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JIRSEA: PUBLISHING POLICY

The Journal for Institutional Research in South East Asia (JIRSEA), an online journal, that is Scopus Indexed, is published electronically on a biannual basis. In 2017, a decision by the SEAAIR Executive Committee to celebrate the inclusion in the May/June JIRSEA issue of the top "Best Paper" and "Outstanding Papers" selected from the annual SEAAIR Conference by a panel of judges on-site. All publications, invited or selected, undergo the due diligence of the double blind review process by independent international reviewers. Original research papers, which have not been submitted for publication elsewhere, dealing with all aspects of institutional research, planning and related issues in tertiary education will be considered.

All papers are refereed by two independent persons and evaluated according to:

1. Significance in contributing new knowledge
2. Technical, Scientific and Academic acceptability
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Updated May 2019

Editorial

The September/October 2019 issue of JIRSEA has two main features of the ten normal papers accepted following the due diligence of the double-blind review process and to celebrate the 19th SEAAIR 2019 Conference's "Best Paper" and two selected "Outstanding Papers".

The papers are mainly in 3 main categories: (1) Academic Performance that looks at the personal domain of spiritual well-being and family support; grit personality as the mediator of the effect of internet addiction on procrastination; and school abuse and depression outcomes; (2) collaborative learning; and (3) communication issues of individualism and collectivism & social media in enhancing language competence.

The three papers that are celebrated include the 19th SEAAIR Conference of the "Best Paper" on entrepreneurial propensity, and two "outstanding papers" on pedagogy effects on students' practices of school values; and application of Markov forecasting in enrolment planning.

The key synopsis from the six main paper submissions and the three from the 19th SEAAIR Conference are:

- **Chun Cheong Steve Fong** of *Macao Polytechnic Institute* paper on "Contribution of Personal Domain of Spiritual Well-being and Family Support of University Students (major in Accounting) in Macau to their Academic Performance" examines the contribution of the personal domain of spiritual well-being of university students (major in Accounting) in Macau and family support to their academic performance. The findings demonstrate that the accounting student's academic performance was contributed positively by the personal domain of spiritual well-being and the family support factors and unfavorable family support factor as student part-time work was suggested to be modified to a favorable factor.

- **Poh Chua SIAH, Annabella Hui Wen NG, Eunice a/p Dharmaraj, Carmen Foo, Swee Mee Tan,** and **Walton Wider,** all from *Universiti Tunku Abdul Rahman, Malaysia,* in their paper "Grit personality as a mediator or moderator for the effects of internet addiction on Procrastination" studies the triangulation of the relationships among internet addiction, grit personality, and academic procrastination. The findings suggested that internet addiction is positively associated with academic procrastination, while grit is negatively linked to academic procrastination. Findings also implied that internet addiction serves as a negative factor to the consistency of interest but not to the perseverance of effort in grit personality and concluded that consistency is a mediator rather than a moderator for the effects of internet addiction on procrastination.

- **Jalal. K. Damra** of the *Educational Psychology and Psychological Counseling Department, Hashemite University, Jordan,* focuses on *"Abusing other behind the Screens: Depression outcomes"*. The study on Cyber-bullying (CB) investigates the relationship between CB exposure and depression among Hashemite University students (HU). indicated that 13.48% of participants had experienced CB in college; participants who identified themselves as victims of CB had increased odds of depression in light of previous personal history with traditional bullying and longtime of internet access, but not in light of gender variable.

- **Tad Watanabe,** *Kennesaw State University, Kennesaw, Georgia, USA*; **Akihiko Takahashi,** *DePaul University, USA* and **Areej Isam Barham** of *Qatar University, Qatar* study on "Implementing school-wide Collaborative Lesson Research in Qatar" uses the Collaborative Lesson Research (CLR), an enhanced version of Japanese lesson study in this research. The findings show that the participants gained much insight into both teaching mathematics through problem-solving and CLR and confirmed the significance of knowledgeable others for teacher learning in CLR.

- **Nael M Sarhan, Fayiz Dahash Shrafat,** and **Amer Alshishany** from the *Faculty of Economics and Management Science, Hashemite University, Zarqa, Jordan* and **Ayman Harb** from the *Faculty of Tourism and Hospitality***,** *The University of Jordan, Aqaba, Jordan* focus on "The impact of Individualism and Collectivism on Communication Apprehension: A study of University Academic Staff". The findings of this research reveal that there is a significant relationship between the individualism and collectivist culture and communication apprehension and that Jordanians have higher levels of communication apprehension.

- **Nalini Arumugam** and **Sivajothy Selvanayagam** of *Academy of Language Studies, Universiti Teknologi MARA, Malaysia* and **Normah Ismail**, *Universiti Teknologi MARA Johor* with **Sai Dharinee Sathiyasenan** *Modern Language Department, Management and Science University, Malaysia*" focuses on the "Social media in enhancing English Language competence among Undergraduates". The study concludes that social media platforms have much potential among undergraduates in learning the English language and their use as a pedagogical approach can improve students' learning outcomes in acquiring the English language.

- **Anthony Ly B. Dagang** of *Lourdes College, Philippines* and **Heidi Grace P. Mendoza** of *Capitol University, Philippines,* the **19th SEAAIR Conference "Best Paper" Award** focus on the "Entrepreneurial propensity of business students of a city in the southern Philippines: A Structural Model". The model proposes that entrepreneurial propensity is best predicted by intention, school

factors, and motivation - which indicates that regardless of personality, students are likely to choose entrepreneurship as a career path in the future when significant others such as family or colleagues approved of that choice and if they have a strong belief that they have control of the situation.

- **Miguela B. Napiere** and **Judith C. Chavez** of *Lourdes College, Cagayan de Oro City, Philippines*, one of the two **19th SEAAIR Conference "Outstanding Paper" Citation,** focuses on the "RVM pedagogy: Does it matter on students' practice of school's core values?". The study concludes that the participants' perceived effects of the RVM pedagogy can make a difference in their practice of the school's core values of faith, service, and excellence.

- **Amir H. Rouhi** of *Analytics and Insights, Finance and Governance, RMIT University, Melbourne,* the second 19th SEAAIR Conference "Outstanding Paper" Citation focuses on a paper entitled "Applying Markov-based forecasting in Enrolment Planning". It utilizes a frequentist approach to achieve the transitional probabilities and computing the likelihood of possible future states by implementing different scenarios by way of tweaking the elements of the primary Transitional probability matrix and analyzing the results.

Associate Prof. Teay Shawyun, Ph.D.

