addresses the rising cases of learning deficiencies, particularly in reading and writing, among high school students. The objective is to systematize the process and ensure a more structured approach to bridging learning gaps as DepEd rolls out Grade 7 of the K to 12 Basic Education Program. Consequently, Reading and Writing Skills were included as a core subject for senior high school students, focusing on developing these skills through a wide range of materials beyond poetry, fiction, and drama in preparation for higher education. Additionally, various programs were initiated, such as HAMON: Bawat Bata Bumabasa (3Bs initiative) under DepEd Memorandum No. 173, s. 2019, and the Implementation of Catch-up Fridays under DepEd Memorandum No. 001, s. 2024.

The two-year pandemic has significantly impacted students' rights to quality education, particularly in reading and writing. Additionally, the Programme for International Student Assessment (PISA) in 2023 showed the Philippines scoring approximately 120 points below average in mathematics, reading, and science, placing the country in the bottom four among 64 nations. This situation prompted the local government of Negros Occidental, along with the Provincial Line Agencies, DepEd Negros Occidental. Team and civil society representatives to address the core problem. In 2022, the USAID ABC+ Project's Beginning Reading Program (BRP) was launched to identify innovative and sustainable solutions for early childhood education. Despite these efforts, a basic education department at a Catholic University

in Negros Occidental reported low examination results, attributed to gaps in learners' reading and writing attitudes. These gaps also led to low achievement in writing assessments in Math, English, and Science, revealing an inability to demonstrate knowledge in these core areas.

Several studies have explored the link between reading and writing attitudes and competence in high school students. For instance, Udu (2021) examined students' attitudes toward reading and writing and their correlation with achievement in English. Graham et al. (2012) investigated whether attitudes toward writing are distinct from attitudes toward reading. Totto and Ramos (2021) focused on the reading and writing performance of senior high school students, while ÜNAL and İŞERİ (2023) studied the reading and writing attitudes of student-teachers and their academic achievements. However, few studies have addressed the reading and writing attitudes and competence among senior high school students. This study aims to fill that gap.

This study assessed the reading and writing attitudes and competence of senior high school students grouped according to sex, strand, and school of origin. It also investigated the correlation between the two variables. The findings of this study served as the basis of the proposed Instructional Learning Materials for Reading and Writing to help students develop their reading and writing attitudes and competence.

2.0 THEORETICAL FRAMEWORK

The provided paper theorizes that a positive attitude toward reading and writing is a crucial factor in enhancing English language proficiency and academic success among senior high school students. The study posits that by focusing on fostering positive student attitudes, it is possible to improve their literacy competence. It further suggests that this relationship, while weak, is significant, and that leveraging students' positive attitudes can lead to improved skills. The research aligns with Sustainable Development Goal (SDG) 4: Quality Education, which aims to ensure inclusive and equitable education and promote lifelong learning by focusing on foundational literacy skills.

This theoretical foundation is anchored in the self-determination theory, which posits that individuals are more likely to be motivated and engaged in activities when they feel a sense of autonomy, competence, and relatedness (Deci & Ryan, 1985). This theory, from its proponents, emphasizes that intrinsic motivation, fostered by these three psychological needs, is more conducive to sustained engagement and higher performance than extrinsic motivators. In the context of education, when students feel a sense of control over their learning (autonomy), confidence in their abilities (competence), and a connection to their teachers and peers (relatedness), their motivation and subsequent performance are likely to improve.

The connection between the study's theory and self-determination theory is evident. The study's focus on attitude as a key variable aligns with the self-determination theory's emphasis on intrinsic motivation. The paper notes that a positive attitude is associated with a "Good" rating among students , which can be seen as a manifestation of a sense of competence and relatedness in their learning environment. By proposing to develop instructional materials that capitalize on students' existing willingness to learn, the study aims to strengthen their attitudes, thereby enhancing their sense of competence and autonomy. The study's finding that attitude only accounts for a small portion of the variance in competence also suggests that other factors, such as supportive learning environments and effective instructional strategies, are necessary to fully address the psychological needs outlined in the theory to improve competence.

3.0 METHODOLOGY

This paper utilized a quantitative research design using descriptive and correlational research approaches. Siedlecki (2020) defines descriptive research design as describing the characteristics of individuals, events, or conditions by studying them in their natural setting. Additionally, descriptive and correlational research approaches were used to ascertain the description and relationships between and among the variables to be studied (Baker, 2017; Adera et al., 2023). In this study, the descriptive

approach was utilized to determine the reading and writing attitudes and competence of senior high school students. The correlation approach determined whether a significant relationship exists between students' reading and writing attitudes and competence.

The study utilized 238 senior high school students in a Catholic School for the school year 2025-2026 from the total population of 640 officially enrolled senior high school graduating students. The sample size was determined using stratified random sampling. This study utilized a standardized questionnaire to determine the level of reading attitude and researcher-made questionnaires to assess the writing attitude and competence among senior high school students. The instrument was made of four parts. Part 1 contains the study's objective and the respondents' profiles. Part II contains 40 items for reading attitude. Part III of the questionnaire contains 40 items for writing attitude. Part IV contains 70 items for Reading and Writing competence.

The research instrument on reading and writing attitude underwent validity using the Good and Scates method, and the research instrument on Reading and Writing competence underwent validity using Lawshe's (1975) method.

Upon the approval of the gatekeepers, the researchers identified the participants of the study. An orientation was conducted to inform the participants about the study before securing informed consent and parents' assent forms for voluntary participation. The data was collected face-to-face in the presence of the researchers. The participants were given enough time to answer through a test questionnaire. After the data were gathered, a series of tabulations and analyses were administered, and the statistical tools appropriate for the research questions were employed. Raw data was stored and will be disposed of after several years.

Descriptive and correlational analysis were the methods used to analyze the data gathered for the variables in this study. For descriptive analysis, mean and standard deviation were used to determine the levels of reading and writing attitude and competence. On the other hand, Pearson Product-Moment Correlation was used for correlational analysis.

This study adheres to integrity, which equates to honesty and transparency. The participants' privacy and anonymity were considered in this study, and their identities and the findings were kept confidential. Consent and assent forms were also secured from respondents, and their parents were given an informed consent form tailored according to the standards of the ethics review team. All personal information and the results of this investigation were discarded after the end of the research.

4.0 RESULTS AND DISCUSSION

Degree of Reading Attitude among SHS Students

The results presented in Table 1 indicate that the reading attitude among SHS students, both as a whole and when grouped by sex, strand, and school of origin, is "Good". The overall mean reading attitudes for all 238 students is 4.63, with a standard deviation of 0.52. Specifically, when categorized by sex, both male (n=103) and female (n=135) students exhibit a "Good" reading attitude, with mean scores of 4.52 (SD=0.56) and 4.71 (SD=0.48), respectively. This finding aligns with the study's overall result of a more positive reading attitude among the students.

These results support the idea that a positive attitude towards reading is generally present among these senior high school students. This finding is consistent with recent studies that have explored the reading habits and attitudes of adolescents. For instance, a study by Kucirkova et al. (2021) observed a generally positive disposition towards reading among high school students, noting that even with the rise of digital media, many students still value reading for pleasure and academic purposes. This is further supported by research from Coiro et al. (2020), which indicates that while reading formats are evolving, a positive attitude towards reading remains a key factor in students' engagement with diverse texts, both print and digital. Another study by Sadeghi et al. (2022) found that a significant portion of high school students report positive feelings towards reading, often associating it with personal growth and the discovery of

new interests. These findings collectively suggest that a "Good" reading attitude is a common characteristic among this age group, which bodes well for initiatives to promote literacy and lifelong reading habits.

Furthermore, when grouped according to sex, females obtained a higher mean (M=4.71, SD=0.48) than males (M=4.52, SD=0.56). This indicates that, on average, the female students in this study have a more positive attitude towards reading than their male counterparts. This finding aligns with a consistent pattern observed in recent educational research. Studies have frequently reported that female students tend to demonstrate a more favorable disposition toward reading than male students across various age groups and academic levels (Coiro et al., 2020; Sadeghi et al., 2022). This trend is often attributed to various factors, including reading preferences and social norms. For example, research by Hu et al. (2023) and Clark and Teravainen-Goff (2019) suggests that girls are more inclined to engage in frequent reading for pleasure, fostering a more positive attitude. Similarly, a study by Kucirkova et al. (2021) highlights that girls' reading habits, which may be more aligned with traditional school curricula and popular literature, contribute to this positive outlook. These findings underscore that the difference based on sex in reading attitude is a widely documented phenomenon, supporting the interpretation of the data in this study.

When grouped by strand, all strands obtained a "Good" reading attitude. However, it was observed that HUMSS (M=4.82, SD=0.54) obtained the highest mean, while TVL obtained the lowest (M=4.48, SD=0.43). This means that students enrolled in the Humanities and Social Sciences (HUMSS) strand, on average, possess a more positive attitude toward reading than any other strand. This difference can be interpreted through the lens of academic focus and curriculum demands. Students in humanities-related fields are often exposed to a curriculum heavily reliant on text-based learning, research, and critical analysis of complex written materials, naturally cultivating a more positive reading disposition (Kucirkova et al., 2021). On the other hand, TVL students are more focused on practical, hands-on skills and technical knowledge, where a large portion of their learning may not be text-centric. A study by Sadeghi et al. (2022) found that a student's academic path significantly influences their engagement with and attitude towards reading, with students in liberal arts-focused programs consistently showing higher engagement. Similarly, research by Hu et al. (2023) highlights that intrinsic motivation for reading is often higher in students who are in fields that require extensive reading, as it is directly relevant to their academic success and career interests.

In terms of school of origin, students from both private (M=4.61, SD=0.54) and public (M=4.68, SD=0.49) schools of origin demonstrate a "Good" reading attitude. Yet, students from public schools obtained a higher mean than students from private schools. This means that, within this study's sample, students from public schools have a slightly more positive attitude towards reading than those from private schools. However, the difference is not substantial enough to categorize one as having a "better" attitude than the other. This finding challenges the common assumption that private schools, with their often more extensive resources, would necessarily foster a more positive reading attitude. Instead, it suggests that factors unique to the public-school environment may be at play. Research has shown that a positive reading attitude is not solely dependent on a school's financial resources but is also shaped by the reading culture within the institution (Sadeghi et al., 2022). For example, public schools may implement specific reading programs or participate in community-based literacy initiatives that strongly promote reading for enjoyment, which could contribute to a higher mean score. Furthermore, a study by Hu et al. (2023) highlights that students' attitudes are significantly influenced by a supportive peer environment and teacher encouragement, which can be particularly strong in public school settings. Another perspective from Coiro et al. (2020) suggests that the varying socioeconomic backgrounds of public-school students can lead to a greater value placed on reading as a means of personal advancement and access to educational opportunities. These varied factors, rather than a single cause, likely contribute to the slightly higher positive reading attitude observed among students from public schools in this study.

Table 1

Degree of Reading Attitude among SHS Students when taken as a Whole and when grouped according to Sex, Strand, and School of Origin

Variables	n	M	SD	Interpretation
Sex				
Male	103	4.52	0.56	Good
Female	135	4.71	0.48	Good
Strand				
ABM	23	4.61	0.44	Good
HUMSS	39	4.82	0.54	Good
STEM-AMH	93	4.61	0.49	Good
STEM-EIT	74	4.59	0.58	Good
TVL	9	4.48	0.43	Good
School of origin				
Private	153	4.61	0.54	Good
Public	85	4.68	0.49	Good
As a whole	***238***	***4.63***	***0.52***	***Good***

Note: 1.00-1.82=VB, 1.83-2.65=B, 2.66-3.48=P, 3.49-4.31=F,4.32-5.14=G,5.15=6.00, =VG

Degree of Writing Attitude among SHS Students

Table 2 presents the degree of writing attitude among Senior High School (SHS) students, categorized by sex, strand, and school of origin. Overall, the SHS students demonstrated a "Good" writing attitude, with a mean score of 4.35 and a standard deviation of 0.64. This indicates that, as a whole, these senior high school students possess a generally positive disposition toward writing, which is a crucial skill as they prepare for higher education and their future careers. This finding is consistent with recent research that explores the factors influencing writing attitudes among this age group.

The positive attitude can be attributed to several factors specific to the senior high school environment. For instance, the widespread use of digital tools like Google Docs, online collaborative platforms, and school portals for submitting assignments has made the writing process more efficient and engaging for modern students (Zheng et al., 2021). Furthermore, research by Graham et al. (2020) highlights that the process-oriented writing instruction common in senior high school, which focuses on drafting, peer feedback, and revision for academic papers and essays, is effective in building a more positive writing attitude. This is because it moves beyond the fear of the final product and emphasizes learning as part of the process.

Additionally, many SHS students are more aware of the direct connection between strong writing skills and their future success. A study by Al-Jamal et al. (2023) found that when students perceive writing as a necessary tool for college applications, scholarships, and professional careers, their motivation and attitude towards it significantly improve. This is further supported by the work of MacArthur (2022), which noted that SHS students are often motivated by the opportunities to use writing for personal expression, whether through creative projects or social media, which reinforces a positive feeling about

the activity. Lastly, the supportive classroom environments fostered by SHS teachers play a critical role in developing a "Good" writing attitude by providing constructive feedback on complex academic writing tasks and reducing writing anxiety (Staples et al., 2020).

When examining the results by sex, male students showed a "Fair" writing attitude (M=4.18, SD=0.72), while female students exhibited a "Good" writing attitude (M=4.47, SD=0.54). This finding indicates that, within this sample of senior high school students, females possess a more positive disposition toward writing than their male counterparts.

This difference can be attributed to varied influences. For instance, studies have shown that female students generally report higher writing self-efficacy and motivation, directly correlating with a more positive attitude toward the task (Limpo & Alves, 2021). This confidence is often nurtured by a stronger connection between their writing and their academic and personal goals, such as producing strong papers for college applications or using writing for personal expression (Al-Jamal et al., 2023). Furthermore, the positive relationship between reading and writing is a key factor. Research indicates that female students are more likely to engage in reading for pleasure, nurturing a more positive outlook on writing (Hu et al., 2023). Pedagogically, certain writing instructional approaches, such as those emphasizing process-based writing, collaboration, and personal voice, may resonate more with female students, thereby contributing to their higher mean score (Graham et al., 2020). Lastly, socio-cultural factors and peer influence in the senior high school setting can also play a role, as a supportive and encouraging writing environment, fostered by teachers and peers, is critical for building a positive attitude and may be perceived differently by male and female students (Staples et al., 2020).

Across the different strands, HUMSS, STEM-AMH, and STEM-EIT strands displayed a "Good" writing attitude, with mean scores of 4.51 (SD=0.68), 4.32 (SD=0.59), and 4.35 (SD=0.69), respectively. ABM and TVL strands showed a "Fair" writing attitude, with mean scores of 4.20 (SD=0.62) and 4.26 (SD=0.57), respectively. This result suggests that a student's chosen academic strand is closely linked to their writing attitude, reflecting the nature of their curriculum and its writing demands. The "Good" attitudes observed in the HUMSS and STEM strands can be attributed to the fact that these fields are inherently text-intensive, requiring students to engage in rigorous academic writing such as essays, research papers, and lab reports. Moreover, research by Al-Jamal et al. (2023) highlights that students' positive attitudes toward writing are often driven by the perceived importance of the skill for their future academic and career paths. This perception is particularly strong in these strands.

The "Fair" attitudes in the ABM and TVL strands reflect a curriculum emphasizing quantitative, practical, or hands-on skills rather than extensive writing. While writing is still necessary for these students, it may not be as central to their daily coursework, leading to a less positive overall disposition. This is supported by studies like Graham et al. (2020), which show a direct relationship between the amount of writing instruction and a student’s attitude. Furthermore, research by Limpo and Alves (2021) and MacArthur (2022) indicates that a student's writing self-efficacy strongly predicts their attitude, and students in fields with less frequent writing practice may have lower confidence. This pattern is consistent with the finding that writing attitude is shaped by the specific demands and learning environments of a student's chosen specialization, underscoring the importance of tailored writing instruction for all senior high school strands.

Regarding school of origin, both private and public school students demonstrated a "Good" writing attitude, with mean scores of 4.33 (SD=0.67) and 4.38 (SD=0.58), respectively. The negligible difference between the two groups indicates that a positive writing attitude is not significantly dependent on whether a student comes from a private or public school. This finding suggests that other, more universal factors are crucial in shaping the writing attitudes of senior high school students, transcending the differences in funding or resources between school types.

This can be explained by several consistent findings in recent literature. First, effective teaching practices are a key determinant of student attitudes, regardless of school type. Studies by Graham et al. (2020) show that instructional strategies focused on the writing process and providing meaningful

feedback are effective across different educational settings. Secondly, the role of a supportive teacher-student relationship is paramount. Research by Staples et al. (2020) emphasizes that an encouraging classroom environment, where students feel safe to express themselves and receive constructive criticism, is a critical factor in fostering a positive writing attitude in secondary schools. Furthermore, the increasing integration of technology, which is now prevalent in public and private education, has made writing more accessible and engaging for students, thereby improving their attitudes (Zheng et al., 2021). Students' personal motivation, driven by their perceived relevance of writing for their academic and career futures, is also a powerful influence that is independent of their school of origin (Al-Jamal et al., 2023). Lastly, a student's writing attitude is also shaped by peer influence and their specific academic strand, which exists in both public and private school environments, further reinforcing that the type of school is not the primary factor in determining a positive writing disposition (MacArthur, 2022).

Table 2

Degree of Writing Attitude among SHS Students when taken as a whole and when grouped according to Sex, Strand, and School of Origin

Variables	n	M	SD	Interpretation
Sex				
Male	103	4.18	0.72	Fair
Female	135	4.47	0.54	Good
Strand				
ABM	23	4.2	0.62	Fair
HUMSS	39	4.51	0.68	Good
STEM-AMH	93	4.32	0.59	Good
STEM-EIT	74	4.35	0.69	Good
TVL	9	4.26	0.57	Fair
School of origin				
Private	153	4.33	0.67	Good
Public	85	4.38	0.58	Good
As a whole	***238***	***4.35***	***0.64***	***Good***

Level of Reading and Writing Competence among SHS Students

Table 3 indicates the level of reading and writing competence among Senior High School (SHS) students, categorized by sex, strand, and school of origin. The overall interpretation for all groups, and the students as a whole, is "Moderate". A "Moderate" attitude indicates that while a portion of the students likely possess a positive disposition, a significant number are either ambivalent or hold a less favorable view. This overall average reflects the diverse challenges and competing priorities faced by adolescents in their final years of high school.

This "Moderate" finding is consistent with recent educational research. For instance, the prevalence of digital media and the demand for short-form content can lead to decreased engagement with traditional long-form reading and writing, contributing to an overall lukewarm attitude (Zheng et al., 2021).

Furthermore, the pressures of a rigorous academic curriculum and the focus on standardized testing can transform reading and writing from activities of enjoyment into tasks of necessity, negatively impacting student attitudes (Al-Jamal et al., 2023). A "Moderate" attitude also reflects the well-documented variation among students based on their academic interests and sex. As shown in previous findings, some strands and sexes exhibit a "Good" attitude. In contrast, others are "Fair," and this disparity naturally averages out to a "Moderate" score for the overall population (MacArthur, 2022). Additionally, a study by Limpo and Alves (2021) suggests that a lack of self-efficacy in writing skills can lead to a less positive attitude, a widespread challenge for many students. Lastly, the degree of teacher and peer support within a school can significantly influence attitudes, and the overall "Moderate" score may reflect a varied level of support experienced by students across the school community (Staples et al., 2020).

Further, these findings align with the broader context of reading and writing proficiency in the Philippines. For instance, the Programme for International Student Assessment (PISA) in 2023 revealed that the Philippines scored approximately 120 points below average in reading, placing the country among the bottom four out of 64 nations. This suggests a general challenge in reading and writing skills among Filipino students, consistent with the "Moderate" competence observed in this study. The Department of Education (DepEd) has implemented various initiatives, such as DepEd Order No. 39, s. 2012, to address learning gaps in reading and writing among high school students. Additionally, programs like "HAMON: Bawat Bata Bumabasa (3Bs initiative)" and "Catch-up Fridays" were introduced to further support the development of these skills. Despite these efforts, a Catholic University in Negros Occidental reported low examination results due to gaps in learners' reading and writing attitudes, leading to low achievement in writing assessments across core subjects.

When grouped by sex, the reading and writing competence of males and females is moderate. However, males obtained a lower mean of 32.34 (SD = 5.71) than females of 4.67 (SD = 4.87). This finding suggests that while both groups possess a foundational level of literacy, female senior high school students exhibit a higher level of reading and writing proficiency. This disparity is a consistent trend in educational research and is influenced by several factors directly related to sex.

First, this gap is often linked to differences in leisure reading habits. Studies consistently show that female adolescents are more likely to read for pleasure and longer durations than males, which directly contributes to enhanced vocabulary, grammar, and overall comprehension skills (Hu et al., 2023). This greater exposure to text provides a tangible advantage in both reading and writing tasks. Secondly, motivational and psychological factors play a significant role. Research indicates that female students often report higher self-efficacy in literacy tasks, which strongly predicts performance (Limpo & Alves, 2021). This confidence may lead them to engage more frequently and persist longer with challenging writing tasks. Furthermore, the types of writing and reading tasks typically emphasized in the curriculum may be more aligned with the learning styles or interests of female students, which can lead to better performance (Staples et al., 2020). Lastly, socio-cultural influences and gender expectations can shape a student's engagement with literacy. Males in some contexts may face social pressure that discourages them from participating in reading-intensive activities, while female students are often more encouraged to develop these skills (Clark & Teravainen-Goff, 2019).

When grouped by strand, all interpretations for competence are "Moderate". Humanities and Social Sciences (HUMSS) students show the highest mean competence at 35.46 (SD = 4.30). In contrast, the Accountancy, Business, and Management (ABM) and Technical-Vocational-Livelihood (TVL) strands show slightly lower means at 30.83 (SD = 5.43) and 30.78 (SD = 3.53), respectively. This finding suggests that while all senior high school students possess a foundational level of literacy, the level of competence varies significantly based on their chosen academic specialization.

The observed differences can be directly attributed to the distinct curriculum and academic demands of each strand. The HUMSS strand, by its nature, is a text-intensive field that requires students to engage in extensive reading, complex analysis, and persuasive essay writing daily (Applebee et al., 2021). This

consistent practice cultivates and hones advanced literacy skills. In contrast, the ABM strand places a greater emphasis on numerical and quantitative skills. While writing is still necessary, it is often in the form of business reports or financial summaries, which require a different set of skills from the academic writing in HUMSS (Rapp et al., 2020). Similarly, the TVL strand is designed for hands-on, practical training where academic writing and reading may be less central to the curriculum, leading to less frequent opportunities for development (Hsieh et al., 2022). This pattern is further supported by studies indicating that students' writing proficiency is strongly linked to the type and frequency of literacy tasks embedded in their coursework (Teng, 2019). The overall "Moderate" finding for all strands suggests that while some students are gaining a high level of proficiency in their chosen fields, there is still a general need to strengthen foundational literacy skills across all academic paths (Graham et al., 2020).

For the school of origin, both private and public school students also demonstrate "Moderate" competence, with means of 33.61 (SD = 5.12) and 33.75 (SD = 5.80), respectively. This finding suggests that a senior high school student's literacy competence is not significantly determined by whether they attended a private or public school. The nearly identical mean scores indicate that students from both educational backgrounds have achieved a similar, foundational level of proficiency, challenging the common assumption that one system holds a performance advantage over the other.

This parity can be explained by a range of factors more influential than the type of school. For instance, studies show that a teacher's pedagogical skill and ability to implement effective literacy-building strategies are paramount to student success, and these qualities are not exclusive to either private or public schools (Dunkley et al., 2022). Furthermore, a student's intrinsic motivation and engagement with academic tasks, which are shaped by their personal interests and perceived relevance of the material, play a critical role in their learning outcomes regardless of their school environment (Pritchard et al., 2021). The home literacy environment and parental support are also significant predictors of a student's reading and writing skills, providing a consistent foundation that can transcend school-based differences (Abedi et al., 2022). Peer influence and the academic climate within a school community can also impact student competence, and these factors vary widely within both public and private systems, leading to a "Moderate" overall outcome for both groups (Reichl et al., 2020). Lastly, the widespread access to digital learning tools and online resources in contemporary education has helped to level the playing field, providing students in both public and private schools with similar opportunities to develop their literacy skills (Schleppegrell, 2019).

Table 3

Level of Reading and Writing Competence among SHS Students when taken as a whole and when grouped according to Sex, Strand, and School of Origin

Variables	n	M	SD	Interpretation
Sex				
Male	103	32.34	5.71	Moderate
Female	135	34.67	4.87	Moderate
Strand				
ABM	23	30.83	5.43	Moderate
HUMSS	39	35.46	4.30	Moderate
STEM-AMH	93	34.16	5.22	Moderate
STEM-EIT	74	33.32	5.78	Moderate
TVL	9	30.78	3.53	Moderate

School of origin				
Private	153	33.61	5.12	Moderate
Public	85	33.75	5.80	Moderate
As a whole	***238***	***33.66***	***5.36***	***Moderate***

Note:0-13.99=VL, 14-27.99=L, 28-41.99=M,42-55.99=H,56-70=VH

Relationship between Reading Attitude and Reading and Writing Competence among SHS Students

Pearson Product-Moment Correlation was utilized to determine the significant relationship between reading attitude and reading and writing competence among SHS students. There was a significant relationship between reading attitude and reading and writing competence among SHS students, p = 0.006*. There was a weak positive linear relationship (r = 0.178) between reading attitude and reading and writing competence among SHS students.

This suggests that while a more positive reading attitude is associated with a slightly higher reading and writing competence, the strength of this association is not strong. This finding aligns with previous research highlighting the importance of student attitudes toward reading and writing in enhancing language proficiency and academic achievement. For instance, Udu (2021) found that students' reading and writing attitudes have a significant implication for their achievement in the English language in senior secondary schools, concluding that a sustained positive attitude towards reading and writing is likely to lead to excelling in English language proficiency.

Similarly, Abid et al. (2023) and Luis (2024) concluded that reading habits, including attitude, correlate with academic achievement in English and are somewhat predictive of students' academic success. This nuanced relationship is echoed in other studies, which also report a positive but not perfect correlation. A study by Sadeghi et al. (2022) concluded that while a positive reading attitude is a significant predictor of academic achievement, it only accounts for a small portion of the variance, confirming a weak to moderate relationship. Similarly, research from MacArthur (2022) found that a student's attitude toward writing and their self-efficacy are positively linked to writing performance. However, other factors, such as teaching methods and feedback, play a more substantial role. Finally, a meta-analysis by Graham et al. (2020) demonstrated that while writing attitude has a positive effect on writing quality, the magnitude of this effect is often smaller than that of direct writing instruction, reinforcing that attitude is one of several important variables, but not the sole determinant of competence.

Table 4

Relationship between Reading Attitude and reading and writing competence among SHS

Variable			**r**	**df**	**p**
Reading Attitude	x	Reading-Writing Competence	0.178	236	0.006*

Note: the relationship is significant when p<0.05

Relationship between Writing Attitude and Reading and Writing Competence among SHS Students

Pearson Product-Moment Correlation was utilized to determine the significant relationship between writing attitude and reading and writing competence among SHS students. A significant relationship exists between writing attitude and reading and writing competence among SHS students, p = 0.013*. There was a weak positive linear relationship (r = 0.161) between writing attitude and reading and writing competence among SHS students.

This means that as the writing attitude becomes more positive, there is a slight tendency for reading and writing competence to increase. This finding is supported by existing literature. For instance, Udu (2021) concluded that students with a sustained positive attitude toward reading and writing are more likely to excel in English language proficiency. Abid et al. (2023) also found that reading habits, including attitude, correlate with academic achievement in English and are somewhat predictive of students' academic success. Similarly, Graham et al. (2012) investigated the distinctness of attitudes toward writing and reading. The study by Totto and Ramos (2021) focused on the reading and writing performance of senior high school students, while ÜNAL and İŞERİ (2023), Ubbes et al. (2018), and Paker and Erarslan (2015) highlighted the reading and writing attitudes of student-teachers and their academic achievements. These studies collectively highlight the importance of positive attitudes in relation to language proficiency and academic performance in reading and writing.

Table 5

Relationship between writing attitude and reading and writing competence among SHS students

Variable			r	df	p
Writing Attitude	x	Reading-Writing Competence	0.161	236	0.013*

Note: the relationship is significant when $p<0.05$

5.0 CONCLUSION

Positive reading and writing attitudes are significantly linked to improved reading and writing competence among senior high school students. This finding underscores the importance of fostering positive attitudes to enhance academic skills, aligning with existing research on language proficiency and academic success. The results specifically provide a direct basis for developing supplementary instructional materials tailored to address the observed moderate competence levels while capitalizing on the generally positive attitudes. This approach can make learning more engaging and effective. Furthermore, the study's insights are highly relevant to the Philippine educational landscape, informing national efforts by the Department of Education (DepEd) to address persistent learning deficiencies in reading and writing. The localized data can help enhance ongoing DepEd programs like "HAMON: Bawat Bata Bumabasa" and "Catch-up Fridays". This is crucial given the significant challenges in reading skills highlighted by recent PISA results.