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CONTRIBUTION OF PERSONAL DOMAIN OF SPIRITUAL WELL-BEING AND FAMILY SUPPORT OF UNIVERSITY STUDENTS (MAJOR IN ACCOUNTING) IN MACAU TO THEIR ACADEMIC PERFORMANCE

Chun Cheong Steve Fong

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ABSTRACT

This study aimed to examine the contribution of the personal domain of spiritual well-being of university students (major in Accounting) in Macau and family support to their academic performance. Survey data were collected from 101 accounting students of a Macau tertiary institute. The questionnaire was partly adapted from the spiritual well-being measure developed by Gomez and Fisher (2003). A comparison study with another university accounting program (n=133) of a similar study by Pong (2017) in Hong Kong was shown. Both two student samples' results demonstrate that the accounting student's academic performance was contributed positively by the personal domain of spiritual well-being and the family support factors as father's job level and mother's education level, while the student's part-time work experience exercised negative impact. Parents' job level and education level were peculiar and hardly modified. Unfavorable family support factor as student part-time work was suggested to be modified to a favorable factor, such as accounting career development-based internship.

Keywords: personal domain, spiritual well-being, family support, academic performance

Introduction

Student academic performance has long been a remarkable area for accounting educators, students, and parents to investigate factors, methods, and settings for improvement. Accounting education success is recognized to possess an affirmative contribution to society. It is reflected in higher productivity levels and in improving the living standards of young accounting professionals (IFAC Education Committee, 2003). Karreman, *et al.* (2007, p. 473) claimed, "The need for upgrading of accounting education in many parts of the world has been demonstrated". Besides academic factors, such as program structure, course curriculum, contents, and instructor course delivery, empirical research about the influence of students' family support factors and personal factors have been increasingly important and relevant to improve student performance (Messah and Dalia, 2017).

The primary objective of the current study was to study personal factors and family background factors that are remarkable and important to contribute to the academic performance of accounting program students. Personal factors as a sense of identity, self-awareness, joy in life, inner peace, and meaning in life were first set into the variable, personal domain of spiritual well-being (Gomez and Fisher, 2003) for analyzing the role of personal factors in student's academic performance in accounting studies. The study also investigates the role of family background factors (parents' job level and education level, part-time work experience of student), and identifies these impacts on the students' academic performance.

Student performance was regarded to be the result of personal factors and family factors in addition to academic factors (Diaz, 2003). The significance of the current study emanates from the fact that it is differentiated from former studies by recognizing two issues. The first is to identify the contribution of a personal domain of spiritual well-being to student academic performance. The second is to suggest an alternative for handling student's inborn background factors which are hard to modify or change. Once clarified the related situations, these background factors can be suggested to be coordinated with other academic factors for improving student academic performance. It is trusted that this study contributes remarkably to the existing literature of accounting education, especially in developing regions such as the Macau Special Administrative Region (SAR) of China.

The following development of the paper is organized as: Section 2 presents a literature review on the personal domain of spiritual well-being and the family support factors of students. Details about research methods in the studied regions, data collection results, analysis, and discussion are put in Section 3. Conclusion of the results, then implication and recommendation are presented in Section 4 and Section 5 respectively.

Literature Review

Spiritual Well-being

Spiritual well-being can be split into two notions, spiritual and well-being. Spiritual is denoted as a concept associated with immateriality, metaphysics, and spirit (Gomez & Fisher, 2003). Well-being is usually used to designate the prestige of comfort, happiness, peace, and wellness (Ellison, 1983). Uniting these two notions, spiritual well-being represents the pleasant status of a person. It is also viewed as the act of conveying optimistic moods, performances, and views in relationships with oneself, others, the transcendent, and the environment (Gomez and Fisher, 2003). Beauty, contentment, forgiveness, happiness, harmony, honesty, humility, respect, mercy, and peace are major appearances of a person with solid spiritual well-being. A person with healthy spiritual well-being holds a pure meaning and purpose of life and he or she continuously engages in self-examination and self-reflection for further personal perfection (Emmons, 1999). In 1975, the National Interfaith Coalition on Aging (NICA) defined spiritual well-being as a person's relationship with appreciation and gratitude with oneself, community, the natural environment, and the Divine/God (Ellison, 1983; Gomez and Fisher, 2003). Fisher suggested similar concepts of spiritual well-being basing on the definition of NICA (Fisher 2000; Gomez & Fisher, 2003) and listed out four domains of spiritual well-being as (1) personal, (2) communal, (3) environmental, and (4) transcendental.

One domain intra-relates with oneself with regards to meaning, purpose, and values in life (Fisher, 2010). Gomez and Fisher (2003) developed five questions of the Spiritual Health and Life-Orientation Measure (SHALOM) for each of the four domains. The personal domain questions denote the meaning, purpose, and direction of individual life. They cover a sense of identity, self-awareness, joy in life, inner peace, and meaning in life. The communal domain questions extend to interpersonal relationships and communications. They comprise love of other people, forgiveness towards others, trust between individuals, respect for others, and kindness towards other people. The environmental domain questions cover relationships between the environment and individuals. They comprise connection with nature, awareness of breathtaking natural view, oneness with nature, harmony with the environment, and a sense of 'magic' in the environment. Self-awareness is the driving force or transcendent aspect of the human spirit in its search for identity and self-worth (Fisher, 2010). The transcendental domain questions pertain to the relationship and communication between the human beings and the transcendent (Gomez & Fisher, 2003). They link up a personal relationship with the Divine, worship of the Creator, oneness with God, peace with God, and prayer in God.

Personal Domain

Among the four SHALOM domains (Gomez and Fisher, 2003), the personal domain relates much to the initiation of learning by students' autonomous learning. The majority of academically outstanding students are likely to demonstrate decent spirits and character, such as

confidence, satisfaction, and fulfillment. In contrast, most of the weaker performed students may incline to show lower measures in the personal domain compared with others. Academically well-performed students are victors in their learning and their growth. So, they most are assured, optimistic and pleased in daily life. These students seem to show their better measures in the personal domain. Some of the specific features are identified, for instance, concentration, enthusiasm, and self-restraint.

The modern professional business environment and the transforming roles of the accountant highlight the need for a wider focus in accounting education. Critics of accounting education have articulated concern that less emphasis should be placed on technical skills and more emphasis on conceptual qualities and understanding of self-development (McGuigan, 2017). From the International Education Standards for Professional Accountants (IFAC Education Committee, 2003), among the five essential professional skills for professional accountants highlighted, three out of five, i.e. intellectual skills, technical and functional skills, and personal skills relate much with the personal domain. The other two skills, interpersonal and communication skills, as well as organizational and business management skills are a bit remote from a communal domain, environmental domain, and transcendental domain. On the contrary, the personal domain plays a highly important role in influencing the academic performance of accounting students.

Student's Family Support
Besides personal factors as reflected in the personal domain of spiritual well-being, student's family support in guidance, family life, and finance of the student's studies play important roles in shaping student's academic performance. It can be reflected through parents' education level, parents' job level, and student part-time work experience.