6.0 LIMITATIONS OF THE FINDINGS

The study was conducted with a sample of 238 senior high school students from a single Catholic university in the Philippines, which may limit the generalizability of the findings to a broader population of senior high school students in other regions or types of schools. The study utilized a standardized questionnaire for reading attitude and researcher-made questionnaires for writing attitude and reading and writing competence. While validity was addressed for the instruments, the reliance on self-reported attitudes might introduce some bias. The correlational design of the study indicates relationships between variables but does not establish causality. Therefore, while a relationship between attitude and competence was found, it cannot be concluded that one directly causes the other. This suggests that while there is an association, attitude only accounts for a small portion of the variance in competence. Other factors not explored in this study might have a stronger influence on reading and writing competence.

7.0 PRACTICAL VALUE OF THE PAPER

The study offers significant practical value by providing crucial baseline data on the reading and writing attitudes and competence of senior high school students within the specific context of a Catholic university in Negros Occidental, Philippines. This localized data is particularly relevant for educators

and policymakers in the region, offering a clear understanding of the current state of these essential skills among students. The identification of a "Good" overall reading and writing attitude among the students, contrasting with a "Moderate" level of competence, highlights a valuable opportunity for targeted intervention. This positive attitudinal foundation, supported by existing literature emphasizing that positive attitudes enhance language proficiency, indicates that teachers can leverage students' existing willingness to engage in reading and writing to foster further development in their competence.

8.0 DIRECTIONS FOR FUTURE RESEARCH

Building on this study, future research should explore how improving reading and writing attitudes directly leads to better skills, perhaps through new teaching programs. It would also be helpful to study more students from different schools across the Philippines to see if these findings apply more widely. Since attitude only explains a small part of skill level, future studies should investigate other important factors like a student's background, teaching methods, parent involvement, and learning resources. Finally, talking to students directly through interviews could offer deeper insights into their attitudes and challenges in reading and writing.

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Growth Mindset and the Psychology of AI Readiness among Postgraduate Students

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ABSTRACT

This study investigates the cognitive dispositions and psychological factors that influence the AI readiness of postgraduate students. It specifically explores the predictive role of a growth mindset on two psychological outcomes: trust in AI and AI anxiety among graduate students. Participants were selected through purposive-convenience sampling at a private university in the southern Philippines. Invitations were sent to all enrolled postgraduate students for the academic year, achieving a response of 336 valid responses. Data were collected using three instruments: Growth Mindset, Trust in AI, and AI Anxiety, which were piloted on 27 graduate students and have undergone construct validity and reliability tests. Responses were collected using a 5-point Likert scale. With positive results, the final instruments were administered through a professional platform. The research employed a quantitative, causal mediation design and included a sample of 336 postgraduate students from a private university in a southern city of the Philippines. A mediation analysis using PROCESS Model 4 (Hayes, 2022) was conducted to examine whether AI Anxiety mediates the relationship between Growth Mindset and Trust in AI. Results revealed that while AI anxiety does not significantly mediate the relationship between growth mindset and trust in AI, growth mindset directly influences trust in AI. The indirect effect through AI anxiety appeared minimal in this sample. The direct effect of growth mindset on trust in AI suggests that learners' beliefs about their capacity to adapt and improve play a more central role than anxiety in shaping their confidence toward AI systems. Appropriate recommendations were explicitly presented to the institution.

Keywords: Growth Mindset Scale, Trust in AI, AI anxiety, Postgraduate students

INTRODUCTION

Digital technology has significantly transformed higher education, particularly with the rise of Artificial Intelligence (AI). It is essential for students, especially those pursuing advanced degrees, to acquire the technical skills needed to excel in this tech-driven environment. This shift is changing instructional methods and posing new challenges for engaging students in online learning (Holmes et al., 2019). Researchers like Nguyen et al. (2020) highlight that these advancements can foster student-centered learning environments, enhancing active participation, especially beneficial for graduate students who balance full-time jobs and academic responsibilities. The literature on adult learning highlights the diverse roles of graduate students and the value of their life experiences (Meriam et al., 2009; Taylor, 2009). According to Knowles (1980), adults pursue education to navigate challenges better. AI platforms can enhance the autonomy of postgraduate students, encouraging ownership of their learning (Rathner & Schier, 2020). Engagement is boosted through interactive teaching strategies that integrate AI technology (Alam, 2021), making the development of digital skills increasingly urgent in a rapidly evolving professional landscape (Aldulaijan et al., 2025).

Most postgraduate students are already in the workforce, making it essential to prepare them for a job market increasingly influenced by AI and other technologies. These advancements may complicate career paths, heightening the demand for adaptable graduates (Chan & Hu, 2023; Joudieh et al., 2024). Additionally, students' cognitive and emotional readiness to use AI tools is crucial. Effective AI integration in education must consider technology availability, institutional preparedness, and students' mental and emotional responses.

The growth mindset has emerged as a critical psychological construct affecting learning, adaptability, and innovation (Dweck, 2006). Defined by Dweck as the belief that intelligence can be developed through effort, the concept has gained prominence in artificial intelligence (AI). This disposition has prompted extensive discussions on its role in effectively leveraging AI technologies (Farrow, 2020; Gale, 2023; Chow & To, 2025). Researchers are exploring how people's perceptions of AI are shaped by logical, emotional, and social factors (Schepman & Rodway, 2020, 2022). A growth-oriented mindset may enhance human-AI collaboration, fostering innovations across various fields. Notably, students' willingness to engage with AI tools is essential for their effective use (Siau & Wang, 2018; Gašević et al., 2021), necessitating trust and understanding in digital teaching and learning environments (Gašević et al., 2021).

Fear of AI, which may produce AI anxiety, however, poses a barrier to technology adoption. Wang and Wang (2019) define AI anxiety as the emotional pressure faced when interacting with AI, which can deter the use of AI educational resources. On the other hand, Yang et al. (2025) suggest that clear communication about AI helps alleviate this anxiety and build trust. Siau and Wang (2018) highlight that trust in AI develops over time, requiring initial confidence and ongoing engagement. Thus, a growth mindset is essential for fostering readiness to adopt AI, as emotional responses to AI tools significantly impact acceptance. Individuals with a positive growth mindset are more receptive to new opportunities and tend to have a more positive view of AI technologies (Chen & Yi, 2024).

Previous research has explored themes such as growth mindset, technology acceptance, AI acceptance, and AI anxiety (Kaya et al., 2022; Saqr et al., 2023; Avci, 2024; Chow & To, 2025). However, there is a gap in studies defining the relationships between growth mindset and trust in AI, as well as with AI-related anxiety. Additionally, there is limited evidence from developing regions, particularly concerning postgraduate populations, about how these factors impact learners' academic and professional development. This situation underscores the necessity for further investigation into these elements across different educational contexts, specifically for the institution being reviewed.

As AI technologies increasingly transform higher education, students' readiness to engage with these tools relies on access, digital skills, and psychological factors. A growth mindset, which believes abilities can be developed through effort, fosters adaptability and openness to innovation. In contrast, AI anxiety and low trust can impede effective use. Understanding these psychological factors is

imperative for enhancing AI readiness among postgraduate students, balancing various demands. This study aims to enrich the literature on AI technology acceptance in postgraduate contexts.

Theoretical Framework and Related Literature

This study is based on Growth Mindset Theory, developed by Carol Dweck (2006). It posits that individuals hold beliefs about intelligence and ability that shape their academic resilience. Those with a growth mindset view intelligence as changeable and developable through effort and feedback, leading to increased persistence, adaptability, and resilience. Conversely, a fixed mindset sees intelligence as unchangeable. Students with a growth mindset are more likely to embrace challenges and become effective problem solvers (Dweck, Walton, & Cohen, 2014).

The concept of a growth mindset has a significant impact on both personal and professional development. Individuals who adopt a growth mindset are more likely to embrace challenges, persist through setbacks, and view feedback as an opportunity for improvement (Findik, 2024). Research indicates that these individuals exhibit greater adaptability and engagement in technology-rich or high-stakes learning environments (Yeager & Dweck, 2012; Claro, Paunesku, & Dweck, 2016). Furthermore, a growth mindset is a psychological foundation that interacts with various factors, such as technology adoption; a person's willingness to try new tools may depend on their beliefs about their ability to grow and adapt (Burnette et al., 2023).

In the context of higher education, the significance of a growth mindset is increasingly recognized alongside the integration of artificial intelligence (AI) technologies. These technologies offer customized feedback, streamline assessments, and support informed decision-making processes, thereby transforming the learning experience (Williamson & Kizilcec, 2022; Susnjak et al., 2022). Additionally, research suggests that AI-driven technologies are becoming essential tools for students, supporting their academic activities and influencing their leisure pursuits (Chaudhary et al., 2024; Kamalov et al., 2023).

The effective use of AI depends not only on access to technology and skills but also on a learner's psychological readiness. Research shows that students with a growth mindset are more likely to see new tools as learning opportunities, leading to greater trust and reduced anxiety toward AI technologies. This mindset enhances willingness to explore novel technologies and reduces fear-based resistance. Studies indicate that those with a growth mindset are more adaptable and open to learning new skills, especially in technology-rich environments. By viewing challenges posed by AI as growth opportunities, these students demonstrate greater curiosity, persistence, and adaptability in using AI tools in unfamiliar situations (Yeager & Dweck, 2012; Claro et al., 2016).

Michael Gale (2023) highlights the importance of a growth mindset in a Forbes article titled "Why Growth Mindset Is Needed With AI." Drawing from Carol Dweck's research, he outlines ten challenges, including education, climate change, and healthcare. He emphasized how a growth-oriented approach can effectively utilize AI to tackle these issues. By fostering a belief in the value of development and learning, individuals and organizations can better leverage AI technologies to drive innovative solutions. The article emphasizes that adopting a growth mindset is crucial for navigating the complexities of AI advancements (Gale, 2023).

The effective use of AI, however, depends not only on technological access or skill but also on the learner's psychological readiness to engage with these systems. Studies underscore the importance of technological capabilities and psychological readiness in adopting AI tools in education (Dai et al., 2020). In this study, two psychological dispositions were identified as critical factors influenced by the growth mindset of postgraduate students: Trust in AI and AI Anxiety.

Trust in AI is the extent to which students view AI systems as reliable, competent, and beneficial for their academic needs. Transparent and understandable AI enhances trust, reducing uncertainty and fostering confidence in its outputs (Gašević et al., 2021). When students trust AI, they are more likely to engage with AI-driven programs and consider feedback trustworthy. Conversely, a lack of trust can

lead to reluctance and minimal involvement. Overall, trust in AI reflects a user's readiness to rely on these systems, boosting acceptance and usage (Siau & Wang, 2018; Wang & Wang, 2019).

Chen and Yi (2024) explore how mindsets, particularly the growth mindset, impact perceptions of AI technologies. Those with a growth mindset, believing in the development of abilities, tend to attribute human-like qualities to AI, such as intelligent personal assistants. Their research indicates that this mindset fosters openness to AI, reduces feelings of threat, and enhances human-like perceptions. Additionally, students with a growth mindset are more likely to view AI tools as collaborators, leading to increased trust and comfort in educational settings. However, other psychological dispositions, such as AI anxiety, which is characterized by emotional discomfort, fear, and uncertainty, can hinder AI Adoption, vis-à-vis AI trust (Wang & Wang, 2019).

AI anxiety, as defined by Wang & Wang (2019), consists of three components: (1) learning (similar to computer anxiety), (2) AI configuration (akin to robot anxiety), and (3) job placement and sociotechnical blindness (specific to AI anxiety). These avoidance actions impede the adoption of AI in educational settings. The writers recognized the necessity for more research to investigate other factors that may affect learning behaviors over time. Specifically, in this study, AI anxiety refers to an adverse emotional reaction that may be shaped by how students view learning and adapting to new situations, considering AI. On the other hand, students with a strong growth mindset, who believe they can improve and change, may be better at managing their feelings about AI technologies. This can lead to lower levels of anxiety.

This study focuses on how postgraduate students with a growth mindset navigate AI-enhanced learning and how their mindset influences their emotional and cognitive responses to technology. It intends to determine the mediating effect of AI Anxiety on the relationship between Growth Mindset and AI Trust.

METHODOLOGY

Participants were selected through purposive-convenience sampling at a private university in the southern Philippines. Invitations were sent to all enrolled postgraduate students for the academic year, achieving a response rate of 54% with 336 valid responses out of 723 invitations. Three instruments were utilized in this study: the English Version of the Growth Mindset Scale (with permission from Manika Wisessathorn, 2022), which comprises three areas: Positive Attitude and Optimism, Confidence in Self-development, and Recognizing the Value of Intellectual Growth; A ten-item scale for Trust in AI was adapted from Schaefer et al. (2016), and Hoffman et al. (2018) which focused on general trust, emotional and cognitive trust dimensions as well as understandability and transparency (e.g*., I feel confident making decisions based on the AI system's explanations*). The six-item AI Anxiety Scale was adapted from the Artificial Intelligence Anxiety Scale (AIA-S) created and validated by Wang and Wang (2019), which assessed interaction anxiety, fear of making mistakes, stress related to reliance on AI, and apprehension about societal changes (e.g., *I feel anxious when I need to interact with AI technologies).* Responses were collected using a 5-point Likert scale. Ethical approval for the study was obtained from the University Research Ethics Board (Approval No. XXXX-2025). Participation was voluntary, informed consent was obtained prior to data collection, and anonymity was ensured throughout the process. No personally identifiable information was collected. The instruments were pilot-tested for reliability using Cronbach's Alpha Reliability Coefficient and have also undergone construct validity through confirmatory factor analysis. A mediation analysis was conducted using PROCESS Model 4 (Hayes, 2022) to explore whether AI Anxiety mediates the relationship between Growth Mindset and Trust in AI.

Table 1: Reliability Coefficients of Survey Constructs

Construct	**Cronbach's α**	Cumulative Variance (%)	Kaiser-Meyer-Olkin Measure of Sampling Adequacy

Growth Mindset Scale	0.960	64.156	0.952
PAO[1]	0.933	60.241	0.935
CSD[2]	0.922	61.956	0.924
RVIG[3]	0.890	71.458	0.870
Trust in AI Scale	0.887	60.717	0.881
AI Anxiety Scale	0.881	63.337	0.872

1-Positive Attitude & Optimism; 2- Confidence in Self-Development; 3- Recognizing the Value of Intellectual Growth

The reliability analysis showed that all survey constructs had high internal consistency, with Cronbach's α values from .881 (AI Anxiety Scale) to .960 (Growth Mindset Scale), exceeding the .70 threshold (Nunnally & Bernstein, 1994). The total variance explained ranged from 60.24% (PAO) to 71.46% (RVIG), indicating significant construct validity (Hair et al., 2019). The Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy varied from .870 (RVIG) to .952 (Growth Mindset Scale), all above the .80 standard for good adequacy (Kaiser, 1974). Overall, the results indicate strong reliability and adequate sampling for further analysis.

RESULTS AND DISCUSSION

Table 1 presents the frequency and percentage distribution of responses for growth mindset, trust in AI, and AI anxiety among postgraduate students (N = 336). The findings indicate a generally positive self-regard among the respondents regarding their growth mindset. A majority (54.2%) responded with "very true to me," while 45.5% selected "moderately true to me," yielding a high overall mean score (M = 4.54, SD = 0.502). This implies that postgraduate students generally perceive themselves as having strong beliefs in their capacity to grow and improve, consistent with Dweck's (2006) theory of a growth mindset.

In terms of trust in AI, most students responded with "moderately true to me" (63.1%) and "somewhat true to me" (26.5%), with a smaller proportion selecting "very true to me" (9.2%). The mean score of 3.80 (SD = 0.617) suggests a moderate level of trust in AI systems among the participants. For AI anxiety, the responses were more evenly distributed, with a mean score of 3.17 (SD = 0.859). The most common response was "somewhat true to me" (40.2%), followed by "moderately true to me" (35.7%). These results suggest that while students are open to AI, some apprehensions or uncertainties persist, aligning with existing literature on technology-induced anxiety (Wang & Wang, 2019).

Table 2: Frequency and Percentage Distribution of Postgraduate Students' Growth Mindset, Trust in AI, and AI Anxiety (N=336)

	Scale	Frequency	Percent
Growth Mindset	True to me	181	54.2
	Moderately true to me	152	45.5
Mean = 4.54, SD=.502	Somewhat true to me	1	0.3
Very true to me	Total	336	100.0
	Scale	Frequency	Percent
Trust in AI	Very true to me	31	9.2
	Moderately true to me	212	63.1
Mean = 3.80, SD.617	Somewhat true to me	89	26.5
Moderately true to me	Slightly true to me	3	1.2
	Not true to me	1	0.3
	Total	336	100.0
	Scale	Frequency	Percent

	Scale	Frequency	Percent
Growth Mindset Mean = 4.54, SD=.502 Very true to me	True to me	181	54.2
	Moderately true to me	152	45.5
	Somewhat true to me	1	0.3
	Total	336	100.0
AI Anxiety Mean=3.17, SD=.859 Somewhat true to me	Very true to me	10	3.0
	Moderately true to me	120	35.7
	Somewhat true to me	135	40.2
	Slightly true to me	62	18.5
	Not true to me	9	2.7
	Total	336	100.0

Table 3: Mediation Analysis of the Effect of Growth Mindset on Trust in AI Through AI Anxiety (n=336)

Path	b	SE	t	p	95% CI [LL, UL]
GM → AIA	-0.2293	0.1137	-2.0165	.0445	[-0.4530, -0.0056]
AIA→ TAI	0.0287	0.0356	0.8063	.4206	[-0.0414, 0.0988]
GM → TAI (direct)	0.3168	0.0745	4.2512	< .001	[0.1702, 0.4634]
Indirect effect (GM → AIA → TAI)	-0.0066	0.0113a	—	—	[-0.0306, 0.0162]

Note. CI = confidence interval; LL = lower limit; UL = upper limit; a bootstrapped standard error based on 5,000 samples.

To address the objective of this study, a mediation analysis was conducted using the PROCESS macro (Model 4; Hayes, 2018) to examine whether **AI anxiety (AIA)** mediates the relationship between **growth mindset (GM)** and **trust in AI (TAI).** Unstandardized coefficients, standard errors, and 95% confidence intervals are presented in Table 3. The analysis revealed a significant negative association between Growth Mindset and AI Anxiety (b = -0.2293, SE = 0.1137, t = -2.0165, p = .0445, 95% CI [-0.4530, -0.0056]), indicating that individuals with a higher Growth Mindset reported lower levels of AI Anxiety.

However, AI Anxiety was not a significant predictor of Trust in AI (b = 0.0287, SE = 0.0356, t = 0.8063, p = .4206, 95% CI [-0.0414, 0.0988]). The direct effect of Growth Mindset on Trust in AI remained significant and positive after controlling for AI Anxiety (b = 0.3168, SE = 0.0745, t = 4.2512, p < .001, 95% CI [0.1702, 0.4634]). The bootstrapped indirect effect via AI Anxiety was not statistically significant (b = -0.0066, SE = 0.0113, 95% CI [-0.0306, 0.0162]), as the confidence interval included zero. These results suggest that AI Anxiety does not mediate the relationship between Growth Mindset and Trust in AI; rather, the effect of Growth Mindset on Trust in AI is primarily direct and not influenced by AI Anxiety.

The study finds that Growth Mindset positively impacts Trust in AI. Individuals who believe their abilities can improve over time are more likely to accept AI technologies. This confirms earlier research indicating that a growth mindset fosters adaptability and innovation. Interventions promoting a growth mindset have demonstrated benefits in academic performance (Burnette et al., 2023), and meta-analyses show that factors like perceived usefulness and favorable attitudes consistently predict technology acceptance in education (Scherer, Siddiq, & Tondeur, 2019). Authors also emphasize the importance of a growth mindset in promoting adaptability and openness to new technologies (Burnette et al., 2023; Yeager et al., 2022). The findings indicate that AI anxiety does not play a significant mediating role, which is consistent with recent studies on technology trust. These studies suggest that cognitive factors, such as learning attitudes, may have a greater influence on trust judgments than emotional barriers

(Zhang & Dafoe, 2024). This challenges traditional views on technology acceptance (Venkatesh , 2000), which often prioritize emotional responses like anxiety.

The lack of a significant mediation effect suggests that, at least in this sample, AI anxiety does not serve as a key mechanism by which a growth mindset affects trust in AI. Rather, a growth mindset might directly influence trust by enhancing individuals' willingness to engage with, learn about, and adapt to AI systems, thereby circumventing the emotional barrier of anxiety. Studies indicate that trust in new technologies primarily develops through experiential learning, perceptions of transparency and explainability, and a sense of user empowerment, rather than relying solely on emotional comfort (Gefen, Karahanna, & Straub, 2003; Glikson & Woolley, 2020). A summary for mediation analysis is found in Table 4 and highlighted in Figure 1.

Table 4: Model Summaries for Mediation Analysis (n=336)

Outcome Variable	R	R^2	MSE	F(df1, df2)	p
AIA (M regressed on X)	.1097	.0120	0.6208	4.07(1, 334)	.0445
TAI(Y regressed on X and M)	.2276	.0518	0.2634	9.10(2, 333)	< .001

Note. R^2 values represent the proportion of variance explained by the predictors in each model.

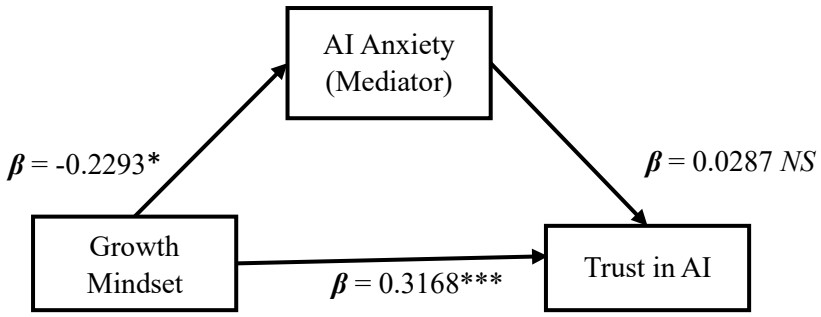

Figure 1. Mediation Path Model

As shown in Figure 1, Growth Mindset is a significant predictor of AI anxiety (β= -0.229, p = .0445), accounting for a small but meaningful portion of variance. It also implies an inverse relationship, which means Growth Mindset reduces AI anxiety. In turn, AI anxiety did not significantly predict trust in AI (β= 0.0287, p < .511), alongside a direct effect of growth mindset on trust in AI (β= 0.3168, p < .001). These findings suggest that AI anxiety partially mediates the relationship between growth mindset and trust in AI, as Growth Mindset influences it. It further suggests that students with stronger growth mindsets experience lower anxiety toward AI, which in turn supports greater trust in AI.

The mediation analysis emphasizes the significant role of AI anxiety in influencing the relationship between a growth mindset and trust in AI. According to mindset theory (Dweck, 2006), students with a growth mindset are more likely to perceive challenges as opportunities for developing their skills. This perspective also affects how they view emerging technologies. As a result, students with a growth mindset experience reduced anxiety towards artificial intelligence, allowing them to engage with AI more openly and confidently. Lower anxiety, in turn, leads to greater trust in AI, which aligns with previous research on technology acceptance models that highlight the impact of emotional factors on technology adoption.

The analysis indicates both direct and indirect effects, suggesting that while a growth mindset contributes independently to trust in AI, a significant portion of its influence occurs through the reduction of anxiety. This finding implies that interventions designed to foster growth mindsets in higher education could not only enhance resilience and adaptability but also improve students' readiness to interact effectively with AI tools in both academic and professional settings.

As AI continues to integrate into various sectors rapidly, future research needs to examine additional factors that may influence trust in AI. Important considerations may include AI literacy, perceived fairness, and prior exposure to AI systems, which have been recognized as emerging predictors of trust (Long & Magerko, 2020; Shin et al., 2022). Understanding these dynamics is crucial for developing targeted interventions that can improve both confidence and competence in adopting AI technologies.

CONCLUSION AND IMPLICATIONS

This study examined the role of growth mindset in shaping postgraduate students' trust in artificial intelligence (AI), with AI anxiety tested as a potential mediator. Results revealed that a growth mindset significantly predicts higher levels of trust in AI and lower levels of AI anxiety. While AI anxiety was negatively related to trust in AI, it did not significantly mediate the relationship between growth mindset and trust in AI. These findings have their theoretical implications in the crucial role of cognitive beliefs, particularly a growth mindset, in promoting psychological readiness for AI adoption in academic settings.

Furthermore, the study's results have practical implications for the institution in review, specifically in the local setting of this study. Graduate students often manage complex personal and professional commitments; a growth mindset may serve as a key psychological asset that supports openness to digital transformation. The direct effect of growth mindset on trust in AI suggests that learners' beliefs about their capacity to adapt and improve play a more central role than anxiety in shaping their confidence toward AI systems.

The findings confirm the importance of psychological dispositions in shaping students' readiness for AI integration in higher education. Growth mindset emerged as a robust predictor of both higher trust in AI and lower AI anxiety, which is consistent with Dweck's (2006) theory and supported by recent studies (Chen & Yi, 2024; Yeager & Dweck, 2012). Interestingly, although AI anxiety was negatively associated with trust in AI, it did not mediate the effect of growth mindset on trust. This suggests that students with a growth mindset may form trust in AI regardless of their anxiety levels, a potential indicator of resilience and openness to innovation.

Postgraduate students often juggle academic, professional, and familial responsibilities; these findings are especially relevant. As the university implements AI technologies in blended learning or fully digital formats, building a growth mindset among learners can enhance psychological readiness and trust in intelligent systems. Embedding mindset-based interventions and digital literacy programs in postgraduate curricula can better prepare students for the evolving demands of an AI-enhanced academic and professional landscape.

RECOMMENDATIONS

This study recognizes that its findings can only be ascribed to the institution under review. There may be a need for Philippine higher education institutions (HEIs) to embed growth mindset principles into student development activities, orientations, and academic advising. Modules on adaptive learning, digital resilience, and constructive feedback may help cultivate a more AI-ready student mindset.

To increase the acceptance of AI technology, consider integrating Growth Mindset Training into Graduate Programs may embed structured modules into postgraduate curricula for working professionals. (e.g. Workshop 1: Reframing Challenges: Activities to identify limiting beliefs and adopt growth-oriented thinking; Workshop 2: AI as a Learning Partner: Hands-on sessions for students may explore AI tools, fostering confidence and curiosity.)

Other recommendations include peer-coaching circles may provide a collaborative support system, enabling students to share strategies for overcoming learning challenges and AI anxiety; faculty-led AI Literacy programs by equipping faculty through training in AI literacy, ethical AI use, and digital

resilience so they can model confident AI engagement. Facilitate AI-focused seminars, case discussions, and co-design sessions where faculty and students explore AI applications relevant to their fields.

While AI anxiety was not a significant mediator, it still showed a negative association with trust in AI. Graduate programs may offer psychoeducational workshops that normalize apprehension about AI, incorporate guided exposure to AI systems, and use scenario-based simulations to reduce fear. Provide one-on-one counseling or small group discussions with guidance staff for students reporting high anxiety levels.

There is a need to promote ethical and transparent AI use. Establish institutional guidelines for responsible AI use in teaching, learning, and assessment. Communicate clearly how AI tools are deployed, how data is handled, and how AI-generated outputs are verified.

Partner with other HEIs to replicate the study and examine additional factors that may influence trust across different geographical regions and institutional types in the Philippines. Compare public vs. private university contexts to enrich the applicability of the findings.