Parents' Education Level
Constantine, *et al*. (2006) identified that student's academic performance fundamentally related much to their parents' educational backgrounds. For instance, parents who have higher education qualifications and professional occupations would possibly have more financial resources and informative resources for developing students intellectually. These parents are more likely and able to arrange experienced private tutors for students before their higher education. Flannery (2012) illustrated students whose parents have higher education achievements, such as professional recognition (e.g. accountant, engineer, lawyer) and higher education level (i.e. Master degree and Ph.D.), tend to possess life satisfaction and have better academic performance. It is because parents with higher academic qualifications would definitely and directly cultivate their youth talents and potentials at their primary ages. These parents would usually inspire students to discover the surroundings and comprehend the world. Sense of awareness of external factors was important to the analytical skills of successful accounting students. McGilton, *et al*. (2012) also noted that students, whose parents have better

academic achievements, tend to nurture their personality, moral and character development. These parents nurture students to be responsible and caring persons rather than ironic and successful ones in the future. Responsibility and due care are essential to nurturing ethics in accounting students.

Parents' Job Level

Students with better resources (e.g. family income, books, private tuition) usually have more learning opportunities and can capitalize them for performing well in studies (Baker, Goesling, and Letendre, 2002). Parents with higher job levels are more likely to provide more learning resources to students. Parents are greater aggregate sophistication among families, which enables them to effectively devote resources to students' education performance. Chiu and Khoo (2005) discovered that students performed better or worse when parent job level exercised a significant effect on student academic performance. Ample resources in families offer students more learning opportunities, which students can use to study more. Well-educated parents normally earn higher incomes and are likely to purchase more and better educational resources for the students.

Parents with more financial wealth are likely to develop larger social networks of professional and educated people (Horvat, *et al.,* 2003). Students can benefit from these networks via immediate interactions with other parents in the networks to access more cultural and social resources. For instance, students' accounting internships in the summer can be arranged through parents' networking with accounting and/or finance professionals.

Student Part-time Work Experience

Watts (2002) specified the increasingly unsatisfied potential impact of part-time employment amongst full-time university students on their studies. Some students work well over 35 hours per week in term-time and hence have difficulties coping with their studies. They are hard to allocate sufficient time and effort to studies. Carney, *et al.* (2005) identified Scotland that part-time work possesses a highly unfavorable effect on both the mental and physical health of students. Long part-time working time increased the probability that the students performed weakly owing to less time spent on daily life and studies. Study mood and concentration are hence weakened.

General or clerical part-time job experience of students plays a negative role in accounting education. Students' part-time work employment is the most frequently quoted reason for absence in class. There was a clear positive relationship between class attendance and consequent academic performance (Paisey and Paisey, 2003; Kouliavtsev, 2013). Manthei and Gilmore (2005) considered that working part-time left less time than desired for studies. Jogaratnam and Buchanan (2004) identified that students who were balancing a full-time academic load along with a part-time job were likely to suffer from stress. Students take general

clerical part-time jobs mainly for earning money in the short term. Routine administrative work tasks cannot enhance students' professional skills and knowledge in accounting. The longer the part-time working time means the shorter the student time and efforts spent on studies. This universally applies to knowledge and technique demanded disciplines, such as accounting. Subsequently, student academic performance was poorer. Ford, *et al.* (2006) stated that the incidence of student part-time employment increases with detrimental effects on academic performance.

On the other hand, a general part-time job differs greatly from an internship. Career development-based internship can integrate learning from school with learning through practice, correlated reality, and theoretical concepts (Albu, *et al*., 2016). Internship helps increasing student motivation for learning and better and clear responsibility for career management.

Accounting Study

The Accounting study is to prepare students to meet the challenge of a rapidly growing and increasingly technology-dependent business environment with particular emphasis on the analytical, organizational, and professional skills required in main business and accounting functions. In addition to traditional technical and contemporary accounting skills and knowledge in preparing financial statements, accounting students are taught to expand their skill level with analytical reasoning, problem-solving, computing technology, presentation skills, as well as verbal and written communication abilities (IFAC Education Committee, 2003). With the advancement in information technology, mechanical and repeatable accounting computation can be handled by computerized programs, and accounting study has been changed to be more emphasized on financial data analysis and communication.

Macau Study

Macau is a Special Administrative Region (SAR) of China. It is famous in the gaming industry and has a small population of around 660,000 people. After returning from a Portugal colony to reunite with China as a special administrative region in 1999, Macau has experienced rapid economic development which is also reflected in the education field. Nine tertiary institutes offer Accounting studies. The current study examines personal domain and family support that can affect student academic performances in terms of cumulative Grade-Point Average (CGPA) in the Accounting Programme of Macao Polytechnic Institute. It is the second-largest public tertiary institute offering professional Accounting studies in Macau and offers four-year bachelor's degree studies in Accounting. The students are Chinese and study Accounting programs in English. The factors chosen for this study were adopted and modified (where appropriate for Macau conditions) from the studies by Fisher (2000), Gomez and Fisher (2003), Marks, *et al*. (2001), and Carney, *et al.* (2005). The following factors, independent variables, were selected for the study.

- Personal domain (of spiritual well-being),
- Student part-time work experience,
- Father's job level,
- Mother's job level,
- Father's education level,
- Mother's education level.

Besides the personal domain, all the other five factors relate to family support. In addition, among them, only student part-time work experience is extrinsic and can be modified. The others are intrinsic. While searching for factors of academic performance, a better understanding of the determinants of learning effectiveness will improve the likelihood of achieving a preferred outcome. The research framework is shown in Figure 1.
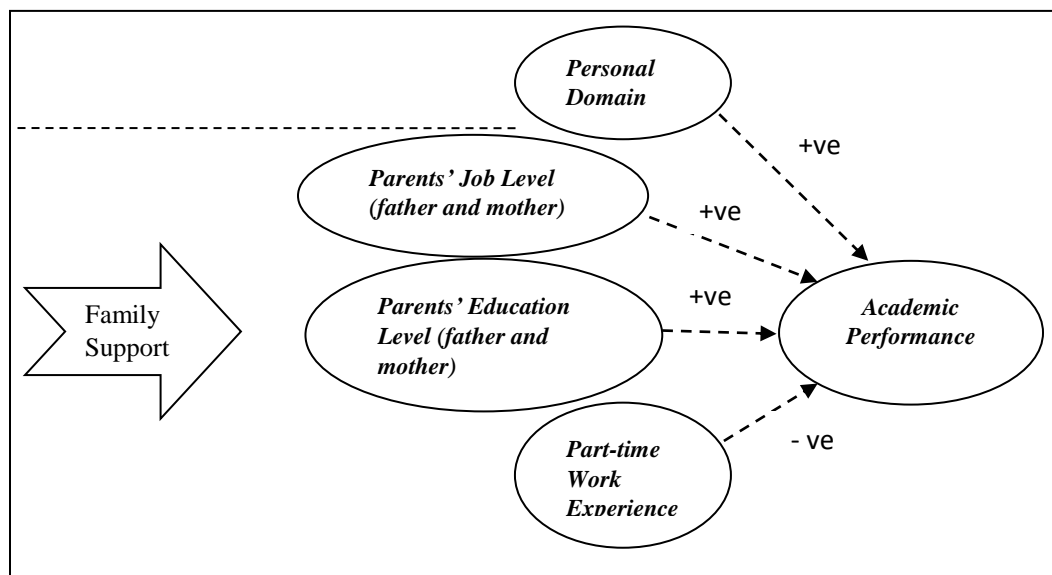
Figure 1: Research Framework about Academic Performance

CGPA of student assessment results achieved in the final examination, mid-term test, quiz, presentation, project, homework exercises, and classwork exercises for studied subjects were used to measure student's academic performance (Makay and Wagaman, 2016). Accounting student's academic performance measured by CGPA is supposed to be positively affected by personal factors such as personal domain, and family support factors such as parents' job level (father and mother) and parents' education level (father and mother). Part-time work experience is regarded to exercise a negative impact on student's academic performance.

Survey Data Collection
Referring to previous research findings (Gomez and Fisher, 2003; Marks, *et al*. 2001; Carney, *et al*., 2005) and the Accounting Program curriculum of the Macao Polytechnic Institute, a

structured questionnaire was developed to collect a wide range of student data. Section A consisted of five questions selected from the personal domain of Spiritual Health and Life-Orientation Measure developed by Gomez and Fisher (2003). These five questionnaire items were: (a) sense of identity, (b) self-awareness, (c) joy in life, (d) inner peace, and (e) meaning in life. A five-point Likert-type scale was used for these questionnaire items. The score for questions in each domain ranges from 'very high' (5) to 'very low' (1).

Section B consisted of questions on demographic data as student CGPA scores in previous semesters, parents' job level, parents' education level, and students' part-time work experience. Student self-reported CGPA scores: six-point ordinal responses were used to report cumulative GPA ranks from the lowest of less than 1.5 to the highest of 3.5 to 4.0 (mostly A's) or equivalent. Parents' education level: Each student reported his or her father's and mother's highest level of education attained, according to an eight-point ordinal scale, ranging from (a) no formal education at all, (b) to primary schooling, (c) junior secondary schooling, (d) senior secondary schooling, (e) matriculated, (f) post-secondary, (g) university (bachelor degree level), and (h) postgraduate studies (master or doctoral degree level). Parents' job level: Each student reported his or her father's and mother's current occupation, according to a 10-point ordinal scale, ranging from : (a) unskilled laborers, (b) industrial operators, (c) craftsmen or repair mechanics, (d) skilled agricultural and fishery workers, (e) service or sales staff, (f) administrative support staff, (g) technicians or related support staff, (h) professional specialists or associate professionals, (i) executives, administrators, or managers, and (j) capitalists, businessmen, proprietors, or directors. Student's part-time work experience: Each student reported his or her part-time work experience according to a six-point ordinal scale, ranging from the lowest level of no experience to the highest level of 18 months or above part-time work experience.

The survey was conducted in Week two to four of Semester II in 2018 to all four-year students of the Accounting Program who had possessed experiences of university studies and examinations. The Accounting Program provided a survey population of 121. The questionnaires were distributed to students in classes. 101 useable questionnaires were received which represented a response rate of 83.5%. There were 54 female students and 47 male students. 74 were Macau students, and 27 students were from China.

Data Analysis

To test the reliability of the research instrument, Cronbach's coefficient alpha analysis was conducted. The personal domain's Cronbach alpha ($\alpha = 0.796$) was over 0.7 alpha value, which exceeded the critical watershed value (Bar-On, 2002). Hence the score was reliable. Spearman correlation was conducted to support correlation results among CGPA scores and other aforementioned factors in Table 1. All illustrated significant correlation results, yet student part-time work experience revealed a negative correlation with CGPA.

Table 1: Spearman Correlation Results

		CGPA	Father's Education Level	Mother's Education Level	Father's Job Level	Mother's Job Level	Personal Domain	Student Part-time Work Experience
CGPA	Correlation Coefficient	1.000						
	Sig. (2-tailed)	.						
	N	99						
Father's Education Level	Correlation Coefficient	.435[**]	1.000					
	Sig. (2-tailed)	.000	.					
	N	96	98					
Mother's Education Level	Correlation Coefficient	.474[**]	.766[**]	1.000				
	Sig. (2-tailed)	.000	.000	.				
	N	99	98	101				
Father's Job Level	Correlation Coefficient	.371[**]	.474[**]	.388[**]	1.000			
	Sig. (2-tailed)	.000	.000	.000	.			
	N	93	95	95	95			
Mother's Job Level	Correlation Coefficient	.286[**]	.471[**]	.456[**]	.524[**]	1.000		
	Sig. (2-tailed)	.005	.000	.000	.000	.		
	N	95	95	97	94	97		
Personal Domain	Correlation Coefficient	.276[**]	.280[**]	.200[*]	.105	.176	1.000	
	Sig. (2-tailed)	.006	.005	.045	.313	.086	.	
	N	99	98	101	95	97	101	
Student Part-time Work Experience	Correlation Coefficient	-.487[**]	-.289[**]	-.344[**]	-.140	-.127	-.075	1.000
	Sig. (2-tailed)	.000	.004	.000	.174	.218	.461	.
	N	98	97	100	95	96	100	100

[**]. Correlation is significant at the 0.01 level (2-tailed).
[*]. Correlation is significant at the 0.05 level (2-tailed).

Results and Discussion

Analysis of the stepwise multiple regression results in Tables 2 and 3 indicated that personal domain of spiritual well-being, student's part-time work experience, father's job level, and mother's education level were significantly ($p<0.05$) associated with the CGPA scores. The regression model explained 37.4% of the variation in student performance of the accounting program ($p < 0.001$).

Of the four independent variables included in the model, student's part-time work experience demonstrated a negative impact on the student's academic performance. The coefficients of partial correlations reported in Table 3 indicated that student's part-time work experience

possessed a major but negative correlation. The mother's education level possessed a major positive correlation, followed by personal domain and father's job level.