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Zipgrade as an Assessment Tool and Its Effectiveness among Senior High School Students of The University of San Agustin

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ABSTRACT

This study explored the perceptions of Senior High School students at the University of San Agustin regarding ZipGrade, a mobile-based assessment tool designed to provide fast and accurate grading. With the increasing demand for technology-driven evaluation methods, the research aimed to examine how students perceived ZipGrade in terms of ease of use, fairness, motivation, and accuracy. The focus on student perspectives stemmed from the belief that learners' trust, engagement, and acceptance of assessment technologies are crucial for their effectiveness, complementing prior studies that largely emphasized teacher experiences. A mixed-methods explanatory sequential design was used. Quantitative data were collected from fifty-seven (57) Grade 12 students representing three academic strands: ABM, HUMSS, and STEM. A structured Google Form with fifteen (15) Likert-scale items measured various constructs related to ZipGrade usage. To gain deeper insights, two (2) open-ended questions were included, allowing students to share their experiences and suggestions. The instrument was based on the Technology Acceptance Model (Davis, 1989) and Constructivist Learning Theory (Piaget, 1972; Vygotsky, 1978), validated by experts, and demonstrated strong reliability with a Cronbach's Alpha of 0.89. Findings revealed high mean scores for ease of use (3.68), fairness (3.51), accuracy (3.44), motivation (3.39), and overall satisfaction (3.60). Qualitative responses highlighted the benefits of instant feedback, grading objectivity, and time efficiency. However, students pointed out limitations, such as reliance on multiple-choice formats and occasional scanning errors. Overall, results suggest that ZipGrade supports efficient and fair grading but should complement, not replace, varied assessment methods needed to measure higher-order thinking skills.

Keywords: ZipGrade, assessment tool, educational technology, grading efficiency, senior high school, University of San Agustin

INTRODUCTION

Assessment has always played a vital role in education, serving as a tool to measure academic progress, guide instruction, and enhance student learning. In the Philippine K-12 system, teachers often faced challenges in evaluating large classes efficiently while ensuring accuracy, fairness, and meaningful feedback. Traditional paper-based grading was time-consuming, prone to human error, and delayed the provision of results, sometimes affecting students' trust in the process. With the growing shift toward technology-driven education, digital assessment tools emerged as solutions to improve grading efficiency and feedback delivery.

Platforms such as *Socrative*, *Kahoot*, *Quizizz*, *Google Forms*, and *ZipGrade* have been widely used to automate scoring and provide instant feedback (Aljohani & Davis, 2022; Zhao et al., 2023). These tools increased engagement and motivation but were often limited to multiple-choice formats, raising concerns about their ability to promote deeper learning and critical thinking (Patel & Rahman, 2021; Martins & Silva, 2021). While most studies emphasized teacher benefits reduced workload, improved accuracy, and easier record-keeping (Lopez & Martinez, 2021; Cruz et al., 2022) students' perspectives were frequently overlooked. Yet, their perceptions influence motivation, test anxiety, and trust in grading fairness (Kim & Lee, 2023; Singh & Narayanan, 2022).

Mobile-based grading tools like *ZipGrade* offer immediate feedback, which has long been linked to improved self-regulation, reduced anxiety, and greater student engagement (Wu et al., 2022; Guzman & Rivera, 2023). However, Martins and Silva (2021) cautioned that fast results alone may not guarantee deeper learning, especially when assessments remain objective-based. Furthermore, few studies in Philippine private school contexts explore these tools from the learners' viewpoint, limiting the applicability of global findings.

This study aimed to fill these gaps by investigating Senior High School students' perceptions of ZipGrade as an assessment tool. It examined factors such as ease of use, accuracy, fairness, motivation, and overall satisfaction, while considering demographic differences. Findings are expected to inform educators, administrators, and policymakers on the effectiveness of integrating mobile-based assessment technologies to support learner-centered education.

Statement of the Problem

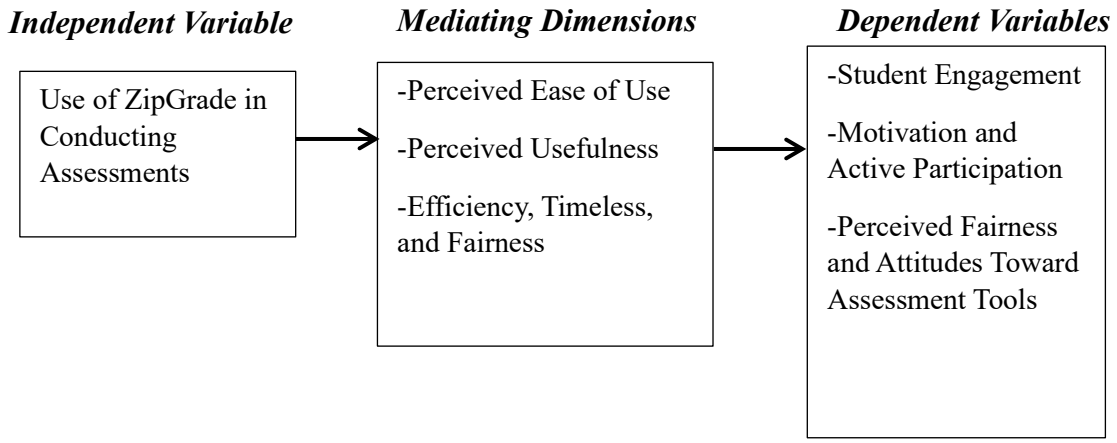
This study aimed to examine the use of ZipGrade as an assessment tool on the perceptions and experiences of Senior High School students of the University of San Agustin. It also sought to determine whether the tool enhanced students' assessment experience and how its perceived ease of use and reliability influenced their academic environment.

Specifically, this study sought to answer the following questions:
1. What was the level of agreement of Senior High School students regarding the use of ZipGrade in terms of a) Ease of Use, b) Efficiency and Timeliness, c) Accuracy and Reliability, d) Engagement and Motivation, and e) Perceived Fairness of Assessment
2. Were there significant differences in students' perceptions of ZipGrade when grouped according to academic strand (ABM, HUMSS, and STEM), age, and sex?
3. What were the students' qualitative insights or experiences regarding the use of ZipGrade in their assessments?

Framework of the Study

This study was based on the Technology Acceptance Model (TAM) by Davis (1989), which highlights two factors influencing technology use: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). These constructs guided the understanding of how Senior High School students viewed ZipGrade in classroom assessments.

It also drew on Constructivist Learning Theory (Piaget, 1972; Vygotsky, 1978), which states that learners build knowledge through experiences and reflection. Using ZipGrade was expected to foster engagement, motivation, and interaction with feedback, supporting a student-centered learning environment.



The independent variable in this study was the use of ZipGrade as an assessment tool, evaluated through key dimensions of the Technology Acceptance Model (Davis, 1989), specifically perceived usefulness and perceived ease of use. Additional factors such as efficiency, timeless, and fairness were also considered to provide a more complete understanding of how the tool functioned in classroom settings.

The dependent variables included students' engagement, motivation and active participation, perceived fairness, and overall attitudes toward digital assessment tools. Drawing on Constructivist Learning Theory (Piaget, 1972; Vygotsky, 1978), the study assumed that when ZipGrade was effectively implemented, it could promote student-centered learning by providing timely and objective feedback, fostering motivation, enhancing participation, and building trust in the grading process. This framework guided the examination of how technology-based assessments influence not only grading efficiency but also the quality of students' learning experiences.

METHODOLOGY

Research Design

This study used a mixed-methods explanatory sequential design, where quantitative data were collected and analyzed first, followed by qualitative data to further explain the results. This approach offered a comprehensive view of students' perceptions of ZipGrade by combining numerical trends with detailed insights.

The quantitative phase utilized a structured survey with fifteen (15) Likert-scale items measuring ease of use, fairness, motivation, and accuracy across different academic strands and demographics. The qualitative phase included two (2) open-ended questions in the same Google Form, allowing students to share experiences, opinions, and suggestions. This process helped interpret statistical findings within the context of real student perspectives.

Participants of the Study

A total of fifty-seven (57) Grade 12 students from the University of San Agustin participated in the study. Participants were selected using purposive sampling to ensure representation from the three main academic strands. Twelve (12) students were from the Accountancy, Business, and Management (ABM) strand, fifteen (15) from the Humanities and Social Sciences (HUMSS) strand, and thirty (30) from the Science, Technology, Engineering, and Mathematics (STEM) strand. The sample consisted of 41 female students (72%) and 16 male students (28%). In terms of age, nine (9) participants (16%)

were 16 years old, twenty-five (25) (44%) were 17 years old, twenty (20) (35%) were 18 years old, and three (3) (5%) were either younger or older than the main age groups.

Instrumentation

The study utilized an online survey form created using Google Forms. The instrument was composed of two parts: a set of 15 closed-ended questions using a four-point Likert scale, and two open-ended questions for qualitative input. Each closed-ended item was rated on a 4-point scale such as 1-Strongly Disagree, 2-Disagree, 3-Agree, and 4-Strongly Agree.

The survey items were developed based on the **Technology Acceptance Model (TAM)** (Davis, 1989) and **Constructivist Learning Theory** (Piaget, 1972; Vygotsky, 1978), adapted for student perceptions of ZipGrade. Items were reviewed for **face and content validity** and pilot-tested for reliability before the final administration.

Construct	Theoretical Basis	Example Item Wording	Source / Adaptation
Ease of Use	TAM-Perceived Ease of Use (Davis, 1989)	"I found ZipGrade simple to understand and use during assessments."	Adapted from Davis (1989); modified for students.
Efficiency and Timeliness	TAM-Perceived Usefulness (Davis, 1989)	"ZipGrade allowed my teacher to provide results more quickly."	Adapted from Lopez & Martinez (2021).
Accuracy and Reliability	TAM-System Quality (Extended TAM)	"I believe ZipGrade provided accurate results with minimal errors."	Adapted from Tolentino (2019); validated by experts.
Engagement and Motivation	Constructivist Theory (Vygotsky, 1978; Ryan & Deci, 2000)	"Receiving instant results through ZipGrade motivated me to do better."	Adapted from Ryan & Deci (2000); contextualized.
Perceived Fairness	Constructivist Learning Theory / Assessment Fairness Framework	"I believe ZipGrade made the grading process more fair and objective."	Adapted from Kim & Lee (2023); validated by experts.

A **pilot test** of the instrument was conducted with ten (10) SHS students (not included in the final sample). The reliability analysis yielded a **Cronbach's Alpha of 0.89**, indicating high internal consistency across all items.

Data Collection Procedure

1. Permission and Coordination

Approval was secured from the school administration, and teachers helped inform students and distribute the survey link.

2. Survey Administration

A validated Google Form was shared via school email accounts, with a one-week response period.

3. Data Gathering

Responses were automatically recorded in a secured Google Sheet accessible only to the researcher.

4. Ethical Considerations

Participation was voluntary, confidential, and anonymous, with no personal identifiers collected.

RESULTS

The results of the study were organized into two (2) main sections: quantitative findings from the Likert-scale items and qualitative insights from the open-ended questions.

Quantitative Results

Table 1: Summary of Student Perceptions on ZipGrade (Celis, 2025)

Dimension	Mean Score	Interpretation	Percentage of Agreement
Ease of Use	3.68	Strongly Agree	92%
Assessment Accuracy	3.44	Strongly Agree	86%
Motivation	3.39	Strongly Agree	85%
Perceived Fairness	3.51	Strongly Agree	88%
Overall Satisfaction	3.60	Strongly Agree	90%

1.1 Ease of Use

Ease of Use recorded the highest mean score (M=3.68, 92% agreement), indicating that students found ZipGrade simple and convenient for classroom assessments. This supports the Technology Acceptance Model (Davis, 1989), which links user-friendly technology to positive adoption attitudes.

Similar findings were reported by Lopez and Martinez (2021), noting that mobile grading apps were intuitive for users. In contrast, Kim and Lee (2023) found some younger students struggled with digital tools, a difference likely due to this study's participants having prior experience with smartphones and online platforms.

1.2 Assessment Accuracy

Assessment Accuracy received a high mean score (M=3.44, 86%), showing that students generally trusted ZipGrade to grade tests objectively, reducing human error and bias. This supports Tolentino's (2019) claim that automated grading enhances reliability and transparency.

However, some students noted occasional scanning errors when answer sheets were misaligned, reflecting a technical limitation also highlighted by Patel and Rahman (2021), who emphasized that automated scanners rely on proper handling to ensure accuracy.

1.3 Motivation

Motivation scored a favorable mean (M=3.39, 85%), suggesting that ZipGrade's instant feedback encouraged students to improve their performance. This aligns with Constructivist Learning Theory (Vygotsky, 1978) and Self-Determination Theory (Ryan & Deci, 2000), which highlight timely feedback as key to fostering self-regulated learning and intrinsic motivation.

Similarly, Wu et al. (2022) found that digital tools enhanced motivation by shortening grade turnaround times. However, some students noted that motivation was limited to multiple-choice tasks, indicating that feedback alone may not deepen learning without more varied assessments.

1.4 Perceived Fairness

Fairness scored high (M=3.51, 88%), with students believing that ZipGrade reduced teacher subjectivity and scoring errors. This aligns with Cruz et al. (2022), who reported that automated scoring increased trust in test results. The positive fairness rating suggests that objective assessment tools can enhance student confidence and help reduce test-related anxiety.

1.5 Overall Satisfaction

Overall satisfaction reached a strong rating (M=3.60, 90%). Students expressed general approval of ZipGrade as part of their classroom assessment experience. This echoed previous findings by Singh and Narayanan (2022), who argued that mobile-based tools enhanced perceived quality of assessment, especially in large classes.

Qualitative Results

Thematic analysis of open-ended responses revealed three dominant themes:

1. Convenience and Time-Saving Benefits. Students appreciated that ZipGrade shortened the waiting period for results, making grading more efficient and less stressful for both teachers and learners.
2. Objectivity and Accuracy. Students valued the reduced likelihood of human error and personal bias.

3. Limitations in Assessing Higher-Order Skills. Several students expressed that multiple-choice assessments were insufficient to measure critical thinking, reasoning, and creativity. A few respondents also mentioned occasional scanning errors that caused anxiety until results were confirmed.

DISCUSSIONS

The overall findings revealed that students generally held favorable perceptions of ZipGrade, highlighting its ease of use, grading accuracy, fairness, and ability to deliver instant feedback. These positive responses supported the Technology Acceptance Model (Davis, 1989), which posits that perceived usefulness and ease of use are key factors influencing technology adoption in educational contexts. Students reported that ZipGrade streamlined the grading process, reduced waiting time for results, and minimized teacher bias, enhancing their overall confidence in the fairness of assessments.

Despite these advantages, the study identified important limitations that affected ZipGrade's overall effectiveness:

1. ***Limited Assessment Depth.*** While ZipGrade efficiently handled multiple-choice assessments, it lacked the capacity to evaluate higher-order cognitive skills such as critical thinking, problem-solving, and creativity. This limitation reflected the concerns of Martins and Silva (2021), who cautioned that digital grading tools, when used alone, risk oversimplifying evaluation and neglecting complex learning outcomes that require more authentic and performance-based assessments.

2. ***Potential Technical Issues.*** Although generally reliable, some students experienced scanning errors caused by misaligned sheets, poor marking, or camera quality issues. These inaccuracies occasionally created temporary uncertainty and anxiety among students, highlighting that automated grading accuracy depends on proper test sheet preparation, device functionality, and user training.

3. ***Student vs. Teacher Perspectives.*** Prior research focused largely on teacher convenience, emphasizing reduced workload and faster grading. This study showed that students also valued improved feedback speed and fairness. However, their need for more meaningful and varied assessments remained unmet, suggesting that technology-driven grading tools should complement not replace diverse evaluation strategies.

The results suggested that while ZipGrade significantly enhanced grading efficiency, fairness, and student motivation, it is not sufficient as a stand-alone assessment solution. A balanced approach that combines automated scoring for objective tests with alternative methods to assess analytical, creative, and higher-order thinking skills is necessary for a more holistic evaluation of student learning.

CONCLUSION

This study investigated the perceptions of Senior High School students at the University of San Agustin regarding the use of ZipGrade as a digital assessment tool. Using a mixed-methods explanatory sequential design, the study combined quantitative data from Likert-scale items and qualitative responses from open-ended questions to provide a comprehensive understanding of students' experiences with this technology.

The findings revealed that students generally had favorable perceptions of ZipGrade across five key dimensions: ease of use, accuracy, fairness, motivation, and overall satisfaction. Consistent with the Technology Acceptance Model (Davis, 1989), positive perceptions of usefulness and ease of use appeared to influence students' acceptance of the tool. Furthermore, the provision of instant feedback, as highlighted by Constructivist Learning Theory (Vygotsky, 1978; Ryan & Deci, 2000), fostered increased motivation and engagement, demonstrating the potential of mobile-based assessment tools to improve learning experiences.

However, the study also uncovered limitations that impacted the overall effectiveness of ZipGrade

1. ***Restricted Assessment Depth.*** While ZipGrade proved efficient in automating scoring, its reliance on multiple-choice questions limited its capacity to evaluate higher-order cognitive skills such as critical thinking, problem-solving, and creativity. Complex learning outcomes that required analytical essays, project-based tasks, or practical demonstrations could not be effectively measured through this tool alone. This raised concerns about overemphasizing rote memorization and factual recall rather than deeper understanding and application of knowledge. Without complementary assessment methods, reliance on ZipGrade could risk narrowing the scope of learning evaluation, potentially misrepresenting students' true capabilities.

2. ***Technical Issues.*** Although ZipGrade generally performed well, students occasionally encountered scanning errors caused by poorly aligned answer sheets, stray marks, or unclear shading. These issues sometimes resulted in inaccurate scoring until teachers manually rechecked the results, creating temporary anxiety and uncertainty among students. Furthermore, variations in device camera quality and lighting conditions could affect scanning accuracy, highlighting the dependency of automated tools on proper user handling and environmental factors. This indicated the need for thorough orientation sessions and clear instructions for both teachers and students to minimize technical errors and build greater confidence in the reliability of the tool.

3. ***Limited Context and Generalizability.*** The study's findings were based on data from a small group of fifty-seven (57) students in a single private institution, which may not represent the broader population of Senior High School students in other schools or regions. Factors such as access to technology, teacher familiarity with digital tools, class size, and school resources can significantly influence student perceptions of ZipGrade. Therefore, results might differ in public school settings, rural areas, or institutions with lower technological readiness. Larger-scale, multi-site studies are necessary to validate these findings and provide a more comprehensive understanding of the tool's impact across diverse educational contexts.

Overall, the study concluded that ZipGrade enhanced grading efficiency, fairness, and student motivation, but it could not serve as a stand-alone solution for evaluating diverse learning outcomes. Its integration into classroom practice needed to be complemented by alternative assessment methods to achieve a more balanced, holistic, and meaningful evaluation of student learning.

RECOMMENDATIONS

Based on the findings and limitations of this study, the following recommendations were proposed:

1. ***Integrate ZipGrade with Other Assessments.*** Teachers should use ZipGrade alongside open-ended tasks, performance-based activities, and projects to measure higher-order thinking skills and avoid overreliance on multiple-choice tests.

2. ***Conduct Further Training for Teachers and Students.*** Proper orientation on using ZipGrade, including answer sheet alignment and troubleshooting scanning errors, can reduce technical issues and build confidence in automated grading.
3. ***Expand Research Across Diverse Contexts.*** Future studies should include larger and more diverse samples from public and private schools to validate findings and capture variations in demographics and technology access.
4. ***Investigate Long-Term Learning Effects.*** Longitudinal research is recommended to assess whether consistent use of ZipGrade improves not just efficiency and motivation, but also overall academic performance and knowledge retention.
5. ***Enhance Tool Features Based on Feedback.*** Developers should consider adding options for partial credit, open-ended question support, and integration with learning management systems to make ZipGrade more flexible and educationally relevant.

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College Student Satisfaction with School Services through the Lens of the 7Ps Marketing Mix in a Southern Negros Occidental Catholic Higher Education Institution

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ABSTRACT

Student satisfaction, a key concern in global education, is linked to faculty and student well-being and DEI principles. Resource-limited Philippine Catholic higher education institutions face challenges in enhancing student services to foster well-being and DEI. This study assessed student satisfaction at a Catholic institution in southern Negros Occidental, Philippines, using a quantitative, descriptive-comparative approach. Data from 328 stratified random student participants, gauging perceptions of service satisfaction via a 7Ps-aligned questionnaire and a five-point Likert scale, were analyzed using descriptive statistics and non-parametric tests to identify demographic satisfaction differences. Findings revealed generally high satisfaction but lower ratings for price and physical evidence, potentially indicating resource constraints affecting both student experience and faculty support. Significant demographic differences emerged: male and higher-income students were more satisfied; fourth-year students valued "people" more; second-year students were less satisfied with "process"; and CLA students reported higher satisfaction across most aspects, suggesting inequities. Actionable strategies include prioritizing price and physical facility improvements (considering faculty impact), adopting equitable practices from CLA, and tailoring support services for inclusivity. Marketing can emphasize strengths while addressing price and physical evidence concerns, highlighting efforts in faculty well-being and DEI. These findings inform decision-making and collaboration to enhance student experience, recognizing faculty well-being and DEI's crucial roles. Future research should employ qualitative and longitudinal methods, include diverse stakeholders, and investigate the impact of satisfaction, well-being, and DEI on key outcomes.

Keywords: Student satisfaction, School services, 7Ps Marketing Mix, Catholic college, Philippines

INTRODUCTION

Student satisfaction is a key measure of educational quality, encompassing more than just comfort (Khan & Yildiz, 2020). Globally, insufficient funding restricts access to vital resources, extracurricular activities, and quality instruction, disproportionately affecting marginalized students (Cahyono et al., 2020). Effective teachers are crucial for a positive student experience; however, heavy workloads and limited professional development opportunities can hinder their impact (Latif et al., 2021; Bahadur et al., 2020). Transparent communication between students and institutions is essential for addressing concerns (DuPaul et al., 2021). Furthermore, rigid curriculums and an excessive focus on standardized testing often overlook individual student needs (Parker et al., 2021). This issue is particularly pressing given the increasingly competitive global education landscape, where institutions in countries like India (Kanwar & Sanjeeva, 2022), Bangladesh (Islam & Himel, 2018), and China (Gu & Lu, 2023) are under growing pressure to prioritize student experiences to ensure satisfaction, retention, and overall success.

Member nations of the Association of Southeast Asian Nations (ASEAN) are making strides in student services. They focus on providing holistic support, integrating technology, adopting student-centered methods, and promoting inclusive practices for accessibility (ASEAN Intergovernmental Commission on Human Rights [AICHR, 2019]; Islam et al., 2021; Kanwar & Sanjeeva, 2022). Despite this progress, challenges persist, including limited funding, large student populations, a shortage of qualified staff, and cultural barriers that may deter students from seeking support (Cahyono et al., 2020; Islam & Himel, 2018; Latif et al., 2021). Best practices emphasize offering comprehensive academic, financial, psychological, and social services. These are complemented by technology-driven solutions, personalized attention, and specific support for students with disabilities or marginalized backgrounds (AICHR, 2019). Implementing these strategies will be vital for overcoming funding and staffing shortages as student populations grow. Increased collaboration and knowledge sharing among ASEAN nations could further enhance policies and build capacity for delivering effective student services.

CHED Memorandum Order No. 9, series of 2013, provides a comprehensive framework for enhancing student affairs and services (SAS) in Philippine higher education institutions (HEIs). It outlines programs designed to promote student well-being and mandates regular assessments of student expectations and satisfaction as part of quality improvement efforts. The Order also requires monitoring by CHED Regional Offices to ensure effective implementation of various student services, including guidance and counseling, career placement, admissions, scholarships, food, health, security, and social community involvement. Additionally, it covers student development programs that foster leadership, social responsibility, cultural awareness, and physical well-being, while providing guidelines for student organizations, activities, discipline, welfare, and services for students with disabilities. This holistic framework aims to create a supportive and inclusive learning environment for all students in Philippine HEIs.

A Catholic higher educational institution in Negros Occidental, Philippines, faces challenges in implementing CHED Memorandum Order No. 9, s. 2013, primarily due to limited resources. Such institutions often struggle to maintain facilities, offer diverse extracurricular activities, and provide ample support services, which can impede holistic student development (Micabalo et al., 2020). Budgetary constraints can also inadvertently marginalize students with disabilities, mental health concerns, or those from underprivileged backgrounds (Sarsale, 2020). However, strategic resource management and partnerships with external organizations can offer viable solutions by providing additional funding, expertise, and resources (Bucad & Perez, 2021).

Current research on student services has several notable gaps. These include overlooking the unique needs of smaller, rural, and marginalized institutions (Cahyono et al., 2020), a limited understanding of technology's role in ensuring equitable access (Islam et al., 2021), a scarcity of qualitative insights into student experiences regarding accessibility and cultural sensitivity (Latif et al., 2021), and a lack of longitudinal studies examining long-term impacts on student retention and career readiness (Kanwar & Sanjeeva, 2022). To address these deficiencies, local studies, such as Madrigal and Genovate's (2021) research at the University of Negros Occidental Recoletos Graduate School, offer valuable context-

specific insights into student experiences and the effectiveness of services within particular institutional settings.

This study aimed to determine college student satisfaction with school services at a Catholic higher education institution in southern Negros Occidental during the 2023-2024 academic year. Specifically, it assessed satisfaction across key service dimensions—product, price, place, promotion, people, process, and physical evidence—both overall and when students were grouped by sex, academic program, year level, and family monthly income, to identify any significant differences in their perceptions. The findings served as baseline data for a proposed marketing plan for the school.

Literature Review

Student satisfaction in higher education is a multifaceted concept reflecting students' positive perceptions of their learning experiences, achievements, and institutional services (Gu & Lu, 2023; Kanwar & Sanjeeva, 2022). Various studies have identified key factors influencing this satisfaction and subsequent loyalty. For instance, instructors, teaching quality, infrastructure, academic aspects, and placement services significantly impact satisfaction in Chinese private universities (Zhai, 2023), while service quality and academic hardiness play roles in public universities (Amoako et al., 2023). The shift to online learning during the COVID-19 pandemic further highlighted the importance of online learning experiences, interactions, and faculty-student engagement for international student satisfaction (Zhang et al., 2023). Overall, student satisfaction is a multidimensional construct, representing how well educational services meet or exceed student expectations across academic, administrative, social, and physical campus environments (Lacap & Cortez, 2023; Elliott & Shin, as cited in Yusof, 2015; Brewer & Carnes, as cited in Yusof, 2015).

Universities increasingly prioritize student satisfaction due to its significant impact on learning outcomes and institutional value (Yusof, 2015; Weerasinghe et al., 2017). Tools like the Higher Education Satisfaction Index have been developed to accurately measure this crucial metric (Ribeiro et al., 2023). Technology also plays a vital role, with effective use of learning management systems directly linked to online course satisfaction (Arabie, 2016). The COVID-19 pandemic underscored the critical need for teaching, cognitive, and social presence to foster satisfaction and a sense of belonging in distance learning environments (Moore et al., 2023). Despite these advancements, many institutions face resource constraints, which can limit the quality and scope of student support services like academic advising, career counseling, and mental health resources, all of which impact student satisfaction (Castillo & Lara, 2020).

Catholic Higher Education Institutions (HEIs) in various regions, including Latin America and Africa, face the dual challenge of upholding their core values while navigating resource limitations. These institutions, committed to social justice and holistic student development, strive to create supportive learning environments where a sense of community and purpose contributes positively to student satisfaction (Wu, 2018; Alemie & Zeleke, 2021). However, limited funding often restricts access to qualified faculty, quality learning resources, and essential student support services, negatively impacting the educational experience. Furthermore, while technology, such as online learning platforms, offers opportunities for increased access and flexibility (Ahn et al., 2021; Okeyo-Odhiambo, 2020), concerns persist regarding digital divides and the need for robust infrastructure to ensure equitable access for all students (Parra-Velasco et al., 2020; Moyo & Mpinganjira, 2021). Thus, these institutions require innovative approaches to leverage technology strategically and prioritize services that align with their values to enhance student satisfaction within challenging environments.

In the context of ASEAN HEIs, a multifaceted approach involving quality instruction, accessible technology, and holistic student support is essential for driving satisfaction. Studies emphasize that skilled and dedicated faculty significantly enhance student satisfaction, with effective teaching, academic support, and personalized guidance positively influencing perceptions (Latif et al., 2021; Bahadur et al., 2020). However, resource constraints in many ASEAN countries can hinder professional development for staff and pose challenges in attracting and retaining highly qualified educators. While technology tools can enhance learning experiences, equitable access to resources and proper

infrastructure remain a concern, particularly for marginalized students (Islam et al., 2021). This applies to Catholic HEIs across China, Japan, Thailand, Malaysia, and Indonesia, where national contexts and student priorities interact with a shared foundation in Catholic social teaching to influence satisfaction (Wu, 2018; Alemán & Burgos, 2021; Nguyen et al., 2021). Challenges like limited funding in developing nations (Cahyono et al., 2020) and competitive pressures in more developed ones (Kanwar & Sanjeeva, 2022) necessitate regionally-specific approaches that integrate national contexts, student priorities, and Catholic values to optimize satisfaction.