Table 2: Results of Multiple Regressions (Macau Student Samples)

Independent Variable	Total
Personal Domain (PERSONAL)	0.166 (0.080)
Student Part-time Work Experience (PTWORK)	-0.238 (0.088)
Father's Job Level (FATHERJOB)	0.094 (0.040)
Mother's Education Level (MOTHERED)	0.191 (0.072)
(Constant)	2.010 (0.531)
	(Standard Errors are in Parentheses)
Sample size	101
R^2	0.402
Adjusted R^2	0.374
F-Statistics	14.289
F-Significance	0.000

Table 3: Regression Summary for the Total Examination Scores (Macau Student Samples)

Independent Variable	Tolerance	F-Statistics	F-Significance	Coefficient of Partial Correlation
PERSONAL	0.975	2.078	0.041	0.220
PTWORK	0.879	-3.508	0.001	-0.356
FATHERJOB	0.819	2.359	0.021	0.248
MOTHERED	0.736	2.653	0.010	0.276
(Constant)		3.783	0.000	

Marks, *et al.* (2001) identified that the most essential socioeconomic dimension of students was parents' work status followed by their education and wealth. There was a significant statistical difference with the tertiary educational score about 10 points higher for students whose parents were well educated, especially for students with learned mothers. Mothers are the primary caregivers in families and their human capital is likely to affect the students' performances more than that of fathers (Chiu and Khoo, 2005). Mothers are likely to have more contact than fathers with students in a pre-university stage. Then the relatively high level of mother's education is expected to have positive and significant effects on student performance. Father's job levels reflect family support on students. A higher level of father's job level reflects more family support on student in academic performance. Slow learning students get the worst results and they are easily considered as failed learners. Thus, they can easily get lost in their learning and have pessimistic feelings. Average students are in between academically outstanding and weak students, so they are often compared with the students in these two groups. They can easily tend to have discriminatory, jealous, and suspicious states of emotion. Thus, they tend to have low spiritual abilities and understanding.

In the stepwise regression employed, tolerance factors of all independent variables were examined in each step. The tolerance factors in the model derived were reported in Table 4. All were higher than 0.5 and close to 1.0 which meant low inter-correlation (Myers, 1990, p.123). Although the tolerance factor of the mother's education level was comparatively less than those of the others, it was still much higher than 0.5 and hence was acceptable by the tolerance rule. Thus, multi-collinearity was not a problem in the study.

Comparison with Hong Kong Accounting Student Samples

Similar to Macau, Hong Kong is a nearby special autonomous region of China and adopts four-year bachelor degree studies in Accounting. The students are Chinese and study Accounting programs in English. A comparative study using Hong Kong data of a similar research setting was conducted. Data of 133 student questionnaires from the Accounting Program of the City University of Hong Kong were collected. There were 62 female students and 71 male students. 113 students were from Hong Kong, and 20 students were from China. The multiple regression model of Macau sampled accounting students showed a higher adjusted R^2 of 0.374. Yet using the same set of independent variables for regressing against CGPA dependent variable in Hong Kong accounting student samples, the adjusted and significant R^2 was 0.193. It might be explained by different demographic backgrounds, personal domain, and part-time work situations between these two nearby but different student populations. Tables 4 and 5 below illustrate Hong Kong accounting student sample results.

Table 4: Results of Multiple Regression (Hong Kong Student Samples)

Independent Variable	Total
Personal Domain (PERSONAL)	0.683 (0.131)
Student Part-time Work Experience (PTWORK)	-.034 (0.048)
Father's Job Level (FATHERJOB)	0.034 (0.031)
Mother's Education Level (MOTHERED)	0.065 (0.069)
(Constant)	1.432 (0.211)
	(Standard Errors in Parentheses)
Sample size	133
R^2	0.218
Adjusted R^2	0.193
F-Statistics	8.910
F-Significance	0.000

Table 5: Regression Summary for the Total Examination Scores (Hong Kong Student Samples)

Independent Variable	Tolerance	F-Statistics	F-Significance	Coefficient of Partial Correlation
PERSONAL	0.956	5.203	0.000	0.418
PTWORK	0.988	-0.701	0.484	-0.062
FATHERJOB	0.744	1.089	0.278	0.096
MOTHERED	0.723	0.086	0.932	0.082
(Constant)		2.805	0.006	

Comment on the Similarities and Differences of Macau and Hong Kong Student Samples

Both two student sample results supported the negative impact of student part-time work experience on student academic performance as CGPA. Yet the degree of regression model explanation as shown in Hong Kong student samples was lower. Other factors, not considered in the model, might have been taken place. This preliminary comparison study fulfilled its presence for serving as control by comparing with a nearby and similar student population. Similar to that of the situation of Macau samples, student part-time work experience contributed negatively to student academic performance. Besides the personal domain, the other factors contributed little but still significant partial correlations to the student academic performance.

This study demonstrated significant differences and positive relationships among university students' spiritual well-being in the personal domain as a result of their different CGPA results. This finding for the personal domain was consistent with the studies by Walker and Dixon (2002), Flannery (2012), and Pong (2017).

Implication and Recommendation

Personal factors and family background have been remarkable and important issues to examine student learning outcomes. Five personal factors as a sense of identity, self-awareness, joy in life, inner peace, and meaning in life were first set into the variable, personal domain of spiritual well-being, for analyzing the role of personal factors in student's academic performance in accounting studies. This research study also brings support to the findings of education research that family backgrounds (father's job level, mother's education level) possess positive consequences on the development of students' academic performance. Whereas, the student's academic performance was less than satisfactory if he or she devoted efforts to part-time work which was remote from the accounting program studies.

Favorable family support and positive personal domain could lead to stronger academic performance. Family support factors as father's job level and mother's education level were peculiar and were hardly modified. Nevertheless, unfavorable family support factors as student part-time work could be modified to accounting career development-based internship. The internship provides students with the opportunity to achieve professional accounting work

experience while undertaking their bachelor's degree studies. Work-related professional learning experiences provide students with exposure to actual working environments by placing them in accounting firms outside the university (Furco, 1996). Such internship experience is hence supposed to contribute to student learning. In addition, a personal domain could be strengthened through the development of a learning community. The students identified as having favorable family support and positive personal domain could be selected to lead the learning community and extra-curriculum activities of tertiary institutes. These would shed light and support on the weakly performed students.

The current study was conducted using student data of two tertiary institutes in Macau and Hong Kong respectively, and this limited the ability of generalization to other tertiary institutes. One recommendation for future research is to use the findings of this study for another comparative research study. Replication studies are desired to generalize the study results. It is important to confirm the external validity of the study findings by conducting a large-scale study on other tertiary institutes in the two regions. Furthermore, future research may include a qualitative study to cross-check the study findings.