Recent literature on student satisfaction in Catholic HEIs frequently uses the marketing mix (7Ps) framework to analyze service provision. The "product" emphasizes a holistic educational experience encompassing academic rigor, social justice, and a strong faith-based community (Boyle & Greer, 2021; Nguyen et al., 2021). "Promotion" involves using targeted digital strategies to communicate this unique value proposition and highlight alumni success (Ahn et al., 2021; Lim et al., 2018). While the "place" (campus environment and online platforms) must be welcoming and reflect Catholic values (Boyle & Greer, 2021), "people" (faculty and staff) are crucial for embodying these values and fostering supportive interactions (Boyle & Greer, 2021; Lim et al., 2018). Efficient "processes" for administrative tasks and clear communication reduce student stress (Boyle & Greer, 2021; Lim et al., 2018), and positive "physical evidence" (well-maintained, technologically integrated facilities) enhances overall perception (Boyle & Greer, 2021; Lim et al., 2018). Furthermore, student demographics, including sex, academic program, year level, and family monthly income, can influence satisfaction levels, with some research suggesting variations in priorities (Reason & Reynolds, 2016; Smith et al., 2019; Antaramian, 2017; Horanicová, 2022; Cho, 2019; Gennetian, 2018). Understanding these factors is crucial for Catholic HEIs to strategically manage their resources, address student needs, and improve satisfaction.

Theoretical Framework

This paper's theoretical framework proposes that college students' satisfaction with school services at a Catholic higher education institution may vary significantly based on their sex, academic program, year level, and family monthly income. This implies that diverse student backgrounds and needs lead to differing priorities and expectations for their educational experience.

Rooted in *Expectancy-Value Theory and Social Exchange Theory,* a student's satisfaction with school services is determined by a cost-benefit analysis shaped by their unique demographic profile. *Expectancy-Value Theory* (Smith & Johnson, 2015) posits that students' motivation and satisfaction are driven by their expectations of success and the value they place on specific outcomes. For example, a student from a lower-income background may perceive the high cost of a service as outweighing its benefits, creating a cost-benefit trade-off that negatively impacts their satisfaction. This is further supported by *Social Exchange Theory* (Brown & Davis, 2016), which suggests students weigh the costs of engaging with a service against its perceived benefits. A student might deem the cost of tuition or fees justifiable if the physical evidence of their education, such as well-maintained facilities and modern equipment, aligns with their expectations.

To enhance student satisfaction and bolster faculty morale, Catholic higher education institutions can leverage the concept of "physical evidence," which refers to the tangible cues of service quality, such as well-maintained classrooms, up-to-date technology, and organized facilities. By improving these tangible aspects, institutions can create a sense of equity and value among students. When students from diverse backgrounds see that their school invests in high-quality physical resources, it may alleviate concerns about the cost-benefit trade-offs of their education, fostering a sense of fairness. This investment can also significantly improve faculty morale, as a well-equipped and maintained environment demonstrates institutional support for their work, ultimately enhancing the educational experience for all.

METHODOLOGY

This study utilized a quantitative, descriptive-comparative research design to assess college student satisfaction with school services and identify potential areas for improvement (Themes, 2017). The comparative aspect allowed for an examination of how satisfaction levels varied among student groups based on sex, academic program, year level, and family monthly income. This analysis was framed within the 7Ps marketing framework: product, price, promotion, place, people, process, and physical evidence.

A stratified random sampling method was used to select 328 college students from a Catholic university in southern Negros Occidental, representing the Colleges of Education, Business and Accountancy, and Arts and Sciences. This rigorous sampling technique, based on the official enrollment list, was intended to mitigate potential non-response bias by ensuring proportional representation from each college. The study achieved a 100% response rate with no attrition, indicating that all selected participants completed the study, effectively eliminating non-response bias. Consequently, the researchers can confidently calculate and interpret the study's effect size as the sample perfectly mirrors the population from which it was drawn, strengthening the generalizability of the findings.

Table 1: *Distribution of the Respondents*

Department	**N**	**n**	**%**
College of Arts and Sciences (CAS)	175	27	8.20
College of Education (COEd)	1,113	169	51.50
College of Business and Accountancy (CBA)	870	132	40.20
Total	**2,158**	**328**	**100**

The primary research instrument was a modified questionnaire adapted from Genovate and Madrigal (2021) and aligned with CMO 9 series 2013. Part 1 gathered demographic information (sex, academic program, year level, and family income), while Part 2 comprised 41 Likert-type items assessing student satisfaction across the 7Ps of educational services. To ensure the instrument's validity and reliability, it underwent content validation by seven expert jurors, achieving an "excellent" rating of 4.80 based on Good and Scates' criteria. Furthermore, a pilot test with 30 similar college students (not included in the main study) yielded a Cronbach's Alpha reliability index of 0.735, confirming the instrument's reliability. Data collection commenced after securing formal permission from the school President. Trained enumerators administered the surveys, adhering to proper procedures, and the collected data were then prepared for statistical analysis.

Interpretative Scale for the Level of Satisfaction

Scale	Mean Range	Verbal Description	Verbal Interpretation
4	3.26 – 4.00	Highly Satisfied	The selected school services consistently exceed the satisfaction of college students.
3	2.51 – 3.25	Satisfied	The selected school services generally meet the satisfaction of college students.
2	1.76 – 2.50	Dissatisfied	The selected school services could be improved to better meet the satisfaction of college students.
1	1.00 – 1.75	Highly Dissatisfied	The selected school services did not meet the satisfaction of college students.

Descriptive and comparative inferential statistics were employed for data analysis, focusing on student satisfaction with school services across the 7Ps, and exploring variations based on demographic factors. A Kolmogorov-Smirnov test revealed that the variables (product, price, place, promotion, people, process, and physical evidence) were not normally distributed (all p-values = 0.000). Consequently, nonparametric tests were utilized for inferential comparisons: the Mann-Whitney U test was applied for

comparisons based on sex and income, while the Kruskal-Wallis test was used for comparisons based on year level and academic program. All aspects of the study, from design to data handling, adhered to ethical considerations, prioritizing respect for persons, justice, and beneficence.

RESULTS AND DISCUSSION

Level of satisfaction of college students with selected school services as a whole.

Students generally reported high satisfaction with the school's services (M=3.34, SD=0.40), a sentiment consistent across all demographic groups—sex, year level, academic program, and income. Specifically, students expressed high satisfaction with the product, place, promotion, people, and process components of the services. However, their satisfaction was notably lower regarding price (M=3.20, SD=0.54) and physical evidence (M=3.22, SD=0.50).

The overall high satisfaction, particularly in areas like product, place, promotion, people, and process, suggests the Catholic school is largely meeting student expectations and providing a positive educational experience. Conversely, the lower satisfaction with price and physical evidence indicates specific areas needing improvement. This highlights the school's need to address concerns about affordability and the tangible aspects of the school environment. These findings underscore the importance of a comprehensive approach to student satisfaction, considering both academic and non-academic elements to ensure a more fulfilling educational journey for its students.

Recent research reinforces the multifaceted nature of student satisfaction in Catholic higher education (Haverila et al., 2021). Key factors influencing satisfaction consistently include the quality of educational services, perceived value for money, and a student-centered approach. Assessments using the 7Ps marketing framework often reveal that product aspects are highly valued, while price considerations typically rank lower (Genovate & Madrigal, 2021). This emphasizes that both academic factors, such as instructional effectiveness, and non-academic aspects, like campus climate and student services, significantly shape student experiences (Laureta & Dioso, 2020). Optimizing marketing mix elements, particularly those related to service, distribution, human factors, physical evidence, and service processes, can enhance student satisfaction (Brkanlić et al., 2020). Despite these insights, research gaps persist, pointing to a need for standardized quality assurance factors and further investigation into the relationships between various elements of student satisfaction (Bagur-Femenías et al., 2020).

Table 3: *Level of Satisfaction of College Students with Selected School Services as a Whole*

Services	M	SD	Interpretation
Product	3.42	0.44	Highly satisfied
Price	3.20	0.54	Satisfied
Place	3.45	0.47	Highly satisfied
Promotion	3.42	0.45	Highly satisfied
People	3.40	0.47	Highly satisfied
Process	3.39	0.50	Highly satisfied
Physical evidence	3.22	0.50	Satisfied
Whole	*3.34*	*0.40*	*Highly satisfied*

Level of satisfaction of college students with selected school services in terms of the 7Ps Marketing Mix

Product. Overall, respondents reported high satisfaction with the product (M = 3.42, SD = 0.44), a sentiment consistent across all demographics, including sex, year level, academic program, and income. While minor variations existed, ranging from M = 3.32 to 3.69, all subgroups consistently fell within

the "highly satisfied" range. Notably, students from the College of Arts and Sciences (CAS) (M = 3.69) and those from higher-income households (M = 3.56) expressed the highest levels of satisfaction. This broad consistency suggests the institution effectively delivers on its offerings, including counseling, health, spiritual development, food services, financial aid, special needs support, safety, and extracurricular activities. This alignment with student needs fosters a positive experience and contributes to institutional success (Guo et al., 2021; Aman et al., 2023), with non-classroom interactions crucial for personal development (Herdlein & Zurner, 2015).

Price. Respondents were generally satisfied with the price (M = 3.20, SD = 0.54), though satisfaction levels varied by group. Male students, fourth-year students, and those from higher-income households reported higher satisfaction, falling into the "highly satisfied" range. Conversely, female students, those in their first, second, or third year, and those from lower-income households expressed moderate satisfaction. CAS students again showed the highest satisfaction. This suggests the institution's pricing strategies are generally well-received, likely due to transparent fees, flexible payment options, scholarships, and clear refund policies. However, the moderate satisfaction among specific demographics indicates a need to explore and potentially adjust pricing to better address their financial concerns and ensure equitable access to education (Amir et al., 2016). Student perceptions of value are influenced by fees, reputation, and academic quality (Jones et al., 2020), with socioeconomic status impacting financial decisions (Callender & Melis, 2022).

Place. Students reported high satisfaction with the place (M = 3.45, SD = 0.47). This satisfaction remained consistent across all demographics, including sex, year level, academic program, and income, with all subgroups falling within the "highly satisfied" range, showing only slight variations (means from 3.38 to 3.66). This consistent high satisfaction indicates the effectiveness of the institution's location and facilities. Its strategic city-center location, combined with a safe environment, proximity to amenities, accessible transportation, and ample parking, likely contributes to a positive perception of convenience and accessibility. Such positive perceptions are vital for fostering a conducive learning environment, enhancing the overall student experience, and benefiting the institution's reputation and attractiveness (Hanssen & Solvoll, 2015; Wilkins et al., 2022; Yazgan, 2022; Wesselmann, 2019).

Promotion. Respondents expressed high satisfaction with the promotion (M = 3.42, SD = 0.45). This sentiment was consistent across all demographics—sex, year level, academic program, and income—with all subgroups falling within the "highly satisfied" range (ranging from 3.36 to 3.66). This indicates the effectiveness of the institution's promotional strategies. The diverse promotional activities, including school campaigns, online support, promotional materials, social media engagement, and community events, resonate well with both current and prospective students. This success likely stems from a comprehensive and engaging approach that keeps stakeholders informed and connected, successfully creating a positive image and generating interest in the institution, ultimately contributing to enrollment and brand recognition (Guro et al., 2023; Nguyen et al., 2020; Mahajan & Golahit, 2017; Missaghian & Milian, 2018).

People. Respondents reported high satisfaction with the people aspect (M = 3.40, SD = 0.47). This satisfaction was consistent across all demographics, including sex, year level, academic program, and income, with all subgroups falling within the "highly satisfied" range (from 3.29 to 3.65). This consistently high satisfaction highlights the positive impact of the institution's personnel on the student experience. It suggests that interactions with college staff—from administrative personnel to healthcare providers and counselors—are consistently positive and supportive, contributing to a welcoming and inclusive campus environment. Such positive interactions can enhance student engagement, well-being, and overall satisfaction with their academic journey, reflecting the institution's ability to recruit and retain dedicated personnel who prioritize student needs (Graham, 2016; Schreiner, 2017; Power et al., 2020; Bukhatir et al., 2023).

Process. Respondents reported high satisfaction with the process (M = 3.39, SD = 0.50). This satisfaction was generally consistent across all demographics, including sex, year level, academic program, and income, with all subgroups falling within the "highly satisfied" range, showing slight variations from M = 3.19 to 3.57. This indicates the effectiveness of the institution's academic and

support processes. Students perceive the accreditation and affiliations, faculty qualifications, curriculum, extracurricular activities, and student support services as valuable and well-implemented. This high satisfaction reinforces the institution's commitment to quality education and student-centered practices, enhancing its reputation and attracting potential students, fostering a fulfilling educational experience, and promoting student engagement and success (Rahman & Nasrin, 2024; Zhang et al., 2021; Ulker & Bakioğlu, 2019; Mulay & Khanna, 2020).

Physical Evidence. Overall, respondents were satisfied with the physical evidence (M = 3.22, SD = 0.50). However, satisfaction levels varied among different groups. Male students, those in their first or fourth year, CAS students, and those from higher-income households were "highly satisfied," while female students, those in their second or third year, College of Education (COED) and College of Business and Accountancy (CBA) students, and those from lower-income households were "satisfied." Despite these variations, the general satisfaction with physical evidence indicates that students find the institution's venues, facilities, and safety measures satisfactory. Well-equipped gymnasiums, functional clinics, comprehensive libraries, and modern laboratories are valued resources, and robust safety measures contribute to a sense of security. The slight variations, however, suggest areas for potential improvement, such as enhancing specific facilities like cafeterias or restrooms to better meet student needs and preferences across all demographics (Hanssen & Solvoll, 2015; Pereyras, 2021; Cabasal et al., 2023).

Difference in college student satisfaction with selected school services in terms of demographics

This study explored how college students' satisfaction with school services varied based on their sex, income, year level, and academic program. We found no significant differences in satisfaction with place [U=8254.500, p=0.171] and process [U=8457.500, p=0.281] when grouped by sex. However, there were significant differences in satisfaction for product [U=7612.000, p=0.023], price [U=7267.000, p=0.006], promotion [U=7679.500, p=0.029], people [U=7649.500, p=0.027], and physical evidence [U=7497.500, p=0.016], with males consistently reporting higher satisfaction than females in these areas. This suggests a sex-based disparity, where male students' preferences or needs might be better met by current service offerings. Literature supports that while males may report higher overall satisfaction, females often have heightened expectations for certain services and prioritize aspects like the price-quality relationship, while males might value social aspects more (Mansoora, 2017; Kim et al., 2021; Latif et al., 2022). Sex also influences service recovery preferences, with males preferring quick fixes and females preferring collaborative solutions (Cadet et al., 2024; Dvir & Malca, 2020). Addressing these disparities requires tailoring service delivery, diversifying offerings, revisiting strategies for pricing and promotion, providing diversity training for staff, and creating a more inclusive physical environment.

Significant income-based disparities emerged across all service aspects, with higher-income students consistently reporting greater satisfaction for product [U=7696.500, p=0.000], price [U=7255.000, p=0.000], place [U=7777.000, p=0.000], promotion [U=7789.000, p=0.000], people [U=7235.000, p=0.000], process [U=7438.500, p=0.000], and physical evidence [U=8370.000, p=0.003]. This suggests that the current service model may unintentionally favor higher-income students, whose pre-existing expectations, access to resources, and backgrounds may align more closely with the school's environment. Research aligns with this, showing that higher-income students often report greater satisfaction and better educational outcomes, reflecting broader college income segregation patterns (Cadet et al., 2024; Chetty et al., 2020; Song et al., 2019). Factors like pre-existing expectations, resource access, and institutional practices contribute to these inequalities (Carpentier, 2021). To foster equity, schools should diversify service offerings, adjust pricing strategies, develop inclusive communication, promote staff diversity training, and enhance facilities to cater to diverse student needs and backgrounds, potentially reducing segregation and increasing intergenerational mobility (Chetty et al., 2020).

When examining satisfaction by year level, we found no significant differences for product [$\chi 2(3)=6.053$, p=0.109], price [$\chi 2(3)=4.853$, p=0.183], place [$\chi 2(3)=1.240$, p=0.743], promotion

[$\chi2(3)=0.793$, $p=0.851$], and physical evidence [$\chi2(3)=6.556$, $p=0.087$]. However, significant differences were present for people [$\chi2(3)=9.094$, $p=0.028$] and process [$\chi2(3)=8.718$, $p=0.033$]. Notably, 4th-year students rated "people" significantly higher than other students, while 2nd-year students rated "process" significantly lower. This aligns with findings that second-year students often experience a "sophomore slump," characterized by decreased satisfaction and difficulties adapting, while fourth-year students may have higher satisfaction due to stronger relationships and increased involvement (Webb & Cotton, 2018; Goodwin & Schreiner, 2018; Birbeck et al., 2021; De Sisto et al., 2021). For academic program, there was no significant difference in satisfaction with place [$\chi2(3)=5.492$, $p=0.064$]. Yet, significant differences were observed for product [$\chi2(3)=12.627$, $p=0.002$], price [$\chi2(3)=17.445$, $p=0.000$], promotion [$\chi2(3)=9.174$, $p=0.010$], people [$\chi2(3)=12.758$, $p=0.002$], process [$\chi2(3)=8.217$, $p=0.016$], and physical evidence [$\chi2(3)=13.881$, $p=0.001$], with College of Arts and Sciences (CAS) students consistently rating these areas higher. This could stem from CAS's superior academic offerings, faculty expertise, resources, effective promotional strategies, perceived value, and streamlined administrative processes (Valdez et al., 2020; Borishade et al., 2021; Genovate & Madrigal, 2021; Haverila et al., 2021). These findings underscore the importance of targeted interventions to enhance student experiences across different year levels and academic programs.

CONCLUSION

This study revealed that while college students generally report high satisfaction with school services, significant differences exist based on sex, income, year level, and academic program, underscoring the need for customized service delivery. The research also highlighted the notable impact of pricing and physical infrastructure on student perception, along with varying satisfaction levels across different academic programs. Despite its valuable insights for enhancing the student experience—such as prompting administrators to focus on areas like price and facilities and guiding the marketing team to leverage strengths and address feedback.

LIMITATION OF THE FINDINGS

While the study offers valuable insights, it's important to recognize its limitations. The findings, derived from a single institution and based on self-reported data, may not generalize to other educational settings and could be subject to reporting biases. Additionally, the study focuses on satisfaction levels without exploring the underlying reasons, which restricts the depth of understanding and the ability to draw comprehensive conclusions about student experiences.

DIRECTION FOR FUTURE RESEARCH

To better understand student satisfaction in Catholic schools, future research should use a variety of methods. Qualitative studies, like interviews, could reveal the reasons for satisfaction levels, while longitudinal studies could track changes over time. Comparative analyses with other types of schools would highlight the unique factors at play in Catholic education. It would also be beneficial to expand the scope to include more stakeholders, such as parents, alumni, and faculty, to get a more complete picture. Finally, investigating the link between student satisfaction and academic achievement, retention, and post-graduation success could demonstrate the long-term value of investing in these initiatives, helping Catholic schools develop more effective strategies to improve the student experience.

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A Study on the Effectiveness of South Korea's LINC Project for Promoting Industry-University Cooperation

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ABSTRACT

This study aims to evaluate the effectiveness of South Korea's representative industry-university cooperation funding project, the Leaders in INdustry-university Cooperation (LINC) program, by applying a panel analysis (fixed-effects model), and to draw policy implications for government-led financial support for universities. The model was designed to separately assess both the treatment effect of LINC participation and the treatment intensity effect based on the amount of funding received. The treatment effect model includes a dummy variable for LINC participation to compare the outcomes between participating and non-participating universities, while the treatment intensity model evaluates the effect of funding scale among LINC-participating institutions. The fixed-effects panel analysis revealed that variables with a statistically significant positive association with LINC participation and funding scale include the proportion of students completing capstone design programs and technology transfer income per full-time faculty member. In contrast, variables with a negative association include domestic research output, employment rate, and the proportion of students completing four-week internships. Based on these findings, several recommendations are proposed to enhance the long-term effectiveness of industry-university collaboration: (1) Universities need to expand problem-based curricula such as capstone design programs; (2) The government is required to implement policy measures to increase universities' technology transfer income, a key performance indicator of academic-industry collaboration; (3) Institutional support must be strengthened to facilitate collaboration among local governments, industries, and universities to secure a wide range of field training providers and promote high-quality internships; and (4)to more accurately assess LINC's impact on employment outcomes, further analyses are required to be limited to departments that directly participate in the LINC project.

Keywords: LINC Project, Funding Project for Industry-University Cooperation, Fixed Effects Model, Treatment Effect, Treatment Intensity Effect

INTRODUCTION

The Leaders in Industry-University Cooperation+ (LINC+) Project is one of South Korea's flagship government-funded programs initiated by the Ministry of Education to promote university-industry collaboration. From 2017 to 2021, approximately 300 million dollars was invested in the initiative. The LINC+ project was launched under the vision of "co-prosperity between universities and local communities," with the strategic goals of strengthening national competitiveness through fostering "industry-leading universities," expanding employment and entrepreneurship opportunities for youth, and supporting innovation in small and medium-sized enterprises (SMEs). To achieve these goals, the project focused on expanding the autonomy and institutionalization of university-industry partnerships, enhancing their diversity and sustainability, and strengthening job competencies through demand-driven, customized education (Namgoong et al., 2020).

Beginning in 2025, the Ministry of Education is introducing a new governance framework called the Regional Innovation System & Education (RISE), which shifts the leadership of university funding from central government to local. Under this system, most university financial support programs—including LINC+—are being integrated into the RISE framework. Local governments are expected to play a central role in supporting regional universities, with a focus on cultivating locally-rooted talent, enhancing cooperation among universities, industries, and research institutes, revitalizing vocational and lifelong education, and addressing regional challenges. The ultimate objective is to establish a regional development ecosystem in which talent development, employment and entrepreneurship, and local settlement are linked systematically (Ministry of Education, 2023).

At this pivotal moment of transition from central to local governance in higher education policy, the revitalization of regionally grounded university-industry cooperation has become increasingly critical. Therefore, it is necessary to thoroughly assess the outcomes of the Ministry of Education's previous flagship program for university-industry collaboration to identify strategies that can maximize the impact of similar initiatives under the new RISE framework. This study aims to evaluate the effectiveness of the LINC+ project by applying a fixed effects panel model focusing on performance indicators related to university-industry collaboration. This study aims to systematically analyze the effectiveness of the LINC+ project by focusing on performance indicators related to industry-university cooperation using a panel fixed effect model.

Literature Review

Numerous studies have assessed the effectiveness of government-funded university-industry cooperation programs in South Korea using various performance indicators. Kim and Lee (2016), through multiple regression analysis of 41 LINC-participating universities (2012–2016), found that both the LINC budget and the capstone design completion rate positively influenced job placement rate of graduates. LINC funding was also associated with the size of revenue from sharing equipment and the number of industry-collaborative research projects per faculty.

Bae, Ra, and Hong (2016) applied Propensity Score Matching (PSM) to compare LINC and non-LINC universities, finding higher rates of field training participation and technology transfer cases in LINC institutions. However, no significant differences were observed in other indicators such as capstone design completion, entrepreneurship education hours, or employment rates. Using a Generalized Estimating Equation (GEE) model, Lee et al. (2017) analyzed 66 LINC universities and reported improvements in field training, capstone design, workforce development, R&D output, startup funding, and technology transfer. Yet, employment rates did not differ significantly.

Nam et al. (2022) used Difference-in-Differences (DID) analysis with GOMS data and found that LINC participation improved labor market competitiveness—raising regular employment rates, hourly wages, career program participation, and student satisfaction. Kim and Kim (2022) compared 50 LINC+ universities (2017–2019) by budget allocation type, grouping them into "education and

engagement focused" and "infrastructure focused." While the latter showed higher enrollment in contract-based departments, no other significant performance differences emerged. Methodologically, most prior studies fall into regression-based (e.g., Kim & Lee, 2016; Kim & Kim, 2022). However, regression models face omitted variable bias due to unobserved institutional factors, and PSM, while partially addressing endogeneity, relies on observable characteristics and does not measure pre- and post-treatment changes (Nam et al., 2022).

To overcome these limitations, this study employs a fixed effects panel model. Compared to cross-sectional or time-series data, panel analysis enhances estimation efficiency by increasing degrees of freedom and reducing multicollinearity. It also controls for unobserved heterogeneity (Lee, 2001; Jeon et al., 2004) and estimation errors in time- or region-specific data (Baltagi, 2005), making it well-suited for policy evaluation.

RESEARCH METHOD

3.1 Data and Variables

To evaluate the effectiveness of the LINC+ project, this study utilized key indicators of university-industry cooperation that are publicly available through the University Information Disclosure System. As summarized in Table 1, the dependent variables included: employment rate, the proportion of students completing field training programs, the proportion of students completing capstone design programs (4-week, 8-week, and 12-week durations), technology transfer income per faculty member, domestic research output per full-time faculty member, and international research output per full-time faculty member. The sample consisted of 60 universities that participated in the LINC+ project and a comparison group of non-participating universities. The main independent variable was LINC+ project participation, with an additional explanatory variable measuring the amount of project funding received by participating institutions. Control variables included institutional characteristics such as type of control (public or private), geographic location (metropolitan or non-metropolitan), and institutional size (enrollment scale).

<Table 1> Definition of Variables

Variables		Definition of Variables
Dependent Variables	Employment rate (%)	KPI 1: Percentage of employed graduates)
	Field training completion rate (%)	KPI 2: Proportion of enrolled students who completed 4-week field training
		KPI 3: Proportion of enrolled students who completed 8-week field training
		KPI 4: Proportion of enrolled students who completed 12-week field training
	Capstone design completion rate (%)	KPI 5: Proportion of enrolled students who completed capstone design courses
	Domestic research output per faculty	KPI 6: Number of domestic publications (KCI-listed or higher) per full-time faculty member
		KPI 7: Number of SCI(E)/SCOPUS-indexed publications per full-time faculty member
	Technology transfer income per faculty (log)	KPI 8: Natural log of (technology transfer income per full-time faculty member + 1)
Independent Variables	LINC+ participation	Treatment effect of the project: 1 = Participating, 0 = Not participating
		Treatment intensity effect : Natural log of (annual LINC+ project funding + 1)
Control Variables	LINC participation	1 = Participated in LINC project; 0 = Not participated
	Type of control	1 = National/Public; 0 = Private
	University location	1 = Metropolitan; 0 = Non-metropolitan

University size	1 = 5,000~10,000; 0 = Otherwise	
	1 = 10,000 or more; 0 = Otherwise	

<Table 2> Descriptive Analysis of Dependent Variables

Year	KPI 1: Employment rate (%)		KPI 2: Field training completion rate (%) –4 weeks		KPI 3: Field training completion rate (%) –8 weeks		KPI 4: Field training completion rate (%) –12 weeks	
	N	M	N	M	N	M	N	M
2011	183	60.77	-	-	-	-	-	-
2012	184	61.42	-	-	-	-	-	-
2013	190	60.06	-	-	-	-	-	-
2014	186	58.80	223	2.29	223	0.64	223	0.54
2015	188	58.43	222	2.57	222	0.65	222	0.55
2016	188	65.12	221	2.21	221	0.65	221	0.60
2017	190	62.87	162	3.00	162	2.24	162	1.41
2018	190	63.95	154	3.58	154	2.53	154	1.68
2019	190	63.96	153	2.79	153	1.66	153	1.26
2020	189	62.09	149	1.74	149	1.34	149	1.05
2021	-	-	134	0.53	134	0.62	134	1.05
Year	KPI 5: Capstone design completion rate (%)		KPI 6: Domestic research output per faculty		KPI 7: International research output per faculty		KPI 8: Technology transfer income per faculty	
	N	M	N	M	N	M	N	M
2011	97	5.46	221	0.65	221	0.15	100	593
2012	105	8.86	218	0.69	218	0.17	114	608
2013	113	10.71	218	0.68	218	0.19	113	610
2014	118	10.96	218	0.70	218	0.20	119	717
2015	119	11.67	218	0.66	218	0.21	126	830
2016	127	12.68	218	0.64	218	0.20	122	988
2017	138	12.16	215	0.65	215	0.21	131	851
2018	138	13.33	215	0.63	215	0.21	128	997
2019	140	14.51	215	0.63	215	0.22	125	1,023
2020	141	14.18	215	0.61	215	0.22	129	1,049
2021	143	14.52	213	0.60	213	0.23	121	1,388

3.2 Research Model

The fixed effects panel model allows for correlation between unobservable characteristics (error term) within the analysis unit—such as universities or individuals—and the predictor variables. This assumption enables the estimation of the unique effect of the explanatory variables on the dependent variables by controlling for time-invariant characteristics. To examine the effects of the LINC+ project on university-industry cooperation, this study designed a 2×2 program effectiveness analysis model, as shown in <Table 3>.

The model distinguishes between the treatment effect (based on whether the institution received the program) and the treatment intensity effect (based on the scale of funding), thus allowing for a more nuanced analysis of program impact. Additionally, to account for differences among participating universities, the model separately estimates the treatment effect and treatment intensity effect by institutional characteristics. To validate the use of a fixed effects model within the panel analysis framework, an F-test was conducted. Moreover, in order to assess the effects according to institutional characteristics that can be examined in a random effects model, interaction terms between treatment variables and control variables were constructed to test the heterogeneous effects of the LINC+ project across university types.

<Table 3> Analysis Model of LINC+ Project Effectiveness

Category	Project Participation Model	University Characteristics Model
Treatment Dummy Variable (Project Participation)	Model I-1	Model II-1
Treatment Intensity Variable (Project Funding)	Model I-2	Model II-2

Model I is a model for analyzing the **treatment effect of LINC+ project participation.** Model I-1 examines the effect of binary project participation, while Model I-2 examines the effect of the size of project funding. These models are specified in Equation (1):

$$y_{it} = \beta_0 + \beta_1 d_{it} + \alpha_i + \tau_t + \delta_g \cdot t + u_{it} \qquad (1)$$

i denotes the individual university, t denotes the year, y_{it} is the quantitative performance indicator for university i in year t, which corresponds to one of five dependent variables. d_{it} represents the **treatment variable** of the LINC+ project. The treatment intensity variable d_{it} represents the **natural log of the funding** received by university i in year t. To address cases where the funding amount is zero, it is specified as: $d_{it} = \log(\text{Funding}_{it} + 1)$. α_i represents the **university fixed effect,** which controls for time-invariant differences in performance outcomes across universities. τ_t captures **year fixed effects**, accounting for year-specific shocks that affect all universities in the sample. $\delta_g \cdot t$ controls for **linear time trends** specific to each type of LINC+ project not captured by τ_t. A model that assumes $\delta_g = 0$ for all g would imply **common trends across groups,** but this study explicitly estimate δ_g to account for the possibility that common trends may not hold.

Model II is designed to assess the **treatment effect of LINC+ participation conditional on university characteristics.** Model II-1 examines how the effect of project participation varies by institutional attributes, and Model II-2 assesses how the **funding scale effect** differs across university types. This is specified in Equation (2):

$$y_{it} = \beta_0 + [\sum_{h=1}^{3} \beta_1^h d_{it}^h] + \alpha_i + \tau_t + \delta_g \cdot t + u_{it} \qquad (2)$$

Equation (2) allows for heterogeneity in project effects across different subgroups h representing interaction terms between institutional characteristics and the project participation or funding variable. Specifically, the subgroups are defined as follows: h=1: national/public university group receiving LINC+ support, h=2: Universities located in the Seoul Metropolitan Area, h=3: Large-sized universities, h=4: Medium-sized universities,h=5: Universities that participated in LINC project.

RESULT

The results of the analysis on the effect of LINC+ project participation (Model I-1) and project funding scale (Model I-2), while controlling for university characteristics, are presented in Table 4 and Table 5. First, the analysis of the treatment effect based on project participation (Model I-1) shows that LINC+ participation has a statistically significant effect on the capstone design completion rate among enrolled students ($p < .001$) and the log-transformed technology transfer income per full-time faculty member ($p < .05$). On the other hand, negative correlations were observed between LINC+ participation and the following indicators: Graduate employment rate ($p < .05$), Domestic research output per full-time faculty member ($p < .05$), and Field training completion rate (4 weeks) among enrolled students ($p < .01$).

< Table 4>. Analysis of LINC+ Project Effectiveness (Model I-1)

Category		KPI1	KPI2	KPI3	KPI4	KPI5	KPI6	KPI7	KPI8
Treatment Effect		-1.571*	-1.402**	1.686	0.341	5.094***	-0.058*	0.014	0.333*
Year Fixed Effect	2012	0.646*	-	-	-	3.025*	0.021	0.021***	0.036
	2013	-0.264	-	-	-	5.171***	0.014	0.035***	0.086
	2014	-1.882***	-	-	-	5.649***	0.033	0.045***	0.357**

	2015	-2.317***	0.279*	0.016	0.014	6.480***	-0.004	0.061***	0.628***
	2016	4.371***	-0.095	0.004	0.056	7.728***	-0.032	0.053***	0.812***
	2017	2.821***	0.719*	0.761	0.590*	5.235***	-0.007	0.049***	0.656***
	2018	3.900***	1.252*	0.971	0.817**	6.246***	-0.022	0.055***	0.710***
	2019	3.910***	0.425	0.084	0.391	7.626***	-0.024	0.057***	0.770***
	2020	1.803**	-0.569*	-0.289	0.152	7.327***	-0.05	0.060***	0.783***
	2021	-	-2.026***	-1.190**	0.122	7.798***	-0.055*	0.074***	0.991***
Constant		60.644***	2.624***	0.794***	0.645***	5.031***	0.669***	0.152***	6.333***
N		1,878	1,418	1,418	1,418	1,379	2,384	2,384	1,328

* p<0.05, ** p<0.01, *** p<0.001

The amount of LINC+ project funding (Model I-2) was found to have a **positive effect** on the **capstone design completion rate** among enrolled students ($p < .001$) and the **log-transformed technology transfer income per full-time faculty member ($p <$** .01). However, it showed a **negative association** with the **graduate employment rate** ($p < .05$), the **4-week field training completion rate** among enrolled students ($p < .05$), and the **domestic research output per full-time faculty member** ($p < .01$).

< Table 5>. Analysis of LINC+ Project Effectiveness (Model I-2)

Category		KPI1	KPI2	KPI3	KPI4	KPI5	KPI6	KPI7	KPI8
Funding Effect		-0.069*	-0.049*	0.071	0.014	0.254***	-0.003**	0.001	0.016**
Year Fixed Effect	2012	0.646*	-	-	-	3.011*	0.021	0.021***	0.037
	2013	-0.264	-	-	-	5.160***	0.014	0.035***	0.087
	2014	-1.883***	-	-	-	5.637***	0.033	0.045***	0.358**
	2015	-2.318***	0.279*	0.016	0.014	6.467***	-0.004	0.061***	0.629***
	2016	4.371***	-0.095	0.004	0.056	7.718***	-0.032	0.053***	0.813***
	2017	2.763***	0.568*	0.853	0.612*	5.207***	-0.008	0.050***	0.661***
	2018	3.838***	1.092	1.071	0.840**	6.240***	-0.024	0.056***	0.718***
	2019	3.852***	0.268	0.179	0.413	7.598***	-0.025	0.058***	0.776***
	2020	1.748**	-0.726**	-0.196	0.174	7.287***	-0.051*	0.061***	0.788***
	2021	-	-2.192***	-1.091**	0.145	7.762***	-0.056*	0.075***	0.996***
Constant		60.644***	2.621***	0.796***	0.645***	5.042***	0.669***	0.152***	6.332***
N		1,878	1,418	1,418	1,418	1,379	2,384	2,384	1,328

* p<0.05, ** p<0.01, *** p<0.001

The results of the analysis on the effect of LINC+ project participation (Model II-1) and the effect of project funding amount (Model II-2), considering university characteristics, are presented in Table 5 and Table 6, respectively. The analysis of project participation effects by institutional characteristics (Model II-1) shows that no significant differences were found based on the type of university establishment (i.e., national/public vs. private). However, the participation of universities located in the Seoul Metropolitan Area was positively associated with the graduate employment rate ($p < .05$) and international research output per full-time faculty ($p < .01$). In contrast, participation by metropolitan universities showed a negative association with the log-transformed technology transfer income per faculty member. In terms of university size, medium-sized universities that participated in the LINC+ project disclosed a lower rate of 4-week field training completion among enrolled students compared to other institutions ($p < .05$). On the other hand, both medium-sized and large-sized universities demonstrated higher capstone design completion rates than small-sized universities ($p < .01$ and $p < .05$, respectively).

Regarding technology transfer income, medium-sized participating universities achieved significantly higher results ($p < .01$). LINC+ participating universities, overall, showed a negative correlation with graduates' employment rates ($p < .01$). Specifically, medium-sized universities recorded a 3.11 percentage point lower rate of 4-week field training completion. The capstone design completion rate

was 6.23 percentage points higher in medium-sized universities and 6.34 percentage points higher in large-sized universities, compared to small-sized institutions. As for domestic research output per full-time faculty, medium-sized universities had 5.9% lower output, and large-sized universities had 7.3% lower output than their counterparts. On the other hand, international research output per faculty member was 3.8% higher in metropolitan-area universities that participated in the LINC+ project. Conversely, the technology transfer income per faculty member was 26.88% lower in metropolitan universities, but 74.4% higher in medium-sized universities.

< Table 6>. Analysis of LINC+ Project Effectiveness (Model II-1)

Category		KPI1	KPI2	KPI3	KPI4	KPI5	KPI6	KPI7	KPI8
Interaction between university characteristics and treatment effect	National/Public	0.142	-0.166	0.255	0.133	-0.972	-0.008	0.011	-0.215
	Seoul Metropolitan Area	2.592*	2.000	6.493	3.317	-4.948	0	0.038**	-0.313*
	Medium-sized	-0.643	-3.111*	-5.012	-2.471	6.227**	-0.059*	-0.014	0.556**
	Large-sized	-0.434	-2.619	-5.812	-2.915	6.339*	-0.073*	-0.018	0.346
	LINC Participation	-1.850**	0.714	5.116	2.049	-0.224	0.006	0.02	-0.005
Year Fixed Effect	2012	0.646*	-	-	-	3.024*	0.021	0.021***	0.039
	2013	-0.264	-	-	-	5.196***	0.014	0.035***	0.089
	2014	-1.883***	-	-	-	5.692***	0.033	0.045***	0.362**
	2015	-2.317***	0.279*	0.016	0.014	6.525***	-0.004	0.061***	0.634***
	2016	4.371***	-0.095	0.004	0.056	7.801***	-0.032	0.053***	0.819***
	2017	2.795***	0.796**	1.072	0.710*	5.737***	-0.007	0.049***	0.693***
	2018	3.875***	1.332*	1.293	0.941**	6.752***	-0.022	0.056***	0.748***
	2019	3.884***	0.506	0.407	0.516*	8.134***	-0.024	0.058***	0.808***
	2020	1.778**	-0.487*	0.039	0.278	7.830***	-0.05	0.060***	0.821***
	2021	-	-1.941***	-0.845***	0.255	8.300***	-0.055*	0.074***	1.030***
Constant		60.644***	2.626***	0.801***	0.648***	4.956***	0.669***	0.152***	6.327***
N		1,878	1,418	1,418	1,418	1,379	2,384	2,384	1,328

* p<0.05, ** p<0.01, *** p<0.001

The analysis of the effect of project funding scale, considering university characteristics, revealed that—similar to Model II-1—the relative effect based on university location was not statistically significant. However, among universities located in the Seoul Metropolitan Area, the scale of LINC+ project funding showed a positive effect on graduates' employment rate ($p < .05$) and international research output per full-time faculty member ($p < .01$), while it demonstrated a negative association with the log-transformed technology transfer income per faculty member ($p < .05$).

With respect to university size, the scale of project funding for medium-sized and large-sized universities showed a positive association with both the capstone design completion rate among enrolled students and the log-transformed technology transfer income per faculty member. However, in large-sized universities, project funding scale was negatively associated with domestic research output per full-time faculty. In contrast to Model II-1, the analysis did not find statistically significant effects of funding scale based on university size on graduates' employment rate or 4-week field training completion rate.

Overall, the scale of project funding for LINC+ participating universities was found to have a negative association with the graduate employment rate.

< Table 6>. Analysis of LINC+ Project Effectiveness (Model II-2)

Category		KPI1	KPI2	KPI3	KPI4	KPI5	KPI6	KPI7	KPI8
	National/Public	0.013	-0.005	0.255	0.133	-0.027	0	0	-0.009

Interaction between university characteristics and Project Funding	Seoul Metropolitan Area	0.122*	0.077	6.493	3.317	-0.233	0	0.002**	-0.016*
	Medium-sized	-0.03	-0.125	-5.012	-2.471	0.254**	-0.002	-0.001	0.026**
	Large-sized	-0.03	-0.117	-5.812	-2.915	0.278*	-0.003*	-0.001	0.017*
	LINC Participation	-0.080*	0.044	5.116	2.049	0.026	0	0.001	0.001
Year Fixed Effect	2012	0.646*	-	-	-	3.008*	0.021	0.021***	0.039
	2013	-0.264	-	-	-	5.179***	0.014	0.035***	0.089
	2014	-1.883***	-	-	-	5.675***	0.033	0.045***	0.362**
	2015	-2.318***	0.279*	0.016	0.014	6.507***	-0.004	0.061***	0.634***
	2016	4.370***	-0.095	0.004	0.056	7.778***	-0.032	0.053***	0.819***
	2017	2.750***	0.619*	1.072	0.710*	5.721***	-0.009	0.050***	0.693***
	2018	3.825***	1.144	1.293	0.941**	6.754***	-0.024	0.056***	0.749***
	2019	3.833***	0.345	0.407	0.516*	8.082***	-0.026	0.059***	0.804***
	2020	1.729**	-0.647**	0.039	0.278	7.769***	-0.052*	0.061***	0.816***
	2021	-	-2.109***	-0.845***	0.255	8.242***	-0.057*	0.075***	1.025***
Constant		60.645***	2.622***	0.801***	0.648***	4.976***	0.669***	0.152***	6.327***
N		1,878	1,418	1,418	1,418	1,379	2,384	2,384	1,328

* p<0.05, ** p<0.01, *** p<0.001

CONCLUSIONS

Based on the panel fixed effects model comparing LINC+ participating and non-participating universities, the following conclusions and recommendations are drawn: First, consistent with prior findings on the original LINC project (Kim & Lee, 2016; Lee et al., 2017), this study confirms that LINC+ participation (Model I-1) has a statistically significant positive effect on the capstone design completion rate. Project funding scale (Model I-2) also shows a similar positive effect. These findings support the continued promotion of problem-solving-oriented programs like capstone design within the Regional Innovation System & Education (RISE) framework.

Second, technology transfer revenue per full-time faculty member (log-transformed) showed a statistically significant effect in both Models I-1 and I-2. Technology transfer fees are payments made by companies to universities that own R&D results in exchange for technology transfer. They represent the ultimate outcome of university-industry collaborative activities, such as industry-university joint research, technology development, patents, and prototype production. Therefore, they are typically generated at the advanced stage of industry-university collaboration. This suggests that universities that participated in the LINC+ project after the LINC project experienced increased technology transfer fees as their industry-university collaboration activities became more sophisticated. Policy support is needed to support universities in increasing technology transfer fees, the ultimate outcome of industry-university collaboration.

Third, the 4-week field training completion rate showed a negative correlation in both participation and funding models, whereas the 8- and 12-week indicators were not significant. In Model II-1, medium-sized universities had relatively lower 4-week completion rates; in Model II-2, institutional size did not significantly moderate the funding effect. These findings suggest that LINC+ universities prioritized longer-term field training, aligning with the program's focus. RISE should continue supporting longer (12-week or more) field placements through expanded institutional partnerships.

Finally, Participation in the LINC+ program showed a negative correlation with graduate employment rates. This finding is interpreted as a result of the practical limitations of using the employment rate of

all graduates as an outcome variable, as only some departments participate in the LINC program. Furthermore, employment rates themselves are determined not solely by university efforts but rather through the interaction of various environmental factors surrounding the university. For a more rigorous analysis, it is necessary to analyze the effectiveness of the program on employment rates between participating and non-participating universities, focusing solely on departments participating in the LINC+ program.

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Case Study: Utilizing Self-Analysis & Diagnosis of Major Curriculum and University IR

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ABSTRACT

This study was conducted for the purpose of deriving the current status of operation and major curriculum self-analysis and diagnosis system implemented at Daegu University. In order to implement this system, Daegu University abolished the existing department competency evaluation and established an institutional foundation to strengthen student success, university competitiveness, and the major curriculum reorganization and operation capacity of individual departments. Daegu University has been operating a data-based major education curriculum IR system in which all departments of the university participate since 2023, and is supporting autonomous major education curriculum improvement and feedback by developing a total of 4 areas and 20 evaluation criteria. As a result of the operation of this system, it was suggested that the sustainability of the data system for major education courses within universities should be improved, guidelines should be developed to expand and operate non-major/integrated majors within universities to expand students' major choices and prepare for a convergence society, and a linkage system with various projects within universities should be established and stable financial resources should be secured.

Keywords: major curriculum self-analysis and diagnosis system, data-based major education curriculum IR system, evaluation criteria

INTRODUCTION

Reforming major-specific curriculums is a cornerstone of higher education innovation. The curriculum serves as both the core of university education and its support system, reflecting institutional competitiveness and underpinning student success. The term "curriculum" comes from the Latin currere, meaning a race course with a start and finish. It should be viewed not as static subjects but as a dynamic cycleplan, implement, assess, and continuously improve. A major curriculum specifically must follow this continuous, performance-linked cycle to be meaningful.

Universities have developed various systems quality management (QM) and performance management (PM)to facilitate curriculum reform and accreditation. The most common system is a self-accreditation program for curricula, featuring custom indicators, processes, and feedback mechanisms. There are also accreditation systems for liberal arts courses and extracurricular programs.

However, such "self-accreditation" systems often fall short in promoting faculty-led, sustainable curriculum reform: Implementation requires faculty understanding of indicators, target-setting, data collection, and ongoing maintenance. These systems need committed human resources, external committee members, and funding, which are increasingly limited.

This issue paper introduces Daegu University's 2023 pilot of the self- Analysis & Diagnosis System for Major Curricula, focusing on quality assurance, performance linkage, IR-data integration, and continuous improvement. This case is notable for its intentional design to be connected from the start with the university's IR system, offering potential insights for other institutions.

Literature Review and Framework

2.1 Literature Review

Since the 2000s, as the accountability of university education has been emphasized, the concept of quality management has also been receiving attention. The OECD has also developed the 'Guideline for Cross-Border Higher Education' to manage the quality of university curricula (Park So-young, 2024). Quality management of university curricula refers to the process by which universities, as educational institutions, continuously improve their curricula so that all students can achieve their learning goals (Lee Seon-young and Yoo Ha-ra, 2001; Glatthorn, 2004).

The most necessary thing in this process is a systematic procedure to maintain and improve students' academic standards. This procedure includes the development, operation, evaluation, and feedback of curricula that reflect the university's educational goals, the educational goals pursued by each department and major, and social needs. In particular, standards, policies, and procedures for whether these procedures are being systematically operated should also be included. Reflecting this, Korean universities are implementing policies to establish a curriculum or subject certification system or conduct continuous monitoring. Quality management of university curriculum has already shifted from the emphasis on input factors such as securing excellent facilities and equipment, excellent faculty, and securing finances to the emphasis on output factors that focus on the process dimension such as the quality of the curriculum and learning activities and the performance of faculty and students (Lee Jeong-mi and Choi Jeong-yoon, 2008).

The 'Guideline for Cross-Border Higher Education' developed by the OECD was created for the purpose of protecting students and universities from low-quality education services and continuously improving the quality of education to provide high-quality higher education programs across borders. This guideline has greatly contributed to improving the international compatibility of evaluation systems and establishing a quality assurance system at the university level worldwide. The goal of this guideline is to create a learning environment that is helpful to students while maintaining educational standards across borders. Quality assurance of higher education across borders includes cooperation with accredited accreditation agencies, maintaining transparent information about programs and faculty

qualifications, establishing language proficiency requirements, providing strong student support services, implementing a continuous quality assurance system, ensuring that faculty meet international standards, providing appropriate infrastructure and resources, entering into agreements with partner institutions, complying with legal requirements, and promoting cultural sensitivity (Lee Byeong-sik, Chae Jae-eun, 2007).

In order to enhance the accountability and competitiveness of higher education, quality management of university curricula should be further emphasized. In Korea, Institutional Accreditation is a system that determines whether universities meet the basic requirements that universities must have as higher education institutions and announces the results to society to provide social and international trust. The subject of accreditation is recognized as an official quality management mechanism in that university programs cover the entire university institution (Korea University Evaluation Institute, 2024).

The certification elements include five areas: university philosophy and management, curriculum and teaching and learning, faculty and staff, student support and facilities, university performance and social responsibility, and 30 evaluation criteria. This system is certified every five years, and as of 2025, the third cycle of certification is being implemented. In Korea, the certification results are directly linked to university financial support. The evaluation criteria applied in the university institutional evaluation and certification are also used as a basis for individual universities to implement their own certification, and they provide useful information for promoting quality management of university curriculum. However, when applying the certification system implemented at the national level to universities, there are limitations in the certification subject, certification method, and utilization of certification results.

2.2 Analysis Framework and Goal

Daegu University's self-analysis and diagnosis system is unique in that it embodies OECD guidelines and produces results that reflect the autonomy and characteristics of each department. The methods used in this study are as follows:
(1) Literature analysis: Analyze literature on quality management of university education and derive implications
(2) Case analysis: Present a specific case of Daegu University's self-major curriculum diagnostic analysis system and derive implications
(3) Deriving implications: Evaluation of the Effectiveness of IR Linkage in Curriculum Redesign by Department, Proposing a plan to improve the university system

RESULT: Daegu University's Self-Analysis & Diagnosis System

Result: Daegu University's Self-Analysis & Diagnosis System

3.1. Reasons for Implementation

Until 2022, Daegu University employed a departmental capability evaluation system, which did not effectively encourage curriculum development. Its indicators focused on departmental characteristics and performance, not curriculum redesign. It failed to respond to external demands like accreditation or innovation grants.

The university also mandated Continuous Quality Improvement (CQI) reports by departments, but these became overly perfunctory. A 2017 ACE-funded initiative set up an IR center and piloted curriculum accreditation, but lack of trust prevented deeper adoption. CQIs were separate from course-level CQIs, leading to disconnects.

Ultimately, existing systems lacked structure to foster voluntary, sustained, department-led innovation. In response, Daegu University merged previous systems into the new self- Analysis & Diagnosis System, backed by the Center for Major Competency Diagnosis with dedicated staff and IR integration.

3.2. System Overview

o Why It's Needed
- Major curricula require bottom-up reform led by departments, guided by IR-provided data.
- The system simplifies reporting by consolidating previous procedures, reducing departmental burden.

o Goals
- Enhance student learning outcomes and satisfaction.
- Build self-diagnostic capacity.
- Establish an IR-linked platform for sustainability.
- Prepare for the 4th cycle of institutional accreditation.
- Promote a culture of continuous, faculty-led improvement.

o Strategies
- Mandatory participation by 50 departments (excluding some accredited fields).
- Creation of a Major Competency Diagnosis Committee.
- Departments receive institutional data via templates.
- Integration with the existing DU Big Data System.
- Harmonization with other university programs.
- Align indicators with external accreditation bodies.

o Concept & Operation
- Departments self-analyze using criteria defined by the Center.
- Objectives: empower departments to evaluate progress toward institutional goals and plan improvements.
- Governed by the 2023 regulations, replacing older evaluation and CQI practices.

3.3. Implementation Details

o Criteria & Structure
- A handbook and data templates were distributed.
- 4 main areas with 23 sub-criteria, based on national accreditation standards and linked to existing programs.

o Analysis Process
- The following procedures are used to analyze the results of self-analysis and diagnosis of major curriculum by department. The Major Competency Diagnosis Center of the Education Innovation Institute is responsible for overall course management and feedback.

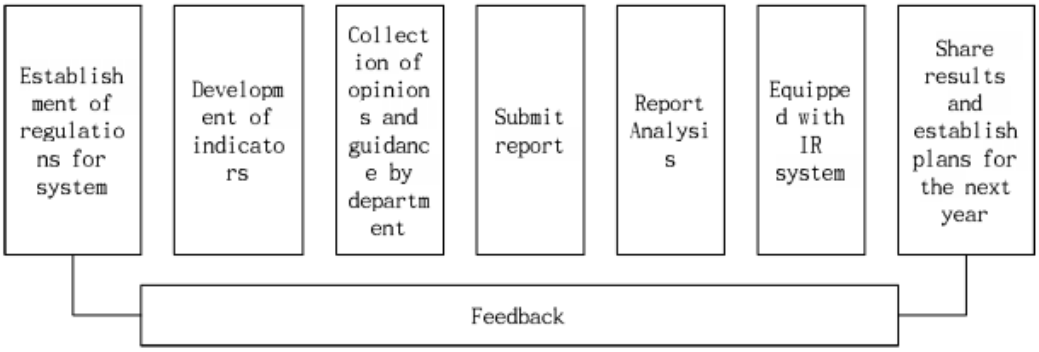

Figure 1: Analysis Process by DU Major Competency Diagnosis Center

3.4. Departments added their contextual examples

o Institutional Data Provision: University supplied 50 departments with data like enrollment patterns and course registration analyses.

o Key Focal Points: Criteria based on systematic, appropriate, and flexible curriculum design. Departments evaluated and documented how their curricula met these criteria using evidence.

o Handbook Contents: Included departmental data and guidance for each of the four areas to support report writing.

3.5 Diagnostic Areas in Detail

o Department Profile

- Offered data on trends, faculty, enrollment, retention, transfers, etc.

o Area I: Alignment with Institutional Goals

- Departments examined how their mission matched the university's, evaluating three criteria.

o Area II: Curriculum Design & Delivery

- Covered six criteria, including cross-listed courses, frameworks, and support programs, with a 3-year data reference.

o Area III: Curriculum Feedback & Improvement

- Nine criteria related to committees, satisfaction surveys, monitoring, and tangible revisions across courses.

o Area IV: Departmental Achievements & Context

- Departments reported on recruitment, retention, faculty efforts, external partnerships, SWOT/PEST analyses, and benchmarking.

- Overall Conclusions & Improvement Plans

- Each department provided a summary, improvement plan, and consulting requests.

3.6. 2023 Results

All 50 departments submitted reports. The Center issued monthly briefs summarizing criteria-based outcomes. Significant variation was found in extracurricular program reporting, committee activities, and improvement initiatives 10 departments requested external consulting, 20 opted in.

Table 1. 2023 Academic Year Analysis by Department and Indicator Overview

N0	Contents
2.3.	Many non-credit programs are not entered into the HEART extra-curriculum system.
2.4.	Need to update guidance on supporting completion of major courses - Other guidance: executive meetings, leaflet production, academic festivals, career roadmap production, mentoring, etc.)
3.1.	Number of Curriculum Management Committee meetings: 0 to 28
	Composition of the Industry-Academic Cooperation Committee: 1 to 10 external members
	Number of Industry-Academic Cooperation Committee meetings held: 1-11
3.2.	Whether or not a self-investigation of the major curriculum was conducted: A total of 20 departments (divisions)
3.3.	Major Curriculum Feedback and Improvement Achievements: New and eliminated courses, expanded industry-academic collaboration, strengthened practical courses, expanded cross-curricular offerings, expanded curriculum-linked extracurricular offerings, strengthened practical courses, expanded cross-curricular offerings, expanded curriculum-linked extracurricular offerings. Department (Division) Excellence Achievements: Curriculum Improvement, Student Performance, Faculty Performance, and Other
4.2.	Environmental analysis for future improvement of specialized education - SWOT and PEST analysis conducted for 19 departments and divisions - Benchmarking of other universities: 20 departments and divisions
Request for consulting	10 departments (divisions), 3 departments (divisions) upon request

3.7. 2024~2025 Follow-Up

The implementation of the self-analysis and diagnosis system in 2024~2025 will be implemented in the direction of checking how the major improvement items written by each department were reflected in the self-analysis and diagnosis report written in 2023.

The 2023 self-analysis and diagnosis report includes the contents of the future improvement plan written for each criterion. In 2024, the [major curriculum self-analysis and diagnosis system] feedback system was established by inputting the extent to which these improvement plans were implemented. In 2023, documents written in Hangul files were collected and checked one by one by department (division), but in 2024, all reports were uploaded as PDF files to the [DU Big Data System], the on-campus portal system menu, so that all departments (divisions) can check them.

Departments (divisions) can constantly access the [DU Big Data Analysis] system and check the contents written by other departments (divisions) by department/criterion.

Implications for IR & Major Curriculum Performance Management

4.1. Need to improve sustainability of major curriculum data system within universities

Major curriculum is a process of continuously checking and improving a wide range of areas, starting from the connection with the educational goals of the university, to organization and opening, operation, improvement, and feedback. Most universities have recently implemented [Department Certification System, Curriculum Certification System], etc., but they are showing limitations in inducing and checking such improvements. This is because it is an area where voluntary and professional participation of department (division) professors is required to support results

The [Major Curriculum Self-Analysis and Diagnosis System], first implemented at Daegu University, is a system that reorganizes available data within the university centered on departments, and departments independently check this and induce continuous improvement. In this respect, a more long-term approach strategy is needed to achieve continuous feedback and major curriculum innovation. IR

is an organization that supports policy decision-making by establishing a data system that can collect and analyze data dispersed within the university. There are various functions that need to be promoted in IR, but it should be continuously emphasized that the core should be placed on the operation of the major education curriculum.