Conclusion

The personal domain of spiritual well-being to university students' academic performance in Macau has not previously been studied. The current study provides empirical evidence to support the existence of a positive relationship between the student's domain and academic achievement in accounting. The spiritual elements of the personal domain, such as inner peace, joy in life, and self-awareness, were found to express positive impacts on accounting education. Positive contributions were also found for student's family support factors as father's job level and mother's education level on students' academic achievement in accounting studies. These intrinsic and family support factors provide supportive backgrounds to aid student learning. Yet part-time work experience was identified to exert a negative impact on the student's academic performance. Part-time work mitigates student time and efforts used in studies. This extrinsic and family support factor is not inborn and hence can be altered to be contributive through diverting to the profession-related accounting internship. Albu, *et al*. (2016) found accounting career development-based internship was supportive of student academic performance. Work experiences in accounting, auditing, and/or taxation let students integrate accounting studies with practical accounting tasks. Students could learn accounting problem-solving skills and knowledge through work tasks undertaken in CPA firms.

As an empirical accounting education research in a small Southeast Asian city as Macau, the current study possessed three main limitations. First, a self-reporting method was used for the questionnaires. The respondents might have selected their preferred answers instead of their true answers. Moreover, they could have underrated or overrated themselves in the questionnaires.

Second, the generalizability of the findings in the study might be restricted because only a limited number of university accounting program students were studied. The number of the Accounting Program students (101) was comparatively small compared with the total population of university accounting students in Macau.   The comprehensiveness and integrity of the phenomena might not be illustrated sufficiently. Third, the personal domain of the spiritual well-being measure was first developed in English and was then translated into Chinese (Fisher and Wong 2013). Some discrepancies in the meanings and interpretation of concepts and terms might still be present to affect the results.

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GRIT PERSONALITY AS A MEDIATOR OR MODERATOR FOR THE EFFECTS OF INTERNET ADDICTION ON PROCRASTINATION

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ABSTRACT

The current study aims to triangulate the relationships among internet addiction, grit personality, and academic procrastination. It further examines the role of grit either as a mediator or a moderator in the effects of internet addiction on procrastination. Purposive sampling and survey methods were applied in recruiting 430 undergraduate students from a university located in a rural area of Malaysia. The results suggested that internet addiction is positively associated with academic procrastination, while grit is negatively linked to academic procrastination. Further to this exploration, findings also implied that internet addiction serves as a negative factor to the consistency of interest but not to the perseverance of effort in grit personality. Additionally, the present report concluded that consistency is a mediator rather than a moderator for the effects of internet addiction on procrastination. To combat the problem of procrastination among undergraduate students, it is advisable to provide a supportive environment that would accommodate students' needs as another alternative in reducing their chance of internet addiction, as well as enhancing the consistency of interest in their academic endeavor.

Keywords: Internet addiction, grit, procrastination, undergraduates

Introduction

Procrastination is defined as voluntarily delaying an intended course of action despite its negative consequences (Klingsieck, 2013). Academic procrastination, on the other hand, is a kind of procrastination specifically related to the area of academic study. It has eventually caused students to suffer negative consequences in their academic performances and subjective well-being (Andangsari, Djunaidi, Fitriana, & Harding, 2018).

In the academic setting, procrastination is a common occurrence among students because, within a restricted timeframe, these students have to face many demands and datelines requested by the courses they are undertaking. It is estimated that over 75% of college students are procrastinators. They usually would do their assignments only when deadlines were close or return library books when due dates had passed. They delay writing papers, and instead of preparing for the examination, they would simply waste their time doing nothing (Schouwenburg & Lay, 1995; Steel, 2007).

Procrastination and internet addiction

The antecedents of academic procrastination generally include two aspects: The motivational aspects (such as lack of self-control) and the clinical aspects (such as addiction and anxiety) (Andangsari et al., 2018). Among all these antecedents, internet addiction or excessive use of the Internet is regarded as the third most addictive behavior which contributes to academic procrastination among undergraduate students (Mohammed & Abdulwasiu, 2017). It is followed by addictions to alcohol and drugs. Internet addiction is a term labeled as pathological internet use, problematic internet use, or internet dependence. In addition, it is also defined as the inability of an individual to manage his or her internet usage, thus resulting in feelings of distress and functional impairment of daily routine (Shapira, Goldsmith, Keck Jr, Khosla, & McElroy, 2000).

There are several reasons why undergraduates become so addicted to internet usage. Firstly, the Internet is highly appealing as it offers users high autonomy, opportunities for identity exploration, and a space free of parental control (Reinecke et al., 2018). Secondly, online activities like social media, gaming, and watching videos provide immediate gratifications that are pleasurable to procrastinators, especially while users are trying to avoid tasks (Thatcher, Wretschko, & Fridjhon, 2008). Finally, internet usage, in general, is distracting and is easily habituated, causing it hard for adolescents and young adults to have self-control. As a result, these young people are at higher risk and more likely to become addicted when compared to other age groups (Ni, Qian, & Wang, 2017).

Studies have found that when the Internet serves as a medium of distraction, internet users tend to delay urgent tasks (Reinecke et al., 2018). Most procrastinators have no control over their desire to go online, and this has caused them to spend most of their time on the Internet rather than on the academic duties they planned to complete (Lavoie & Pychyl, 2001).

Procrastination and grit

Besides internet addiction, the personality trait of grit is suggested to be another factor relevant to procrastination (Wolters & Hussain, 2015; Wyszyńska, Ponikiewska, Karaś, Najderska, & Rogoza, 2017). Grit is a personality trait defined as passion and perseverance in achieving long-term goals. It prompts a person to work hard when facing challenges and enables him or her to put effort and attentiveness into tasks over the years, regardless of failures and obstacles along the process (Duckworth, Peterson, Matthews, & Kelly, 2007).

Overall, grit includes two factors: Consistency of interest and perseverance of effort (Duckworth & Quinn, 2009). In the first place, consistency of interest is the tendency that allows one to focus and dedicate oneself to the same set of important goals over a long period. It gives meaning to the goal and a sense of optimism towards achieving it. Consequently, it helps the individual to overcome challenges and difficulties. Next, perseverance of effort is one's ability to commit and maintain energy or effort towards one's goals. It is present when an individual can attach significant meanings to the goal set. Similarly, grit is bestowed when the individual finds a compelling mission in his or her tasks, allowing him or her to persist and moving towards the final destination without being defeated by the adversities faced in the pursuit of achieving it (Duckworth et al., 2007). In short, consistency of interest is responsible for sustaining an individual's passion, while perseverance of effort keeps the individual on track (Perez, 2015).

The personality trait of grit can help an individual to persist in hard times with self-efficacy and productivity and controls his or her behavior of consciously delaying the task (Andangsari et al., 2018). Studies have reported that grit personality brings significant impacts on procrastination. The results indicate that grittier people show lower levels of procrastination (Wolters & Hussain, 2015; Wyszyńska et al., 2017). Students who procrastinate on their tasks are not because of the absence of planning or lacking the awareness of negative consequences. More likely, it is because of their low energy and willpower (Wijaya & Tori, 2018).