The major education curriculum self-analysis and diagnosis system based on IR is possible only when professional personnel and consistent policies of the university are established, and support at the university level is required so that it can be established as a university system (including culture).

Daegu University's major education curriculum self-analysis and diagnosis system is operated as a separate system (DU Big Data System), but it should be designed so that it can be linked with the entire IR system of the university in the future to check the performance of the department (division). Select indicators that can check the core performance of the university[2] and monitor how each indicator is interrelated.

[Information disclosure] must be accompanied so that the performance of the self-analysis and diagnosis system linked to IR can be shared with members and directions for improvement can be sought. Daegu University continuously publishes monthly briefs and results reports, etc., and posts them on the website to provide information so that all members can check them. Each Because periodically sharing the results of operating and improving the major curriculum by department (division) is the most effective strategy for inducing participation from all departments.

4.2. Suggestions for future expansion of non-major/integrated majors, etc.

The recent direction of university innovation is being promoted toward expanding and operating non-major/integrated majors within universities in order to expand students' major choices and prepare for a convergence society. This is continuously emphasized and utilized as an indicator for the allocation of project expenses by university in the University Innovation Support Project, National University Promotion Support Project, related projects within the regional RISE system, and central government convergence talent development projects.

The [Major Curriculum Self-Analysis and Diagnosis System] established by Daegu University is not simply about maintaining a single department (division), but is aimed at fostering and preparing for the department's capacity to flexibly respond to non-majors and integrated majors in the future, and establishing an improvement system.

The university headquarters (respective center, etc.) should provide department (division) operation guidelines to flexibly respond to the external environment and support the organization and operation of systematic and appropriate major curricula. The self-analysis and diagnosis system should be used to rank departments or set certification cycles. It should be promoted in the form of a platform that supports continuous and flexible operation rather than a one-time method, so consistent support and guidelines at the university headquarters level are needed to sustain this system. The non-major and integrated major systems require professors who can implement the structure and content of the bachelor's degree system, major completion consultation, etc. To this end, efforts from departments (divisions) are necessary, but opportunities to improve professors' capabilities must be provided, and such efforts must be included in self-analysis and diagnosis. Various business linkages to support self-analysis and diagnosis of major curriculum.

[1] New student recruitment rate, current student recruitment rate, mid-term dropout rate, employment rate, etc.

4.3. Various business linkages to support self-analysis and diagnosis of specialized education courses

Daegu University operates a self-analysis and diagnosis system while simultaneously conducting department capacity enhancement projects (distribution of entire department business expenses) and professors' self-class improvement implementation studies, etc. Among the criteria included in the self-analysis and diagnosis system, major-related non-curricular programs, excellent department operation performance, etc., must all be accompanied by costs to be linked to meaningful results. Starting from 2024, department capacity enhancement project expenses[3] will be distributed to all departments (including newly established departments, excluding closed departments) to prevent mid-term dropouts, increase employment rates, and operate specialized programs by department. Each department is carrying out various non-curricular programs related to their majors, such as obtaining qualifications, field trips, mentoring, and special lectures, and is producing meaningful results, contributing to improving the rate of new student enrollment and the rate of enrollment of current students.

At the level of individual professors, the [Self-Class Improvement Implementation Research] program allows them to voluntarily and autonomously implement curriculum reform within the major curriculum. It is a flexible program that allows them to autonomously identify, research, and apply improvement measures that fit the characteristics of the subject, rather than applying a specific teaching method. The maximum achievement evaluation score is given to professors participating in this program.

Self-analysis and diagnosis of the major curriculum require professional manpower, but a monitoring system must also be established so that each department's (department's) improvement efforts can proceed without a hitch. In particular, the [DU Major Education Monitoring Group] operated by Daegu University is a channel through which students can inspect the major curriculum of the department (department) from their perspectives and positions and convey their opinions on improvement. It is also included as a sub-criterion of the self-analysis/diagnosis system, so each department (division) has a system to reflect it in the improvement and feedback of the major education curriculum.

It is necessary to operate consulting on the major curriculum on a regular and continuous basis, incorporating both external viewpoints and students' perspectives. It is possible to mainly utilize external experts (professors from the same department (division) of other universities, etc.), but it is appropriate to receive applications from the department (division). However, since the department (division) may not have appropriate expert information, the center in charge may also consider securing a pool of experts or establishing a network with other universities to utilize a mutual consulting system.

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[2] In 2025, it is expected that some departments will be changed to a public offering system that provides differentiated support for business expenses.

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Key Factors Influencing the Business Competitiveness of Thai Higher Education

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ABSTRACT

Background: Thailand's higher education system has expanded rapidly in recent decades to support economic modernization and international competitiveness. Despite this growth, Thai higher education institutions (HEIs) still struggle with quality, worldwide recognition, research output, and alignment with national priorities like Thailand 4.0. In the face of increasing global competition, educational institutions must address structural issues in order to become more attractive and sustainable in the local and worldwide education markets.
Objective: This study aims to (1) identify and analyze the key factors influencing the business competitiveness of Thai higher education institutions and (2) assess the implications of these factors for national policy and institutional practice.
Methodology: This study used a documentary research approach and qualitative content analysis to examine a range of secondary sources published between 2015 and 2024. These included government policy documents, institutional reports, statistical databases, and journal articles. The investigation, which employed thematic coding and triangulation to ensure validity, focused on recurring themes such as globalization, governance, research, curriculum, and financial sustainability.
Results: The results show that Thai HEI competitiveness is influenced by six key factors: (1) internationalization strategies; (2) internationalization and quality assurance and accreditation; (3) financial sustainability; (4) curriculum and program relevance; (5) institutional autonomy and governance; and (6) research and innovation capacity. Each of these factors—such as a lack of English-medium instruction, strict administration, undeveloped industrial connections, and financial limitations—presents both potential and systemic obstacles. Key topics that emerged were enhanced global participation and strategic alignment with national initiatives such as Thailand 4.0.
Conclusion: A multifaceted approach, including institutional innovation, regulatory reform, and international cooperation, is needed to increase Thai HEIs' business competitiveness. Universities need to become more autonomous, performance-driven, and flexible in order to keep up with the quickly evolving academic and job markets. To improve knowledge and inform more context-sensitive, evidence-based policies, future research should incorporate empirical studies, particularly from the viewpoints of staff and students.

Keywords: Higher Education Competitiveness, Thai Universities, Institutional Strategy, Educational Policy Reform

INTRODUCTION

The higher education landscape of Thailand has experienced major changes throughout recent decades, which showcase the country's wider socio-economic modifications alongside its goals to compete globally. Public institutions controlled the higher education sector until it experienced significant growth and privatization starting in the 1990s (Office of the Education Council [OEC], 2017). The expansion sought to provide broader access to higher education while addressing the needs of an expanding middle class and knowledge-based economic demands. The Thai educational landscape comprises more than 150 higher education institutions, which include public universities alongside private universities and specialized colleges that provide diverse academic programs for domestic students and international learners (UNESCO, 2020).

The Thai higher education sector undergoes structural expansion but continues to confront major difficulties in quality assurance and equitable access, along with program relevance. Recent analysis shows that Thai higher education institutions suffer from obsolete curricula alongside insufficient research contributions and fragile connections between universities and industry (ADB, 2022). The struggle of many Thai universities to fulfill global standards becomes clear from their underwhelming standings in worldwide university ranking systems. This situation has led policymakers and institutional leaders to advocate changes in institutional governance alongside curriculum updates and expanded international partnerships to strengthen institutional outcomes and improve worldwide recognition (OECD & UNESCO, 2016).

The "Thailand 4.0" initiative serves as the foundational element of educational reform in Thailand by seeking to develop the nation into an economy led by innovation. Higher education institutions must play a significant role in this transition through the production of highly skilled graduates and support for research initiatives that align with national development goals while also fostering innovation (Ministry of Higher Education, Science, Research and Innovation [MHESI], 2021). A strong framework to support institutional competitiveness is essential when higher education institutions align their operations with national innovation goals, specifically in curriculum relevance research, commercialization, and digital readiness.

The competitive position of Thai higher education institutions demands thorough analysis because of these underlying dynamics. Identifying how structural, operational, and strategic factors shape institutional competitiveness helps develop policies and strategies that strengthen Thai universities' position in the worldwide education market. Thailand needs to perform this analysis to improve the quality of education and economic outcomes while supporting sustainable growth in its higher education system.

Thai higher education serves as an essential driver for long-term economic growth through its contributions to human capital development and advancements in technology and innovation. Through Thailand 4.0 initiatives, the higher education system must deliver skilled graduates who will boost productivity and promote innovation across different sectors (Ministry of Higher Education, Science, Research and Innovation [MHESI], 2021). Universities now function as important economic contributors by connecting academic research with industrial implementation and enhancing national competitiveness beyond their traditional educational roles.

Higher education plays a vital role in combating social inequalities while advancing inclusive development. Quality tertiary education helps people secure better jobs and achieve greater earnings while advancing their social status, according to World Bank research from 2019. The Thai government has launched policies to expand educational access for rural students and those from low-income backgrounds to enhance equity. The state uses financial aid schemes alongside regional university development programs to make education a means for diminishing social inequalities, according to OEC's 2017 report.

Higher education institutions serve as important drivers for both civic involvement and cultural conservation in Thailand's rich socio-cultural environment. Universities function as centers for developing critical thinking skills alongside democratic involvement and ethical leadership training (Chomphupart & Pongwat, 2020). Universities build a knowledgeable and united society through their activities, which include community engagement programs alongside cultural and public service events. Thai identity development alongside global citizenship skills has emerged as a key focus of higher education reform in response to ASEAN integration and globalizing forces.

The ongoing investment and reform of Thailand's higher education system remain crucial for reaching sustainable development goals. The objectives of economic growth through innovation and labor market alignment connect deeply with social goals, including equity and cultural vitality. The strategic advancement of higher education stands as both an economic requirement and a moral duty that needs coordinated actions from policymakers, educators, and private sector entities (OECD & UNESCO, 2016).

Globalization has transformed higher education into a competitive international arena where countries compete to draw international students and research funding while also trying to recruit academic talent. Global competition in higher education has become significantly more intense due to student and faculty mobility growth, international university rankings development, and the expansion of cross-border education models (Altbach & Knight, 2007). Higher education institutions (HEIs) need to persistently pursue innovation and quality improvement while establishing unique characteristics to maintain their appeal and significance in the international arena.

Thailand's position in the global education market represents a strategic national priority beyond just prestige. The government has declared internationalization of higher education a foundational element of its Thailand 4.0 policy framework for advancing economic growth and human capital development (MHESI, 2021). Thailand's higher education institutions need to establish top-tier programs and obtain international accreditations while forming academic alliances with leading international universities. The government's actions target an improved international standing for Thai higher education institutions to attract local and global interest.

Standing out in today's competitive educational landscape needs more than building relationships with international institutions. Systemic and structural reforms must target curriculum relevance while enhancing teaching quality through digital integration and boosting research productivity. The delivery and impact of higher education worldwide have been transformed by global trends, including online and blended learning, artificial intelligence, as well as sustainable development goals (SDGs), according to Marginson (2019). Thai HEIs need to adapt their educational offerings to current global standards and local demands while managing both financial restrictions and regulatory requirements.

Thai universities face the threat of losing their most talented students and faculty members, who will opt for better-funded international institutions without strategic competitiveness. The situation may intensify brain drain while diminishing Thailand's ability to innovate and partake in the global knowledge economy. The improvement of Thai higher education's international competitiveness stands as an essential requirement. For sustainability and national development contributions in today's interconnected global landscape, institutions need to maintain agility while thinking ahead and building international connections (UNESCO, 2020).

Research Objectives

1. To identify and analyze the key factors influencing the business competitiveness of Thai higher education institutions (HEIs).
2. To assess the implications of these factors on policy and institutional practices.

Scope and Limitations

The research methodology used in this study is documentary analysis, which focuses on examining existing scholarly works and publicly available national education policy documents as well as institutional reports. Our objective is to methodically determine and analyze the essential elements that affect the business competitiveness of Thai higher education institutions (HEIs). Researchers use documentary analysis to investigate patterns and institutional behaviors without primary data collection limitations because it helps to synthesize and contextualize existing knowledge (Bowen, 2009). The study's conclusions draw from a diverse collection of sources such as reports from the Ministry of Higher Education, Science, Research and Innovation (MHESI), OECD, and UNESCO.

This national research examines the overall competitive positioning of Thailand's HEIs at a macro level instead of single institutions. The research targets general trends alongside strategic priorities and policy challenges that extend throughout Thailand's higher education sector. The research documents chosen span the past ten years to maintain relevance to ongoing policy discussions and worldwide competitiveness issues. The research framework provides a detailed and systematic examination of both policy factors and institutional elements that shape competitiveness in Thailand (Scott, 2014).

The study faces multiple limitations that need to be acknowledged. The study's analysis remains confined to previously published or reported materials because it relies on secondary data. Documents provide detailed information but fail to depict immediate institutional shifts and undocumented stakeholder experiences (O'Leary, 2017). Internal university documents and unpublished evaluations, which would provide deeper insights into institutional performance and strategic planning, remain inaccessible due to confidentiality and a lack of publication. The availability and accessibility of current high-quality documents create another significant constraint. The utility of policy documents and institutional reports for comprehensive analysis declines when they contain outdated information or fragmented content, or lack English translations for Thai texts. The research results are interpretive and based on selected documents, which leads to potential underrepresentation of some viewpoints or new developments. The study seeks to deliver a reliable analysis of the competitive factors affecting Thai HEIs through the use of top-quality evidence despite existing constraints.

Literature Review

1. Global Perspectives on Higher Education Competitiveness

Global higher education competitiveness faces challenges from swift internationalization combined with digital transformation and performance-based funding systems. The leading higher education systems of the United States, the United Kingdom, and Australia became globally competitive through their research excellence combined with institutional autonomy and effective branding strategies, together with international partnerships (Hazelkorn, 2015). These educational systems prioritize top-tier research while offering students interdisciplinary programs and learning environments that focus on their needs through substantial funding in innovative projects and facility development. Global rankings strengthen their competitive position by acting as quality and reputation benchmarks within the global education market.

Top-tier institutions achieve success because national policies align with both institutional autonomy and accountability. The UK's Research Excellence Framework (REF), alongside Australia's Excellence in Research for Australia (ERA), pushes universities towards generating impactful research outcomes without compromising on teaching standards, according to Marginson (2016). These systems enhance international talent acquisition by offering scholarships together with visa assistance and permitting work opportunities after studies. Institutions that succeed in competition will have the ability to draw students from multiple backgrounds while providing programs with future relevance and developing international partnerships to gain greater visibility and improve their academic reputation.

Thailand should examine the educational success of its regional neighbors, Singapore and Malaysia, which stand as prominent educational centers in Southeast Asia. The Singaporean government has

designated education as a critical national resource by making substantial investments in leading research universities, including the National University of Singapore and Nanyang Technological University, which maintain top global rankings according to OECD 2022 reports. These educational institutions obtain robust government backing while implementing a definite internationalization strategy and maintaining strong industry connections. Malaysia has launched its Malaysia Education Blueprint initiative (2015–2025) to improve international student enrollment rates and enhance both institutional governance and research productivity (Ministry of Higher Education Malaysia, 2015).

Higher education competitiveness requires not only strong institutional capacity but also national strategies that drive excellence and innovation, together with global engagement. Thailand's distinct socio-economic and policy challenges can be addressed by borrowing adaptable frameworks from proven models, which include international benchmarking and performance-based funding combined with talent development strategies to boost its higher education competitiveness. Analysis comparing different models shows that Thailand needs strategic investment along with governance changes and alignment with global academic trends to succeed in the competitive global academic market.

2. Thai Higher Education Context

The higher education system in Thailand has transformed from a few elite institutions into a broad network of public and private universities over the past century. Modern Thai higher education originated with Chulalongkorn University's creation in 1917 when it became the nation's first university with the primary goal of educating civil servants to support Thailand's modernization processes (Office of the Education Council [OEC], 2017). The welfare state expanded in the middle of the 20th century, which led to system growth driven by population increases and economic progress alongside social pressure for advanced qualifications. The higher education landscape transformed dramatically during the 1990s because of decentralization trends alongside the rapid growth of private educational institutions.

The country of Thailand contains over 150 higher education institutions that consist of public autonomous universities, Rajabhat universities, which serve as regional teacher training colleges, and private institutions, according to UNESCO data from 2020. The Ministry of Higher Education, Science, Research and Innovation (MHESI) oversees education policy implementation since its 2019 establishment and manages research funding and quality assurance. Thai higher education institutions expanded access and academic programs but confront challenges, including demographic-driven enrollment drops and insufficient research competitiveness, along with academic output mismatches to labor market demands (ADB, 2022).

Research conducted previously has revealed multiple systemic problems within Thailand's higher education system. According to Salmi (2009), Thai universities face restrictions from bureaucratic rigidity and lack of autonomy, which hinder their ability to innovate and respond effectively. The research output of Thai academic institutions is inferior to that of regional counterparts because of insufficient funding resources, poor university-industry partnerships, and limited English language proficiency in Thai academics (Chinokul, 2017). Internationalization remains a top national priority, but its implementation has progressed slowly, as only limited foreign students and faculty members currently engage with the Thai academic system.

The system faces difficulties, but still holds potential for improving its competitive edge. The Thailand 4.0 strategy seeks to transform HEIs into innovation powerhouses by focusing on STEM education alongside entrepreneurship development and digital learning integration (MHESI, 2021). The recommended strategies for achieving future growth include strengthening quality assurance systems while increasing institutional autonomy and building international partnerships. For Thailand to succeed in becoming a knowledge-based economy, it must synchronize higher education policies with both global trends and local development requirements to build a strong and competitive higher education sector.

3. Conceptual Framework

The concept of competitiveness in higher education involves institutions successfully drawing and keeping students, faculty members, financial support, and strategic partnerships within a rapidly globalizing and market-oriented world. Educational competitiveness involves multiple dimensions beyond traditional business metrics, including academic quality and research output as well as graduate employability and international collaborations, which contribute to institutional reputation (Salmi, 2009). Higher education institutions that compete successfully achieve national quality benchmarks and secure a strong position in international rankings and global academic networks.

Competitiveness at an institutional level frequently depends on an organization's ability to modify its operations to accommodate change while simultaneously developing innovations and aligning its educational programs with external societal requirements and market demands. Porter's competitive advantage theory from 1990, which originated in industrial sectors, now evaluates how higher education institutions create distinct value propositions. Universities secure their competitive edge by implementing unique strategies like specialized academic programs and advanced research abilities, or global branding to build institutional value and achieve recognition in a saturated academic market.

Multiple theoretical frameworks exist that serve to evaluate and improve the competitive edge of institutions. The Input-Process-Output (IPO) model serves as a common framework for assessing educational effectiveness by examining resource utilization as input, while teaching and learning activities function as process, and measuring outcomes through graduate employment and research impact as output (Kettunen, 2004). Another important model is the "Balanced Scorecard," which measures institutional performance across four dimensions. Kaplan & Norton's (1996) Balanced Scorecard framework evaluates institutional performance through four key dimensions, which include financial sustainability together with internal processes and customer (student) satisfaction as well as innovation and learning. These models represent formal methods to assess the strategic and operational capabilities of higher education institutions.

Thai competitiveness frameworks continue to evolve through the combined impact of national policies and international standards. The Ministry of Higher Education, Science, Research and Innovation (MHESI) urges educational institutions to adopt performance indicators that follow international best practices through metrics such as internationalization rates and research productivity while maintaining quality assurance standards (MHESI, 2021). This research applies a multidimensional conceptual framework that combines qualitative and quantitative competitiveness metrics to illustrate the dual public service and market-oriented nature of higher education.

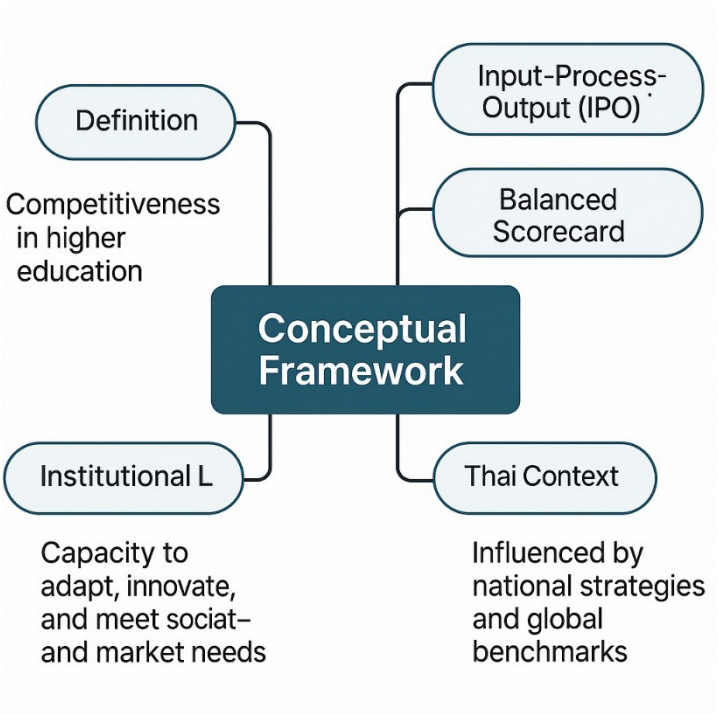

Figure 1: Conceptual Framework

METHODOLOGY

1. Research Design

The research utilizes a documentary research design coupled with qualitative content analysis to analyze factors affecting business competitiveness among Thai higher education institutions. Documentary research enables systematic examination and analysis of written records, which provides understanding of institutional methods and national policies without requiring direct fieldwork (Bowen, 2009). The chosen research design enables scholars to detect trends and patterns by analyzing documents like reports, academic papers, and policy papers that relate to Thai higher education.

2. Data Collection

The research team collected information from multiple documentary sources, namely academic journal articles, government policy papers, institutional reports, and statistical databases. Selection criteria focused on documents that were:

- Published between 2015 and 2024,
- Written in either Thai or English,

This analysis focuses on documents that directly examine higher education competitiveness and institutional development in Thailand.

Documents that were either outdated or did not contain sufficient analytical depth, and documents not related to Thai higher education, were excluded from the selection. The selected method guaranteed that all research materials remained relevant to the study goals while maintaining credibility and proper timing.

3. Data Analysis

Thematic qualitative coding identified key patterns and concepts that affect competitiveness, which included "research productivity," "internationalization," "quality assurance," and "governance." The analysis required organizing text segments into thematic codes, which allowed for building a conceptual framework derived from the data (Nowell et al., 2017). The application of qualitative data software like NVivo helped maintain consistent management and interpretation of extensive textual data when it was possible to do so.

4. Ensuring Validity and Reliability

The researchers strengthened their findings' validity by implementing triangulation, which involved gathering data from various document types across distinct institutions. The approach employed validated interpretations while reducing potential bias risk. The research maintained a transparent record of coding decisions and interpretations throughout the process. The reliability of the research received additional validation through peer debriefing and literature cross-checking (O'Leary, 2017).

FINDINGS AND DISCUSSION

1. Internationalization Strategies

1.1 International Partnerships and Global Engagement play a vital role in higher education internationalization strategies.

Higher education competitiveness depends on internationalization, which requires institutions to strategically embed international and intercultural elements into all academic functions, including teaching, research, and service, according to Knight (2004). Thai higher education institutions (HEIs) have expanded their global academic engagement through international partnerships, along with joint degree programs and research collaborations. Institutional partnerships advance both prestige and academic standards while also promoting knowledge exchange and cross-cultural learning. QS and Times Higher Education rankings drive universities to develop internationalization strategies that prioritize research output and faculty credentials, along with citation data.

1.2 Student and Faculty Mobility

The promotion of exchanges between students and faculty represents another essential element of internationalization. Thai universities have initiated educational programs that support outbound student exchanges and welcome international scholars to enhance global expertise and institutional recognition. Through academic standards alignment with global benchmarks, mobility programs enhance graduate employability in international job markets (Altbach & de Wit, 2015). Many Thai HEIs prioritize foreign student recruitment because these students bring both financial benefits and enhance institutional diversity, which is crucial for universities that aspire to become regional educational centers.

1.3 Thai HEIs encounter multiple obstacles to international talent recruitment and retention, even with supportive national policies.

Thai HEIs experience multiple obstacles when trying to attract and retain international students and faculty despite supportive national internationalization policies. Thai HEIs face obstacles such as restricted use of English in teaching and bureaucratic visa processes while also dealing with poor international rankings and neglected research environments on a global scale (Chinokul, 2017). Faculty retention faces additional hurdles due to limited research funding availability and strict employment policies, which reduce institutional adaptability. The internationalization plans of Thai universities will remain ineffective unless they resolve their systemic limitations.

1.4 Strategic Recommendations

Thai HEIs should implement a more cohesive and enduring approach to boost their internationalization strategies. Successful internationalization requires institutions to strengthen their global engagement capabilities as well as improve English-language program quality by streamlining administrative processes for international staff and students and making sure curricula meet global standards. Building a campus environment that appreciates diversity and promotes global citizenship remains an essential priority. Thailand's place in the worldwide higher education sector depends on its ability to internationalize its academic institutions.

2. Quality Assurance and Accreditation

2.1 National and International Accreditation Standards

Higher education institutions (HEIs) depend on quality assurance (QA) and accreditation processes to sustain and boost their competitive edge. The Office for National Education Standards and Quality Assessment (ONESQA) manages external QA processes in Thailand and mandates periodic evaluations of institutions based on national benchmarks (ONESQA, 2020). To improve their reputation and meet global standards, some Thai universities obtain international accreditations such as AACSB, ABET, or ISO certifications. These accreditations function as quality indicators that affect

the choices of students and institutions that receive funding while shaping their positions in global rankings (Stensaker & Leiber, 2015).

2.2 Academic Quality and Institutional Reputation

The process of accreditation bolsters institutional academic credibility by mandating compliance with quality standards that cover curriculum design as well as faculty qualifications and student outcomes, and governance processes. The rise of global education markets has led to internationally accredited programs that strengthen stakeholder confidence while promoting cross-border partnerships and student exchange opportunities (Altbach, Reisberg, & Rumbley, 2009). Thai HEIs can build trust with local audiences and international partners while attracting prospective students by showing adherence to national and international standards.

2.3 Mechanisms for Continuous Quality Improvement

Thai higher education institutions implement multiple internal mechanisms, including curriculum review committees and student feedback systems, alongside peer evaluations and performance-based assessments, to sustain and enhance academic quality. A variety of institutions have created Internal Quality Assurance (IQA) units, which handle academic performance monitoring and support improvement processes (OEC, 2017). Outcome-based education (OBE) models, together with learning analytics, are gaining adoption in order to synchronize teaching approaches with student outcomes and industry requirements. These mechanisms help establish an environment where accountability and evidence-based decision-making thrive.

2.4 Challenges and Strategic Considerations

The Thai quality assurance system has shown progress but continues to struggle with inconsistent assessment practices while also encountering resistance to change and a lack of connection between evaluation outcomes and strategic planning (World Bank, 2019). Excessive focus on compliance tends to create bureaucratic burdens instead of delivering real improvements. Thai universities need to transition from compliance-based thinking to quality-focused strategies to achieve higher academic standards. Professional development investments, along with increased institutional autonomy and QA integration within strategic goals, form the core of this approach.

3. Financial Sustainability

3.1 Diversification of Funding Sources

Financial sustainability remains essential to maintain higher education institutions' long-term market position. The financial dependence of Thailand's public universities on government funds has been challenged by shrinking public budgets combined with increasing operational expenses, thus forcing institutions to explore other sources of revenue (World Bank, 2019). HEIs generate revenue through tuition fees, research grants, consultancy work, alumni contributions, and campus-based commercial activities. Income diversification allows universities to lessen their reliance on unpredictable government grants while enabling strategic investments in innovation and faculty and infrastructure development (Jongbloed, 2004).

3.2 Tuition Fee Structures

Self-financing and international programs at Thai universities depend heavily on tuition fees as their main revenue stream. Generating revenue while maintaining fair access continues to be an unresolved issue. Students from low-income backgrounds may avoid higher education due to expensive tuition fees, which leads to increased inequality and restricted growth of potential talent (Altbach, 2007). Too much educational subsidy burdens institutional finances and discourages efforts to improve educational standards. Some Thai HEIs have implemented tiered or differentiated fee structures along with scholarship programs and flexible payment options to eliminate financial barriers while ensuring institutional sustainability.

3.3 Implications for Accessibility and Competitiveness

Tuition fee structures exert direct effects on institutional competitiveness. Higher education institutions that set competitive program prices without compromising academic quality will draw more domestic and international students. Transparent financial management practices, together with student loan programs and merit-based financial assistance, create an impression of institutional fairness while promoting inclusivity (Salmi & Hauptman, 2006). Thai universities have to find a stable equilibrium between affordable tuition costs and generating necessary revenue to support ongoing institutional advancement and international collaboration.

3.4 Strategic Financial Management

Thai HEIs must implement strategic financial planning models that include scenario analysis and resource allocation based on performance outcomes to achieve cost control and build long-term sustainability. Thai universities can obtain alternative funding through research sponsorships and workforce development programs by collaborating with industry and private sector partners (OECD, 2022). To maintain quality education as global competition intensifies, educational institutions need to improve financial governance and transparency while embedding funding strategies into their fundamental objectives.

4. Curriculum and Program Relevance

4.1 Academic programs should align with Thailand 4.0 policy objectives to meet labor market demands.

The importance of curriculum relevance stands as a fundamental aspect of higher education competition, especially within rapidly changing technological and structural economies. Thai government policy Thailand 4.0 demands that universities generate graduates who will lead technological advancements in biotechnology, robotics, digital technology, and smart agriculture (MHESI, 2021). Higher education institutions (HEIs) must rapidly update their academic programs to meet modern labor market requirements and support the growth of a knowledge-driven economy.

4.2 Program Adaptability and Stakeholder Engagement

Universities must maintain continuous dialogue with employers and industry associations, and government agencies to ensure academic programs meet real-world expectations. Various Thai universities have introduced co-op programs alongside internship opportunities and industry-related capstone projects to offer their students experiential learning experiences, as indicated by ADB in 2022. Higher education institutions should implement adaptable modular curricula that can be tailored to new industry demands in order to improve graduate job readiness and allow institutions to remain flexible.

4.3 The modern educational curriculum requires combining soft skills with technological abilities to prepare students for the evolving job market.

Today's curriculum development requires merging traditional soft skills like communication and teamwork with digital and technical abilities. As workplace digitization accelerates, it requires graduates who possess both technical proficiency and the ability to operate effectively in diverse, cross-cultural interdisciplinary teams (World Economic Forum, 2020). Thai HEIs are updating their programs with digital literacy, coding, data analysis, and innovation-focused learning to equip students for Industry 4.0 and future challenges.

4.4 Strategic Implications for Higher Education Institutions

When higher education curricula do not match labor market requirements, it leads to graduate underemployment while damaging institutional reputation. Thai HEIs need to constantly evaluate their academic programs and modify them according to national development strategies and employer input to stay competitive. Higher education institutions need to allocate resources towards faculty development programs and curriculum updates while developing stronger relationships with industry partners. The process of curriculum reform represents a strategic necessity for Thai higher education to deliver meaningful contributions to both economic progress and social development.

5. Governance and Institutional Autonomy

5.1 Decision-making processes and innovative capabilities in higher education institutions are shaped by their specific governance models.

The governance structure determines how higher education institutions operate while guiding their strategic choices and responses to new challenges. Institutions with effective governance structures demonstrate enhanced responsiveness while maintaining transparency and promoting innovation. Thailand's public universities operate under centralized supervision from the Ministry of Higher Education, Science, Research and Innovation (MHESI), whereas autonomous universities benefit from increased freedom in their academic and administrative operations (Salmi 2009). Decentralized governance encourages institutional innovation by providing leaders with the flexibility to make decisions that match their missions and stakeholder requirements.

5.2 Institutional autonomy functions as a fundamental driver of competitiveness among higher education institutions.

Institutional autonomy gives higher education institutions the capacity to manage their financial resources, faculty members, academic programs, and governance through independent decision-making processes. Institutions that operate with greater autonomy tend to perform better because they can make quick decisions while attracting excellent faculty members and building strategic international partnerships (Fielden, 2008). The early 2000s shift towards university autonomy in Thailand granted some universities the ability to establish unique identities and improve their competitive standing. The benefits of autonomy have not been fully realized by all institutions because many continue to face limitations in capacity as well as persistent bureaucratic work cultures.

5.3 Balancing Autonomy with Accountability

Autonomy creates potential benefits but necessitates strong accountability systems to make sure public money is spent efficiently and institutional objectives match national priorities. The World Bank (2019) reports that Thailand has implemented performance-based budgeting and quality assurance systems to oversee institutional performance outcomes. Organizations face a difficult task of finding equilibrium because excessive control can suppress innovation, but insufficient supervision can result in mission drift and inefficient operations. For maintaining trust and legitimacy, governance reforms should be implemented along with transparent performance metrics and involve stakeholder participation and external evaluations.

5.4 Governance Reform as a Strategic Imperative

Thai higher education institutions need to focus on developing leadership skills and adopt transparent policies while engaging stakeholders to improve their governance effectiveness. Organizations need encouragement to implement contemporary governance principles, including shared governance practices along with strategic planning and decision-making based on data analysis. The increasing competition on the global stage makes self-governance in HEIs essential while maintaining public accountability to ensure academic quality and societal impact.

6. Research and Innovation Capacity

6.1 HEIs must invest in both research infrastructure and human resources to enhance research capabilities.

Higher education competitiveness and national development depend on research and innovation as fundamental drivers. Thai higher education institutions must continuously invest in research facilities, laboratories, libraries, digital platforms, and advanced technology to enhance their research capacity. The development of human capital stands as a crucial element by prioritizing research-focused faculty members who possess strong academic qualifications and international experience while demonstrating the capability to obtain competitive research funding (Salmi, 2009). Research funding in Thailand has grown through MHESI initiatives, although research management capacity shortages persist in regional universities, according to ADB (2022).

6.2 Enhancing Research Productivity and Impact

Thai universities have enhanced research output but continue to trail behind regional leaders Singapore and South Korea in research impact and citations as well as patent production. Higher Education Institutions need to produce peer-reviewed scholarly work of high quality while also increasing their participation in worldwide academic discussions to improve their visibility and relevance (OECD, 2022). Targeted funding schemes together with faculty incentives and international research partnerships drive research excellence, especially in key sectors like biotechnology and energy and digital innovation, and sustainability.

6.3 Industry Collaboration and Innovation Ecosystems

Innovative research requires robust partnerships between academic institutions and industry players to reach practical applications. The relationship between universities and industry in Thailand remains weak because of mismatched expectations between these entities, as well as unclear intellectual property rules and restricted commercialization options (World Bank, 2019). Science parks, along with innovation incubators and joint research centers, represent promising models that start bridging these existing gaps. Successful partnerships between academia and industry lead to research that meets market demands while creating commercial opportunities and driving economic growth in local communities.

6.4 National Development and Policy Integration

Higher Education Institutions need to actively contribute to national development through research priority alignment with strategic national policies, including Thailand 4.0 and the Bio-Circular-Green Economy model, along with the UN Sustainable Development Goals. Institutions that integrate their research programs into these strategic plans tend to secure government funding while bolstering their societal impact and making significant contributions to sustained economic change. Building robust research and innovation capabilities serves as a fundamental requirement for academic institutions while simultaneously standing as an essential duty of national policy.

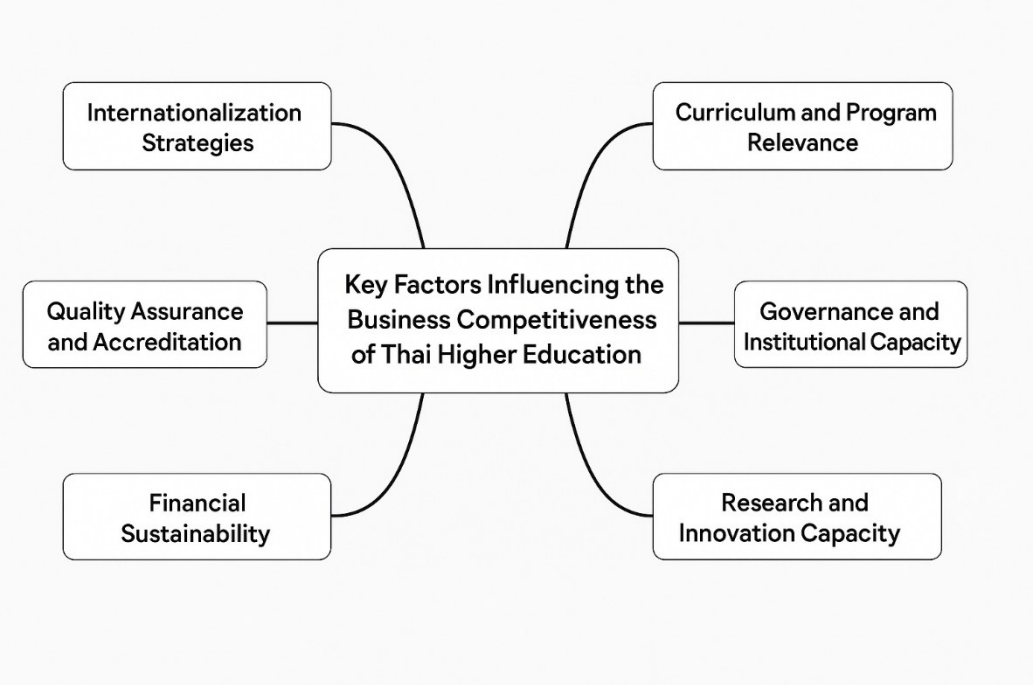

Figure 2: Key Factors Influencing the Business Competitiveness of Thai Higher Education

CONCLUSION

This study has identified and analyzed the key factors influencing the economic competitiveness of Thai higher education institutions (HEIs). Important considerations include internationalization strategies, quality assurance and certification, curriculum relevance, financial sustainability, governance and autonomy, and the capacity for research and innovation. These elements work together to affect an institution's ability to attract talent, get finance, maintain academic standards, and advance national development goals. A competitive Thai higher education institution meets both local and global trends and expectations.

RECOMMENDATION

Implications for Policy and Practice

To elevate Thai HEIs on the global stage, policymakers must implement systemic reforms that foster institutional autonomy alongside performance-based funding and international benchmarking systems. The development of stronger connections among government agencies, academic institutions, and industrial sectors will boost both research relevance and economic outcomes. Thai universities need policy support for language readiness and digital transformation to become competitive, as well as inclusive access to achieve educational equity.

Institutional leaders must focus their strategies on developing innovation ecosystems while aligning curricula to labor market needs and investing in faculty development. Institutions of higher education should implement integrated quality management systems while expanding their financial base

through academic entrepreneurship and strategic partnerships. Long-term competitiveness relies on institutions achieving academic excellence while remaining responsive to market needs.

Future Research

The study offers a conceptual and documentary-based analysis, yet requires empirical research to assess competitiveness strategies across various Thai HEIs. Research methods like comparative case studies and longitudinal studies, together with stakeholder surveys of students, faculty members, and industry representatives, would help reveal institutional strengths and barriers. Research into the implementation results of Thailand 4.0 and BCG projects from higher education institutions would provide significant value.

Future research should investigate how cultural elements, along with regional differences and worldwide crises like the COVID-19 pandemic, affect institutional adaptability and robustness. Analyzing these findings would enable more context-specific policy development and management strategies, which would enhance Thai higher education's influence across national and global domains.

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The Future of Higher Education in Thailand: Integrating Digital Technologies and Internationalization Policies

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ABSTRACT

Background: Thailand's higher education system is undergoing a major upheaval due to globalization and digitization tendencies. Even though the Ministry of Higher Education, Science, Research, and Innovation (MHESI) has begun making changes to align it with national strategies such as Thailand 4.0 and the Bio-Circular-Green (BCG) Economy Model, there are still significant gaps in infrastructure, institutional capacity, and international involvement.
Objective: This study aims to analyze how digital technologies and internationalization policies are influencing the future of Thai higher education and to identify opportunities and barriers to their effective integration.
Methodology: The study used a qualitative documentary research methodology to look at academic publications, government policy papers, and institutional reports from 2015 to 2025. Key subjects were identified using a thematic content analysis, and dependability was increased through triangulation.
Results: Results show that, particularly among top Thai universities, there have been significant breakthroughs in the usage of learning management systems (LMS), worldwide academic relationships, and AI-driven teaching tools. But problems still exist, such as legislative barriers, a lack of internet infrastructure, and low English literacy. Additionally, there is a lack of strategic alignment between internationalization and digital projects, especially at institutions with fewer resources.
Conclusion: For Thai higher education to remain competitive on a global basis, concerted efforts will be needed to close the gaps in policy and technology. Enhancing teacher competencies, fostering ASEAN-wide collaborations, and integrating digital and global efforts are all necessary to build a strong, inclusive, and future-ready higher education system.

Keywords: Digital Transformation; Internationalization; Thai Higher Education; Education Policy Reform

INTRODUCTION

Thailand's higher education system experienced major transformations over multiple decades because of national development objectives combined with demographic changes and global influences. The Thai higher education system began with the goal to expand access and build institutional capacity, but now focuses primarily on improving quality while driving innovation and enhancing international competitiveness. The Ministry of Higher Education, Science, Research and Innovation (MHESI) has implemented governance reforms to enable performance-based funding while promoting university autonomy that aligns with Thailand's strategic objective of developing a knowledge-based economy (OEC, 2017).

Digitalization and internationalization stand as two pivotal global trends changing higher education systems across the world. Learning management systems (LMS) and AI-driven platforms, along with virtual labs and online assessments, represent digital technologies that transform educational methods and content distribution while enhancing student participation. The COVID-19 pandemic served as a catalyst for educational institutions globally to implement hybrid and fully online learning models during their long-term transformation process (UNESCO, 2021). Universities striving for international rankings and global influence now focus on internationalization, which includes cross-border mobility and joint research programs as well as international curricula (Knight, 2004).
Thai higher education institutions face both opportunities and challenges from the combined effects of digital transformation and internationalization. Technology improves global access and academic quality, whereas internationalization establishes new partnership opportunities and innovation ecosystems. Significant integration challenges result from uneven infrastructure alongside language barriers and fragmented policies. The intersection of these forces within Thailand must be understood to effectively chart higher education's future path.

Thai higher education institutions (HEIs) struggle with digital infrastructure deficiencies and inadequate global engagement even after national initiatives aimed at modernizing and internationalizing higher education. Digital platforms and international partnerships have been adopted by some top universities, while regional and less-resourced institutions face challenges, including poor high-speed internet access, inadequate digital investment, and insufficient trained staff for technology integration (World Bank, 2019). The existing digital disparities obstruct teaching and learning efficiency while simultaneously restricting digital innovation possibilities and both blended learning and online program delivery.
Thai higher education institutions demonstrate advancing internationalization efforts through student exchange programs, research collaborations, and their participation in global academic rankings. The current level of global engagement across institutions demonstrates uneven distribution and fails to reach sufficient standards. The challenges within Thai higher education stem from restricted English usage for instruction, complicated visa procedures, and inadequate global academic network presence (Chinokul, 2017). The absence of robust frameworks alongside strategic alignment results in the internationalization policies remaining symbolic and fragmented within institutional operations.

Technological inequality alongside insufficient internationalization efforts weakens both long-term competitiveness and global standing of the Thai higher education sector. An in-depth comprehension of the interconnectedness between policies, resources, and institutional practices is essential to resolve structural problems. The research uses documentary analysis to investigate the integration of digital technologies and internationalization within Thai higher education institutions as a means to achieve sustainable global competitiveness.

The findings of this research are crucial for developing new policies and reforming institutional structures within Thailand's higher education system. The research offers evidence-based findings by examining the integration of digital technologies and internationalization policies within existing academic structures, which can support national strategy development for Thailand 4.0 and the Bio-Circular-Green (BCG) economy model. The study identifies essential investment areas for policymakers, which comprise digital infrastructure, international collaborations, and adaptable

regulations. The study delivers actionable advice to institutional leaders about how to synchronize academic programs and administrative processes with worldwide benchmarks. The research propels a unified and progressive methodology for upgrading Thai higher education into a competitive system that remains resilient while engaging with global academic standards.

Research Objectives

To analyze how digital technologies and internationalization policies are shaping the future of Thai higher education.

Scope and Limitations

The research examines documentary sources that discuss Thai higher education policy alongside digital transformation and internationalization within the timeframe of 2015 to 2025. The research examined government strategy papers along with institutional reports, academic publications, and documents from international organizations such as UNESCO, OECD, and the World Bank. The study confines its analysis to national-level strategies and institutional responses without using direct empirical fieldwork or stakeholder interviews. The study fails to completely represent regional differences as well as institutional diversity and personal views from students and faculty members. The study's dependence on public documents means it could miss important information from unpublished or internal materials. The study successfully delivers an extensive review of the system-wide trajectory and policy framework that will influence the evolution of Thai higher education.

Literature Review

1. Digital Transformation in Higher Education

The digital transformation of higher education systems now stands as a fundamental component of worldwide educational reform by transforming knowledge creation processes and distribution methods. Worldwide best practices demonstrate the need for combining advanced learning management systems (LMS), artificial intelligence (AI), virtual classrooms, along with adaptive learning technologies to provide personalized instruction and improve learner engagement (OECD, 2021). Through substantial investments in national digital infrastructure as well as teacher preparation programs and open educational resources, Estonia, Singapore, and the United Kingdom have proven effective digital education methods according to UNESCO (2021).

The impact of digital transformation on pedagogy is profound: The shift towards digital learning platforms creates adaptable educational settings that center around student needs without being restricted to traditional classroom spaces or live teaching schedules. Higher education becomes more accessible through online and hybrid models, which particularly benefit non-traditional learners, along with people residing in remote locations. Digital platforms support real-time assessment and learning analytics to enable data-driven decision-making, which improves teaching methods and strengthens institutional accountability according to EDUCAUSE (2022).

Digital tools enhance learning outcomes by boosting student motivation and enabling better interactivity and collaboration while facilitating digital literacy development, which remains vital for today’s workforce. The effectiveness of these practices requires fair access to digital resources and supportive policies that promote digital preparedness. Thai higher education institutions must learn and apply global digital practices to achieve inclusive, high-quality, and sustainable educational results through digital transformation.

2. Internationalization Policies

Internationalization for postsecondary education institutions involves adding international, intercultural, and global aspects to their core mission and educational delivery according to Knight's 2004 definition. Internationalization strategies include student and faculty mobility, along with international research collaboration and curriculum internationalization, in addition to cross-border

education programs. According to frameworks like the Comprehensive Internationalization Model (Hudzik, 2011), institutions should incorporate internationalization throughout their entire organizational structure, including leadership and campus operations, instead of making it an isolated initiative.

ASEAN and OECD member states provide effective standards for assessing how well internationalization strategies perform. Singapore established itself as a regional center through English-medium educational offerings and the development of top-ranked universities alongside public-private research partnerships. South Korea has implemented government-supported programs, including the "Study Korea" initiative, to draw international students and enhance institutional competitiveness. Within the OECD framework, Germany and the Netherlands have implemented systematic methods that merge national policy backing with financial incentives and quality assurance processes to support durable international engagement (OECD, 2020).

To follow these standards, Thailand faces ongoing difficulties, including inadequate English language skills, central government control, and inconsistent institutional abilities. Thai higher education reform continues to prioritize internationalization as a fundamental component of strategies that support Thailand 4.0 and ASEAN integration initiatives. The alignment of Thailand's national and institutional policies with established global frameworks will improve the quality and global recognition of its higher education system.

3. Higher Education in Thailand

National development strategies combined with demographic changes and international competition drive a transformational period for Thailand's higher education system. The nation maintains a network of over 150 higher education institutions that includes both research-focused universities and vocational colleges. The growth in student enrollment and institutional variety in Thai higher education institutions is accompanied by continued difficulties in quality assurance and research productivity, as well as graduate employability and global standard alignment (World Bank, 2019). Numerous institutions remain restricted by bureaucratic limitations that affect their autonomy and funding diversification while also dealing with regional infrastructure and academic resource disparities.

Thai government policy initiatives like "Thailand 4.0" represent strategic efforts to transition the country into an innovation-based economy. Higher education stands at the forefront of this strategy through workforce skills development while advancing research initiatives and entrepreneurial activities. The Bio-Circular-Green Economy model stands as a significant platform for HEIs to undertake multidisciplinary research and advancement in fields including agriculture, health, and energy, which promotes sustainable growth and strengthens local economies (MHESI, 2021).

Despite these promising frameworks, implementation remains uneven. A lack of coordination between ministries, together with old curricula and institutional resistance to change, has hindered progress. Thai higher education institutions can modernize and achieve global competitiveness through the integration of digital technologies and internationalization strategies as outlined in national plans. The success of these visionary frameworks depends heavily on ongoing policy backing combined with active stakeholder involvement and robust institutional development efforts.

Conceptual Framework

The investigation utilizes a multi-framework approach that combines digital transformation and internationalization models to study how Thai higher education institutions' competitiveness changes.

The Digital Readiness Model constitutes the first component according to guidelines established by UNESCO (2021) and the OECD (2020). The framework demonstrates how systems can successfully implement digital tools within their infrastructure and pedagogical practices while also incorporating

them into policy and institutional culture. The fundamental indicators comprise ICT infrastructure availability, along with digital literacy among faculty members and institutional support structures, as well as student participation in online learning settings. The model evaluates the readiness of Thai HEIs to implement digital technologies to enhance educational standards and increase accessibility.

Knight's (2004) internationalization framework describes internationalization as the inclusion of international and intercultural components into higher education's fundamental operations: teaching, research, and service delivery. The framework identifies two main internationalization approaches: "internationalization at home" through curriculum design and faculty development, and "internationalization abroad" with student mobility and cross-border partnerships to help institutions measure their global academic engagement beyond simple foreign enrollment figures.

The study puts forward an Integration Model for the comprehensive assessment of Thai HEIs by merging both internationalization frameworks. The framework establishes digital transformation and internationalization as two interdependent foundational pillars that define institutional competitiveness. Through digital technologies, internationalization becomes possible by supporting virtual mobility programs alongside global classroom platforms and international research partnerships. Internationalization drives digital innovation by providing access to global best practices and multilingual content while encouraging cross-cultural collaboration through specialized tools. Thai higher education requires the combination of digital readiness with global engagement to achieve sustainable development in the post-pandemic world.

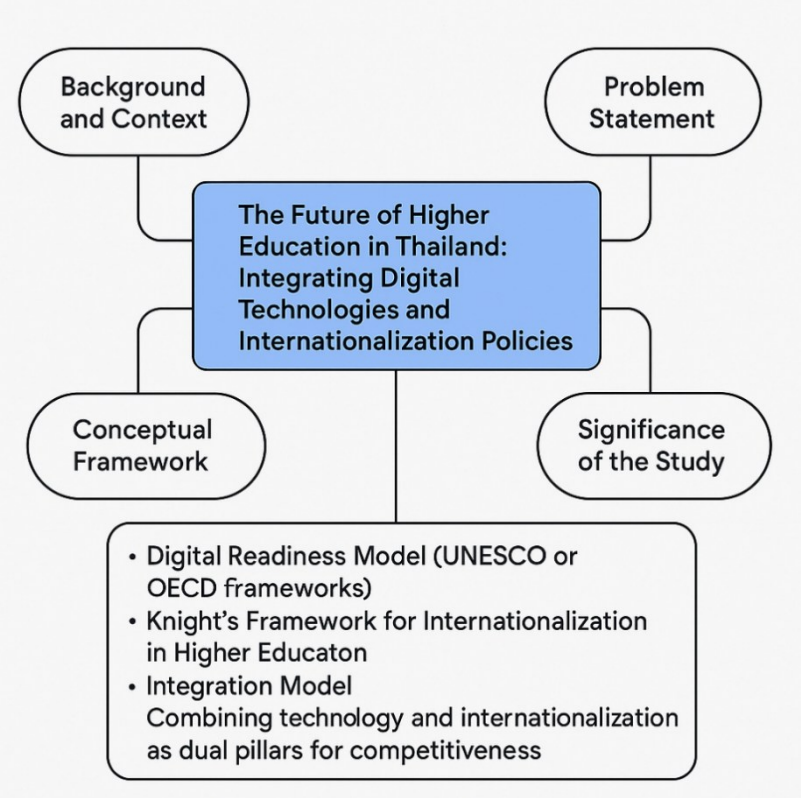

Figure 1: Conceptual Framework

METHODOLOGY

1. Research Design

The research applies qualitative documentary research methodology to examine existing texts and policy documents through which patterns and themes about digital transformation and internationalization in Thai higher education are identified. This approach allows researchers to study national strategies and institutional policies while analyzing scholarly discourse without engaging

human subjects or fieldwork to achieve a comprehensive contextual examination of systemic trends (Bowen, 2009).

2. Data Collection

Data collection included documentary information obtained from various trustworthy sources such as:

- Policy documents from both national institutions, MHESI and global organizations such as UNESCO and OECD, were utilized.
- Research articles from academic journals examine frameworks for digital transformation and internationalization.
- I studied national strategy reports that analyze reforms implemented under Thailand 4.0 and the Bio-Circular-Green Economy Model.

Documents needed to be published between 2015 and 2025 and written in either Thai or English, while specifically focusing on Thai higher education digitalization and internationalization. Documents that did not meet the criteria were removed when they were outdated or lacked analytical depth and failed to focus on the higher education sector.

3. Data Analysis

Thematic content analysis guided the analysis, which required the identification and coding of recurring themes found within the collected documents. The development of key themes, including "digital readiness," "international collaboration," "policy gaps," and "integration strategies," resulted from both inductive and deductive coding approaches. The study achieved validity and reliability by using triangulation to compare results from various document types and institutional viewpoints. The applied method allowed researchers to confirm insights while reducing bias in their analysis.

FINDINGS AND DISCUSSION

1. State of Digital Integration in Thai HEIs

Digital technology adoption by Thai higher education institutions (HEIs) accelerated notably in recent years as a direct response to the COVID-19 pandemic. Online learning platforms such as Google Classroom, Zoom, Microsoft Teams, and Moodle-based Learning Management Systems (LMS) gained widespread adoption across universities to maintain education when campuses were shut down. These platforms now serve as primary instruments for synchronous and asynchronous content delivery while supporting discussions and assessments as well as student progress monitoring (MHESI, 2021).

Thai higher education institutions now focus their resources on producing digital content such as video lectures and virtual labs alongside interactive e-modules and mobile learning apps beyond merely adopting Learning Management Systems. Chulalongkorn University and Mahidol University have created digital learning environments that use cloud storage solutions along with learning analytics and artificial intelligence-based tutoring systems to offer personalized learning experiences and improved academic support services. Although some institutions excel in digital integration, smaller and regional schools often face significant hurdles, including insufficient infrastructure and trained staff, as well as inadequate financial resources to develop strong digital systems (World Bank, 2022).

Despite advancements in digital integration, the sector continues to experience uneven and disjointed implementation. Rural areas face limited internet access, while faculty training programs show digital pedagogy inadequacies, and institutional policies fail to support sustainable digital transformation. Resolving these disparities stands as a fundamental step toward providing fair access to quality education and enhancing Thai higher education's digital competitiveness both domestically and worldwide.

2. Implementation of Internationalization Policies

The implementation of internationalization policies in Thai higher education institutions (HEIs) has focused on three key strategies: Thai higher education institutions focus their internationalization strategies on student and faculty mobility, together with international partnerships and dual degree program development. Thai universities currently operate exchange programs and memoranda of understanding with educational institutions from Japan, China, the United States, and ASEAN nations. The agreements established by these Thai higher education institutions enable international academic and cultural experiences for students and faculty by supporting both incoming and outgoing mobility (Chinokul, 2017).

Through partnerships with foreign universities, dual and joint degree programs enable Thai students to obtain international qualifications while staying in Thailand throughout their entire education period. These programs help institutions become more visible while drawing international talent and enhancing their research partnerships and ranking positions (Altbach & Knight, 2007). Through these programs, Chulalongkorn University and Thammasat University have successfully established themselves as regional educational centers.

The progress achieved in educational programs has not been uniformly adopted by different institutions. The progress of regional or newer universities faces continued obstacles from limited English-taught programs, together with complex visa procedures and funding limitations, as well as inadequate global branding strategies. The COVID-19 pandemic caused physical mobility disruptions, which forced institutions to move toward virtual exchanges and online collaboration, yet many were unprepared for this transition. To enhance internationalization efforts, universities need better national policy coordination combined with more funding and institutional capacity development support.

3. Synergies and Gaps

Thai higher education institutions experience both collaborative benefits and practical challenges when digital transformation merges with internationalization efforts. International programs become more accessible and extend their reach through the use of digital tools. Virtual mobility options alongside online joint degree programs and international webinars have increased student engagement while avoiding physical exchange expenses and logistical challenges. Thai universities continued to maintain international partnerships by utilizing digital platforms both during and after the pandemic, which included the hosting of online international conferences and the creation of transnational online courses, according to UNESCO (2021). The academic innovations have promoted educational inclusion while allowing budget-constrained institutions to join international academic networks.