Procrastination, internet addiction, and grit

Substantial studies prove that both internet addiction and grit were associated with academic procrastination (Alaoui & Fons-Rosen, 2016; Reinecke et al., 2018). Findings

show that grit is negatively associated with internet addiction and mobile addiction (Maddi et al., 2013; P. C. Siah, 2016). Nonetheless, few studies have been conducted to examine the relationships among these three variables. As one can see, the findings from the above-mentioned research have suggested a possible triangular relationship among internet addiction, grit, and academic procrastination. Aiming in this direction, the main objective of the current study is to examine the connection among these three variables.

Research models and constructs

On the second research question, the research also investigates whether grit could have been serving either as a mediator or a moderator of the effects of internet addiction on procrastination. From the essentialist perspective, personality traits are biologically based and they are not susceptible to the influence of the environment (Caspi, Roberts, & Shiner, 2005). However, viewing from the contextual perspective, personality should be fluid and prone to change during developmental periods, especially at the period when one is marked undergoing rapid physical and cognitive changes, social demands, experience from life events and social environment (Caspi et al., 2005; Specht, Egloff, & Schmukle, 2011; Srivastava, John, Gosling, & Potter, 2003). The life events in this period could be specific events including marriage, first job, the birth of a child, and death of a family member (Specht et al., 2011).

A research model based on the essentialist perspective was proposed to examine the relationships among procrastination, internet addiction, and grit (see Fig 1). As mentioned, personality is difficult to be changed by a social context. Thus, it can be a moderator but not a mediator for the effects of predictors on the outcomes. In other words, the influence of social context (internet addiction) on social behavior (procrastination) would be moderated by personality (grit) from this perspective.

In this study, the participants or the group of undergraduate students have just undergone a social-environmental change of life when they left their hometowns, staying away from their parents and guardians. Eventually, they would spend much time using the Internet to cope with their problems such as academic stress and interpersonal issues (Gaultney, 2010; Hershner & Chervin, 2014; Rozental & Carlbring, 2014). Therefore, they might become a potential risk group for internet addiction (Odaci, 2011), especially they were the group of undergraduate students who were recruited from a university located in the rural area whereby not many entertainments are available for them in their daily life.

Therefore, it is assumed that undergraduate students with a lower level of grit tend to have problems with procrastination because their motivation and passion for study are easily affected by the gratification obtained from the Internet. However, internet addiction is less likely to influence the habit of procrastination among undergraduate students with higher levels of grit

since they could uphold the values generated from the grit personality they possess, embracing passion and persistence to committing their goals. They would then not be randomly distracted by the Internet. In this study, an internet addiction test proposed by Young (2004) was employed to measure the internet addiction construct. The grit-short form designed by Duckworth and Quinn (2009) was used as an assessment of grit personality. Lastly, the academic procrastination scale – a short form suggested by Yockey (2016) was applied to the benchmark level of procrastination.
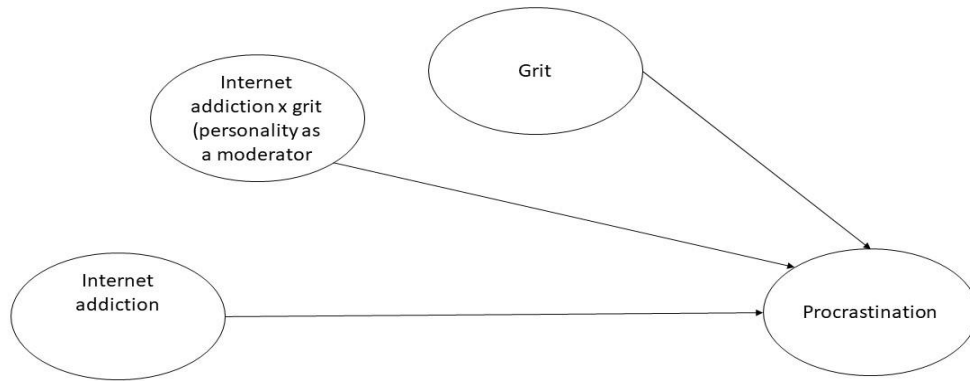
Fig 1. A research model for the moderating effects of grit personality

Nonetheless, viewing from the contextual perspective, personality is a mediator instead of a moderator for the effects of social context on social behavers (Fig 2). The social context of the undergraduate students in this study might have increased their chances of internet dependency when they gratify their needs in a new environment. As a result, their addiction to the Internet would interfere with their persistence and commitment to the goal of their academic performance. Consequently, this internet dependency would shift them to the likelihood of procrastination. In other words, grit mediates the effects of internet addiction on procrastination.
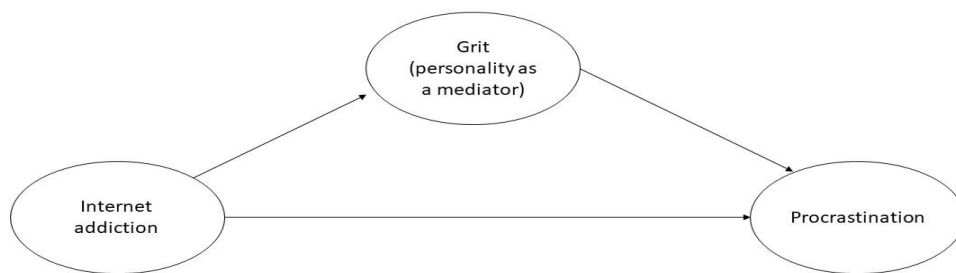
Fig 2. A research model for the mediating effects of grit personality

Aims of the study

Overall, past studies have shown the relationships between internet addiction and procrastination (Reinecke et al., 2018), grit personality and procrastination (Wolters & Hussain, 2015), and grit personality and internet addiction (Maddi et al., 2013). However, not many or none of the studies examined the triangular relationships of these three variables among undergraduate students in Malaysia. By employing essentialist and contextual perspectives on personality as a research framework, the present study thus seeks to understand the relationships among internet addiction, procrastination, and grit personality, auditing either grit mediates or moderates the effects of internet addiction on procrastination. The results of the study would provide information to educators and policy makers dealing with the problem of academic procrastination among undergraduate students. Partial Least Square Structural equation modeling is used to examine the research questions by using SmartPLS program. The hypotheses are as follows:

    H1: Internet addiction is negatively associated with grit

    H2: Internet addiction is positively associated with procrastination

    H3: Grit is negatively associated with procrastination.

    H4: Grit is a statistical mediator for the effects of internet addiction on procrastination

    H5: Grit is a statistical moderator for the effects of internet addiction on procrastination

Method

Participants

In this study, the sample consists of 430 undergraduate students with an average age of 21.23 years (SD = 1.73), while 61.4% of them were females and 38.6% were males. This sample size is larger than the sample size suggested by Hair et al., (2016), who pointed out that the

minimum sample size should be equal to the larger of the ten times the largest number of formative indicators used to measure one construct, in this context, 200.