The two fields continue to show substantial misalignments and persistent gaps. Thai HEIs struggle to integrate digital tools for international engagement because they lack sufficient infrastructure and training, as well as coherent policies. Staff and faculty English proficiency levels essential for digital and international programs continue to vary inconsistently. Digital initiatives, such as building an LMS, lack integration with internationalization objectives like crafting globally transferable curricula because of insufficient strategic coordination. These initiatives function independently instead of together, which decreases their effectiveness and limits their ability to expand.

Thai HEIs need to implement combined strategies that integrate digitalization with internationalization to strengthen their effectiveness instead of treating them as separate initiatives. HEIs should synchronize their IT investments with international partnership objectives while creating digital content that appeals to global audiences and integrating intercultural competence into their online learning systems. Unless these transformative forces work in tandem through proper alignment, their dual potential will stay underused.

4. Challenges

Efforts to modernize Thai higher education alongside its internationalization face persistent obstacles that prevent the successful integration of digital technologies with global engagement strategies.

Infrastructure disparity stands as the greatest obstacle between urban and rural educational institutions. Flagship universities in Bangkok and major urban centers enjoy advanced digital resources and broadband connectivity, while regional institutions experience a lack of dependable internet access and sufficient digital learning tools (World Bank, 2022). Technological gaps decrease digital learning fairness and limit innovation potential.

The language barrier stands as a second significant challenge because faculty members, staff personnel, and students demonstrate limited English language skills. The reliance on English for teaching and international collaboration creates significant barriers for Thai HEIs in drawing foreign students and scholars and engaging with global academic communities (Chinokul, 2017). Digital tools exist, but educational content and cross-border cooperation remain constrained due to insufficient multilingual support.

Systemic challenges continue to emerge from regulatory and policy-related constraints. Inflexible bureaucratic processes, such as complicated international faculty visa rules or sluggish institutional sanctioning of digital curriculum proposals, serve as obstacles for international projects. The separate approach to developing digital and international strategies causes long-term inconsistencies and reduces effectiveness, according to OECD (2020). Structural barriers demonstrate how Thai higher education requires an integrated policy framework that fosters innovation and global competitiveness through flexibility and future-oriented planning.

5. Strategic Opportunities

Thai higher education institutions (HEIs) maintain a strong position to take advantage of new strategic opportunities, which will advance their digital transformation and global standing. The creation of EdTech partnerships with technology firms worldwide offers great potential. Partnerships with platforms like Google for Education and Coursera, along with local startups, deliver scalable digital tools and innovative pedagogical resources while providing professional development opportunities for faculty. Through these collaborations, HEIs can increase their digital capabilities without taking on the full infrastructure costs as they also raise their visibility in the worldwide educational arena (OECD, 2022).

The incorporation of Artificial Intelligence (AI) into educational processes marks a pioneering development in teaching and learning. Intelligent tutoring systems, together with AI-driven learning analytics and automated feedback tools, enable personalized instruction and improved support for at-risk students through enhanced monitoring of student progress. Thai universities have started implementing AI systems in their administration and adaptive learning spaces, but full integration will need investments in infrastructure as well as ethical standards and educator training (UNESCO, 2021).

ASEAN-wide academic collaboration at the regional level presents another opportunity for strategic development. The ASEAN International Mobility for Students (AIMS) program and the ASEAN University Network (AUN) enable regional academic growth through cross-border credit transfer and joint research initiatives while building regional capacity. Thai higher education institutions could develop stronger academic ecosystems and boost student mobility while jointly addressing issues like skills mismatches and climate change through the reinforcement of these frameworks. If Thailand actively engages with these opportunities, it will establish itself as Southeast Asia's knowledge hub while simultaneously aligning its higher education system with worldwide innovation patterns.

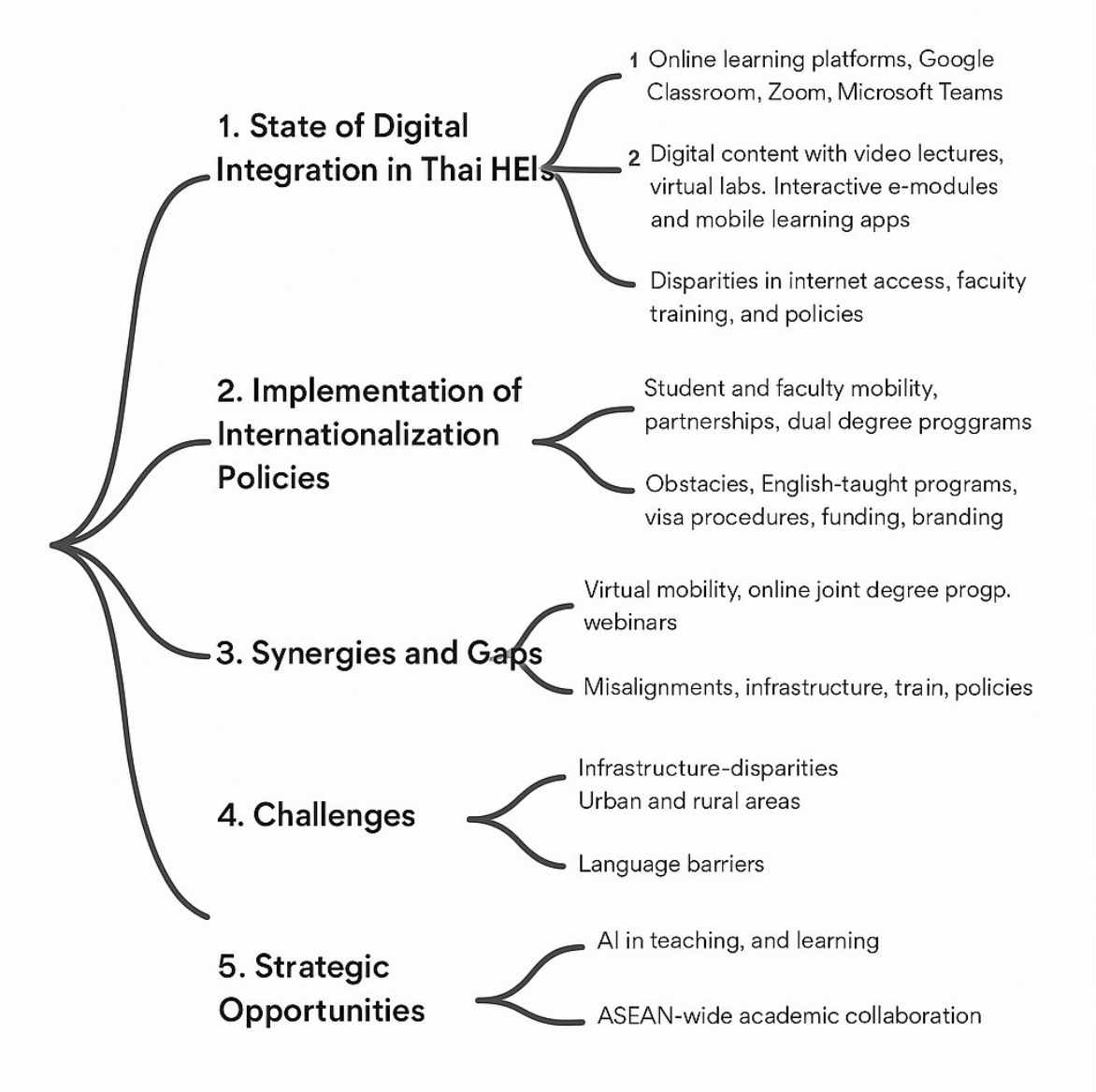

Figure 2: The Future of Higher Education in Thailand

CONCLUSION

This research examines Thai higher education's changing environment by analyzing both digital transformation and internationalization policies. The analysis showed significant advancements in implementing learning management systems along with building international partnerships, which align with national strategies such as Thailand 4.0 and the BCG Economy Model. Despite advancements in Thai higher education's digital transformation and internationalization policies, systemic issues remain, such as digital infrastructure disparities, limited English skills, fragmented execution of policies, and inadequate institutional resources. A number of institutions remain behind their peers in adopting innovation and global engagement because of financial limitations, technological barriers, and administrative challenges.

RECOMMENDATION

Policy and Practice Recommendation

Multiple stakeholders need to work together to move Thailand forward as an education hub for both regional and global markets. The Ministry of Higher Education, Science, Research and Innovation (MHESI) must establish stronger connections between digital efforts and internationalization policies

while distributing resources fairly. Institutional leaders should develop integrated methods that connect digital investments to global objectives through virtual exchange opportunities, cross-border educational programs, and digital credential issuance. Public-private partnerships should actively involve EdTech stakeholders and industry research entities to foster innovation while developing workforce readiness and lifelong learning opportunities.

Future Research Recommendation

The study uses comprehensive documentation, but future studies should apply empirical methods to confirm and build upon these results. It is crucial to conduct longitudinal research that investigates how digital learning affects both student performance and satisfaction. Studying faculty and student perceptions of internationalization efforts through qualitative research methods could reveal important information about institutional effectiveness. By analyzing best practices through comparative studies among ASEAN countries, researchers can help Thai higher education evolve into a more competitive and future-oriented system.

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A Model of Teaching Excellence: Metrobank Awardees' Experience

Marites S. Salasbar, Tita B. Buenaobra

ABSTRACT

This study examined the experiences of six Metrobank outstanding teacher awardees (2012-2017), using descriptive qualitative research to develop a teaching excellence model. The study is anchored on Self-Actualization Theory by Maslow and Two-Factor Theory of Motivation by Frederick Herzberg. The researcher transcribed the interview into texts and grouped them according to sub-themes then into major themes through thematic content analysis by Creswell (2014). The results revealed the experiences of teachers in attaining excellence: overwhelming success and recognition from victory, professional development, self-awareness and acceptance, and participation in community service. The motivations of the teachers include support and encouragement and the impact of student success on teacher motivation. The ideas the awardees shared to improve the performance include professionalism and commitment to one's work and selflessness and dedication to teaching. Additionally, the created model for excellent teaching can help students understand complex concepts, develop critical thinking skills, and achieve academic success. The teachers can also create a supportive learning environment that fosters students' self-esteem, confidence, and overall well-being. Also, the teachers can instill a love for learning that extends beyond the classroom. Future research directions should focus on studying success factors across various educational settings, examining how teaching excellence impacts student outcomes and investigating the role of institutional support in teacher development.

Keywords*:* Metrobank Awardee, Model of Teaching Excellence, Success Stories, Motivations, Outstanding Teachers

INTRODUCTION

Teachers play a crucial role in nation building. Through quality teachers, the Philippines can develop holistic learners who are steeped in values, equipped with 21st century skills, and able to propel the country to development and progress. This is similar to the idea/context on DepEd Order No. 36, s. 2023 stating that "Filipinos who passionately love their country and whose values and competencies enable them to realize their full potential and contribute meaningfully to building the nation" because evidence shows unequivocally that good teachers are vital to raising student achievement, i.e., quality learning is contingent upon quality teaching, enhancing teacher quality becomes of utmost importance for long-term and sustainable nation building (Department of Education, 2017). Various national and global frameworks, such as the K-to-12 reform and the ASEAN integration, globalization, and the changing character of the 21st century learners necessitate improvement and adaptability of education and a call for the rethinking of the current teacher standards. But the enactment into law by the K-to-12 Reform (RA 10533) has changed the landscape of teacher quality requirements in the Philippines. The reform process warrants an equivalent supportive focus on teacher quality – high quality teachers who are properly equipped and prepared to assume the roles and functions of a K-to-12 teacher (Teacher PH, 2017). Hence, recognition and awarding programs for excellent teachers are crucial as they boost morale, enhance job satisfaction, and motivate educators to strive for continuous improvement. These programs publicly acknowledge their valuable contributions, elevate the teaching profession, and inspire future generations of educators to pursue a career in education (Andrews, 2022).

Teachers impact students' lives every day. Teachers help shape students' minds and lay the foundation of knowledge across all learning areas. Students will not set goals for the future to become doctors if they do not excel or find interest in what they learn in their science classes throughout their schooling years (Moore, 2023). Students will never pursue writing if they are not taught how to form sentences and read stories. Students will never wish to be politicians if they do not understand the importance of government in this country, which would have been displayed to them in various Social Studies classes (Darling-Hammond et al., 2019).

Hughes (2015) stated that institutional commitments, workshops, conferences, and journals, all sharing the intent of improving teaching and content delivery, do not necessarily translate to a universal agreement on exactly what it is that teachers are improving. The value and weight placed on teaching vary across institutional type. For promotion and tenure, most faculty likely collate the same sorts of artifacts – collections of materials, such as students' course evaluations, teaching philosophies, syllabuses, assignments, exams, letters detailing classroom observations, and so on. Similarly, Victoria State Government (2019) stated that effective teaching is the single biggest determinant of student improvement in the school. Teachers not only have a direct impact on student achievement but also student engagement and motivation for learning. What teachers do in the classroom and how they interact with students are vital. Moreover, Baker et al. (2015) also stated that an excellent teacher is viewed as one who contributes positively to the learning environment by providing exceptional energy, keen interest in students, and extraordinary strengths in the following five roles: subject matter expert, pedagogical expert, excellent communicator, student-centered mentor, and systematic and continual assessor.

Clemente-Reyes (2019) stated that there are different factors that affect development of teaching expertise in the Philippines. She mentioned that an excellent teacher is a person who can do or perform his job on a very high level without putting so much effort that it looks automatic and easy. Teaching excellence is by developing interest in teaching through experiences and educational attainment. Behind the success of most expert teachers are the influence of their former teachers; favorable working environment; and encouraging administrators, colleagues, family, and friends. Teacher role models inspire their attributes, virtues, and excellent teaching. Moreover, Rossi & Stringfield (2021) cited that favorable school condition supports faculty development by providing instructional equipment, such as computers, overhead projectors, and liquid crystal display contributing to career satisfaction. Added with supportive and encouraging school administrators who give reasonable workload, the affirmation

and advice that they receive from colleagues and friends, together with family who understand the demands of a teacher, also contribute to their success in teaching.

The hard reality for many public-school teachers is that once they are already in the plantilla with the government, they remain passive with their professions. They do not attend professional developments, such as the acquisition of graduate or post-graduate degrees, attending skills-enhancement seminars and training, or being involved in research for the improvement of instruction and policymaking in the school (Bacus & Tagalog, 2023). The same scenario goes for most private schools, which only require teachers with a bachelor's degree and a background check before approving a new hire. Master's degrees and doctorates are highly desired. But, apart from those requirements, what a private school is really looking for are teachers who can inspire students and bring great experience to the classroom (Kennedy, 2019). Furthermore, teachers in both private and public schools fulfill multiple roles, such as being a communicator, facilitator, counselor, disciplinarian, mentor, surrogate parent, and others. Teachers are required to perform various tasks apart from teaching (Pablo, 2012) as long as the teachers show a clear commitment to teaching career. Teachers come into the job having learned the relevant subject knowledge and teaching skills (Santos, 2021).

The researcher observes that many teachers in the public sector find their workplaces safe zones and, thus, no longer see the need to improve themselves personally and professionally. The researcher is a public elementary school teacher and, at the same time, a recipient of various excellent awards in teaching. The researcher cannot equate achievement with excellence as there is still a need to reflect on the experiences of the other awardees who have made it to the national level. It is in this context that the researcher felt the urgency and need to fill the identified research gap. Teaching excellence is important for developing important democratic competences among teachers in both private and public schools. Teaching excellence is associated with better performance for the development of teachers' flexibility and adaptability, openness to other cultures and beliefs, self-efficacy, and tolerance of ambiguity. The study's output will not only foster overall acceptance, equality, and development of teachers who are excellent in their craft but will also allow teachers to participate in many award-giving bodies on teaching excellence. A dissemination plan will be conducted through a research forum or the presentation of the study's results in a reputable local, national, or international journals.

Statement of the Problem

The study was conducted to know the experiences of the Metrobank Outstanding Teacher awardees from 2012 to 2017 in achieving teaching excellence as basis for a proposed model of teaching excellence. Specifically, it answered the following questions:

1. What are the experiences of the participants in attaining teaching excellence via Metrobank's Outstanding Teacher Award?
2. What are the motivations of the participants in achieving teaching excellence?
3. What ideas can the participants share to improve the performance of the teachers?
4. What model of teaching excellence can be proposed based on the findings of the study?

Framework of the Study

The study is anchored on Self-Actualization Theory by Maslow and Two-Factor Theory of Motivation by Frederick Herzberg.

Abraham Maslow's self-actualization theory represents the pinnacle of his hierarchy of needs, describing a state where individuals fulfill their potential and become their most authentic selves (Kaufman, 2020). Self-actualization emerges once lower-level physiological, safety, belonging, and esteem needs are satisfied, enabling people to pursue personal growth, creativity, and purpose. Those achieving self-actualization typically demonstrate qualities like acceptance of self and others, autonomy, deep interpersonal relationships, and peak experiences characterized by moments of profound fulfillment and harmony (Taormina & Gao, 2022; Winston, 2023).

Maslow's self-actualization theory offers critical insights for teaching excellence by providing a framework that encourages educators to address students' holistic developmental needs beyond academic content (Gupta & Awasthy, 2020). When teachers recognize that psychological safety, belonging, and esteem must be established before higher-order learning can flourish, they create environments conducive to deeper engagement and intrinsic motivation (Seidel et al., 2022). Furthermore, self-actualized teachers model authenticity, continuous growth, and purpose-driven practice, inspiring similar qualities in their students while fostering classrooms where creativity, critical thinking, and personal meaning-making thrive alongside traditional academic achievement (Winston, 2023).

On the other hand, Herzberg's Two-Factor Theory of motivation, developed by psychologist Frederick Herzberg, proposes that job satisfaction and dissatisfaction are influenced by two distinct sets of factors rather than existing on a single continuum (Alshmemri et al., 2020). The theory distinguishes between hygiene factors, which prevent dissatisfaction but don't necessarily create satisfaction, and motivational factors, which actively drive satisfaction and engagement when present (Hur, 2022). This distinction has profound implications for workplace management as it suggests that organizations must address both sets of factors to maximize employee motivation and performance, with research continuing to validate the theory's relevance in modern work environments despite changes in workplace dynamics and employee expectations (Matei & Abrudan, 2023).

In particular, the motivational factors in the attainment of teaching excellence are performance and achievement, personal growth, opportunities for advancement, and recognition. Rosenholtz (2016) cited that experienced teachers are more effective than their juniors. Moreover, Salomaki et al. (2012) cited that personal growth involves the development of the teachers' emotional skills by using art and skills and, therefore, improves teaching excellence. In addition, Pearson Education (2016) argued that teachers taking career advancement programs improve their craft and, eventually, their teaching excellence. Lastly, Andrews (2011) cited that recognition programs create impact on teaching excellence. Recognizing teachers for their accomplishments is a necessity and can be done through a good reward system, which keeps teachers being inspired by dynamic growth and new achievements.

The researcher believes that Two-Factor Theory was developed to understand teachers' attitude, motivation, and overall satisfaction to the job, which correlates to teaching excellence. Teachers who have a strong drive to set and accomplish goals enjoy working alone, are willing to take calculated risks, and want to receive regular feedback on their accomplishments and progress which are often motivated by achievement in the workplace. Moreover, offering recognition and praise not only makes teachers feel accomplished and appreciated, but it also reinforces good performance and encourages teachers to continue repeating the actions that led to the performance. The more behavior is positively recognized, the more likely teachers are to repeat these behaviors and remain motivated in the workplace.

Furthermore, teachers who believe that the work they are doing is important and that their tasks are meaningful are more likely to be motivated to do well. Job advancement opportunities also ensure teachers understand a clear plan of progression within their position in the workplace, which can ultimately increase teacher productivity. Also, growth opportunities make teachers often feel more motivated at work when there are ample opportunities for growth and professional development. Giving teacher opportunities to increase their skills and become more efficient in their positions instills a sense of accomplishment and pride that acts as a strong motivator for teachers.

METHODOLOGY

The study used a **descriptive qualitative research design**. This approach focused on gaining insights into the lived experiences of award-winning teachers through open-ended, structured interviews. Thematic analysis was used to interpret and identify recurring patterns in the data.

Participants And Sampling

Six (6) **Metrobank Outstanding Teacher awardees** from 2012 to 2017 served as participants. They were selected through **purposive sampling**, targeting educators who met specific criteria. Participants were from different regions (except Visayas), and most were still in the teaching profession or held roles related to education.

Table 1
Profile of the Participants

Code	Sex	Location	Age	Assigned Level of Education	Assigned Type of Educational Institution	Years in Teaching	Year Recognized as Metrobank Outstanding Teacher
T1	M	NCR	36	Secondary	Private	16	2016
T2	M	Luzon	49	Secondary	Public	27	2014
T3	F	Luzon	36	Elementary	Public	12	2015
T4	F	Luzon	44	Elementary	Public	22	2017
T5	M	Mindanao	32	Secondary	Public	11	2017
T6	M	Luzon	39	Elementary	Public	19	2012

Data Gathering Procedures
After securing ethics approval and permission from Metrobank Foundation, participants were contacted via Messenger. They were given consent forms and scheduled for 30–45-minute interviews conducted via **Microsoft Teams**. Interviews were recorded, transcribed, and coded.
Data Sources
Primary data were gathered through **structured interviews** using a researcher-made guide, which included demographic questions and open-ended prompts related to teaching excellence.
Data Analysis
Thematic content analysis (Creswell, 2014) was used. Transcripts were reviewed, coded, and categorized into sub-themes and major themes, forming the basis for interpretation and discussion.

RESULTS

The data gathered were analyzed and the resulting findings were interpreted. The findings were interpreted and presented in alignment with the sequence of problems.

1. What are the experiences of the participants in attaining teaching excellence via Metrobank's Outstanding Teacher Award?

Table 2
Experiences of the Participants

Responses	Codes	Meanings	Themes
Because ma'am, after winning, I was invited by radio station, television station. (T1)	Having invitation to speak to different platforms	Winning a top prize allows you to become a guest speaker	Overwhelming Success and Recognition from Victory
When we started campaigning, the awarding week, the various	Having different engagements to	Being awarded with a prestigious award allows	

Responses	Codes	Meanings	Themes
engagements, you will face the House of the Senate, the House of Representatives, then you will be awarded with the President, and then, as long as there are a lot of engagements, then the invitations will come one after another. (T4)	speak in front of the top government officials	you to become a voice of the teachers	
I was in my teacher 3 position, but after that award, I was given the privilege to be automatically promoted to Master Teacher 1, then Master Teacher 2. (T5)	Automatic promotion	There is automatic recalibration of teacher's rank	Professional Development
Usually, kapag awardee ka, perfect in the sense na lahat ay nasa ayos. For example, maganda ang career, siyempre, 'yan ang number one. (T3)	Having a good career	Being an awardee follows a good career	
Parang naisip mo na may kulang ka. Akala mo nagawa mo ang lahat, pero hindi mo naibigay ang effort mo. Hindi mo naibigay ang best mo. (T3)	Realization of one's limitations	Coming to a clear understanding of the things you are not good at, the things you cannot do, or the things you have limited resources for.	Self-Awareness and Acceptance
Productive individuals will also contribute to the development of the community and the country in general. (T2)	Contribution and development of the community	Active involvement of the teacher for the betterment of the community,	Participation in Community Service

Shown in Table 2 are the experiences of the Metrobank Outstanding Teacher awardees in attaining teaching excellence. The following major themes emerged: Overwhelming Success and Recognition from Victory, Professional Development, Self-Awareness and Acceptance, and Participation in Community Service.

2. What are the motivations of the participants in achieving teaching excellence?

Table 3
Motivations of the Participants in Achieving Teaching Excellence

Responses	Codes	Meanings	Themes
When I applied, ma'am, I won in 2016. In 2014, my principal was different. He was very supportive. (T1)	Having a supportive principal	Having supportive administrators who offer mentorship, guidance, and advice can help you identify areas for improvement	Support and Encouragement
I know that my fellow teachers supported me well. Actually, during the preparation po of my documents, kasi there are several documents that I	Having supportive teachers	Having supportive teachers can help achieve teaching excellence	

needed to prepare, I was supported by my fellow teachers. (T2)			
But you will continue because there are a lot of people who trust you. There are a lot of people who cheer for you. (T4)	Having people who trust you	People who trust and cheer for you let you achieve great things	
Halimbawa, kung na-appreciate ka ng isang bata. (T3)	Being appreciated by students	Being appreciated by students is one great motivation to achieve excellence	Impact of Student Success on Teacher Motivation
The success of my teaching is reflected when my learners become successful. (T6)	When students become successful	When students become fruitful and successful motivate a teacher to achieving excellence	

Shown in Table 3 are the motivations of the teachers in achieving teaching excellence. The following major themes emerged: Support and Encouragement, and Impact of Student Access on Teacher Motivation.

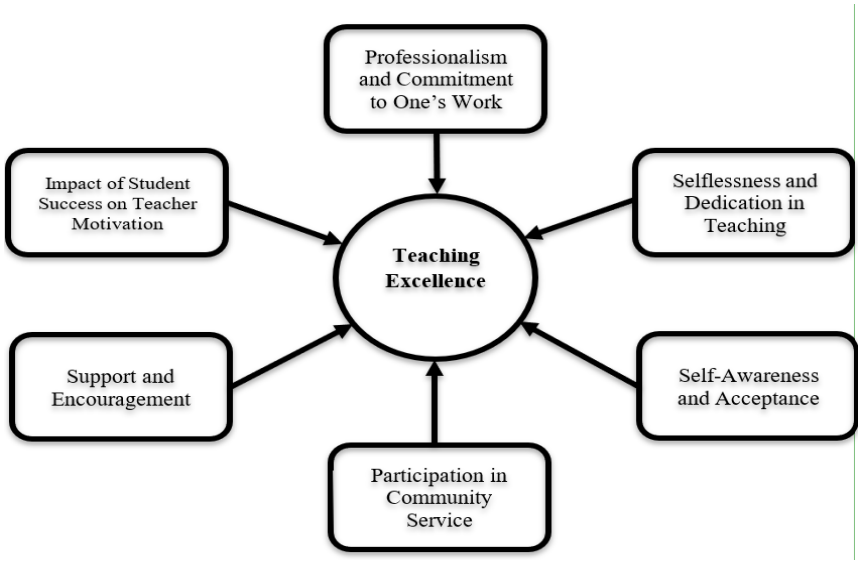
3. What ideas can the participants share to improve the performance of the teachers?

Table 4
Ideas the Participants Can Share to Improve the Performance of the Teachers

Responses	Codes	Meanings	Themes
Una, siyempre, dedication at commitment sa trabaho natin, sa propesyon natin. (T2)	Dedication and commitment	Teacher's unwavering devotion to their profession and to their students	Professionalism and Commitment to One's Work
Do your job with passion, commitment, dedication. (T4)	Passion, commitment, and dedication with the job	This is the teacher's essential qualities in performing their jobs	
Kaya para magtagumpay tayo sa pag-practice ng ating propesyon, kailangan ng dedicated service. (T2)	Dedicated service	Commitment in providing high-quality education and support to students	
Teaching is not about making the learners learned. It is more on giving yourself. (T6)	Giving yourself	Selfless dedication to their profession that involves going beyond the expected duties and investing personal time and emotion to the work.	Selflessness and Dedication in Teaching
Just do your job religiously. (T5)	Doing the job religiously	A deep commitment and dedication to the profession akin to the devotion.	

Shown in Table 4 are the ideas the awardees can share to improve the performance of the teachers. The following major themes emerged: Professionalism and Commitment to One's Work, and Selflessness and Dedication in Teaching.

4**. What model of teaching excellence can be proposed based on the findings of the study**



This model of teaching excellence creates effective teachers who play a pivotal role in helping students achieve their academic goals. They provide clear explanations, offer support, and foster a love of learning. Teaching excellence contributes to the overall quality of education. It ensures that students receive a rigorous and engaging curriculum that prepares them for future success. Excellent teachers create positive and inclusive learning environments where students feel safe, respected, and motivated to learn. Also, effective teachers inspire students to become lifelong learners. They instill a passion for knowledge and curiosity that will benefit students throughout their lives. Additionally, teaching excellence has a positive impact on the community. It produces well-educated citizens who are capable of contributing to society and making a difference.

The Model of Teaching Excellence serves as a framework that guides educators towards achieving high-quality instruction. It provides a clear set of standards, criteria, and expectations for effective teaching practices.

CONCLUSIONS

Awardees' experiences empower them to become advocates, leaders, and inspirations in education both locally and globally.
Recognition unlocks opportunities for growth, promotion, and greater influence in shaping educational practices.
intelligence, mentorship, and a nurturing learning environment.

RECOMMENDATIONS

Teachers pursue ongoing professional development, peer mentorship, and collaborative learning. School administrators model high standards, offer visible support, and recognize teacher efforts. Stakeholders invest in teacher training and build supportive, growth-oriented school cultures. Future researchers are encouraged to examine awardees' long-term influence and how institutional support shapes excellence.

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