Measurements
Grit-S. This scale adheres to eight items and uses a 5-point Likert scale ranging from one to five for participants to choose from. A higher score indicates that the item describes participants better (1 = "Not like me at all"; 5 = "Very much like me"). Four items (1, 3, 5, and 6) measure the consistency of interest and another four items (2, 4, 7, and 8) check the perseverance of effort. The internal consistency for this scale ranges from 0.73 to 0.83 (Duckworth & Quinn, 2009).

Internet addiction test. This scale complies with 20 items. Participants need to fill in their responses in a 6-point Likert scale, in which "does not apply" is 0, "rarely" is 1, "occasionally" is 2, "frequently" is 3, "often" is 4, and "always" is 5 (Young, 1998, 2004). The higher the total score is, the higher their level of internet addiction. The reliability of this scale is reported as 0.93 (Khazaal et al., 2008).

Academic Procrastination Scale Short Form (APS-S). There are five items on this scale. Participants were requested to give their agreement on each item by using a 5-point Likert scale, in which "agree" is 5, "slightly agree" is 4, "neutral" is 3, "slightly disagree" is 2, and "disagree" is 1. A higher score indicates a greater tendency to procrastinate on academic tasks. The internal consistency reliability for this scale is 0.87 (Yockey, 2016).

Results

Measurement Model
Construct reliability. The composite reliability of all four scales is as follows: 0.91 for internet addiction, 0.71 for the perseverance of efforts, 0.79 for consistency of interest, and 0.91 for procrastination. The compositive reliability exceeded the recommended value of 0.7 (Hair Jr et al., 2016). Correspondingly, the findings suggested that the latent constructs of the four scales are acceptable.
Discriminant validity and collinearity statistics (VIF). The *Heterotrait-Monotrait ratio* was used to examine the discriminant validity of the measurements. As shown in Table 1, the discriminant validity of the measurements is acceptable as the *Heterotrait-Monotrait ratio* of all results is below the critical values of 0.85 (Henseler, Ringle, & Sarstedt, 2015). In addition, the results of VIF are all below 2. This indicates that there is no collinearity issue for the measurements (Hadi, Abdullah, & Sentosa, 2016) (see Table 2).

Table 1. Discriminant Validity of Measurements.

	Consistency	Internet Addiction	Perseverance
Consistency			
Internet Addiction	0.59		
Perseverance	0.15	0.13	
Procrastination	0.51	0.42	0.27

Table 2. Coefficient of Determination, Effect Size and Collinearity Statistics of Measurements

Dependent variable	Predictors	R^2	F^2	VIF
Consistency		0.24		
	Internet Addiction		0.32	1.00
Perseverance		0.001		
	Internet Addiction		0.001	1.00
Procrastination		0.27		
	Consistency		0.07	1.32
	Perseverance		0.07	1.01
	Internet Addiction		0.07	1.32

Structural Model

Table 3. Path Coefficients of Direct Effects

	Hypothesis	Path Coefficient	Standard Error	t-value	P Values
Internet Addiction → Consistency	H1	-0.49	0.04	13.84	<0.001
Internet Addiction → Perseverance	H1	0.01	0.07	0.03	0.978
Internet Addiction → Procrastination	H2	0.26	0.05	4.77	<0.001
Consistency → Procrastination	H3	-0.27	0.05	5.66	<0.001
Perseverance → Procrastination	H3	-0.23	0.05	4.27	<0.001

As shown in Table 3, participants who are highly addicted to the Internet have lower consistency, $p < 0.001$, but the same effect was not found between internet addiction and perseverance, $p = 0.98$. In terms of procrastination, both consistency and perseverance imposed negative effects on procrastination, $ps < 0.001$. In contrast, internet addition brought a positive effect on procrastination, $p < 0.001$.

Mediating effect. As shown in Fig 1, the results significantly showed specific indirect effects of internet addiction on procrastination through the measurement of consistency, $B = 0.13$, $SE = 0.03$, $T = 4.87$, $p < 0.001$, which was indicated as a mediating effect of consistency of interest. Since the direct effect is as well significant, it marked a complementary mediating effect of consistency of interest (Nitzl et al., 2016; Zhao, Lynch Jr, & Chen, 2010). However, the results implied non-significant specific indirect effects of internet on procrastination through

perseverance of effort, $B = 0.01$, $SE = 0.01$, $T = 0.03$, $p = 0.98$, which has suggested no mediating effect of perseverance of effort.
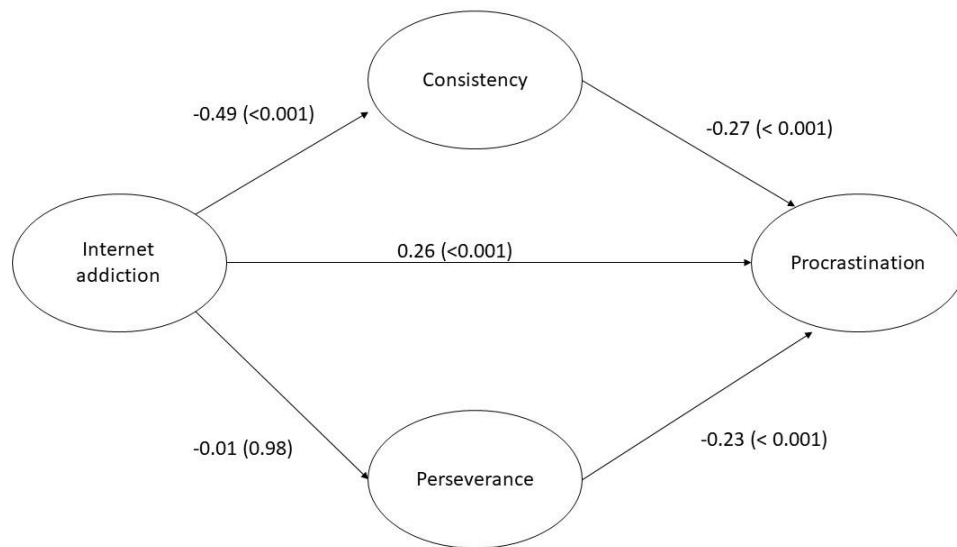
Fig 1. Path coefficients (p-values) of the mediating structural model

Moderating effect. As shown in Fig. 2, neither the interactive effect between internet addiction and consistency on procrastination ($B = 0.01$, $SE = 0.04$, $T = 0.05$, $p = 0.96$), nor that between internet addiction and perseverance on procrastination ($B = -0.04$, $SE = 0.04$, $T = 1.14$, $p = 0.25$) is significant. These results rejected the view that grit personality is a moderator for the effect of internet addiction on procrastination.
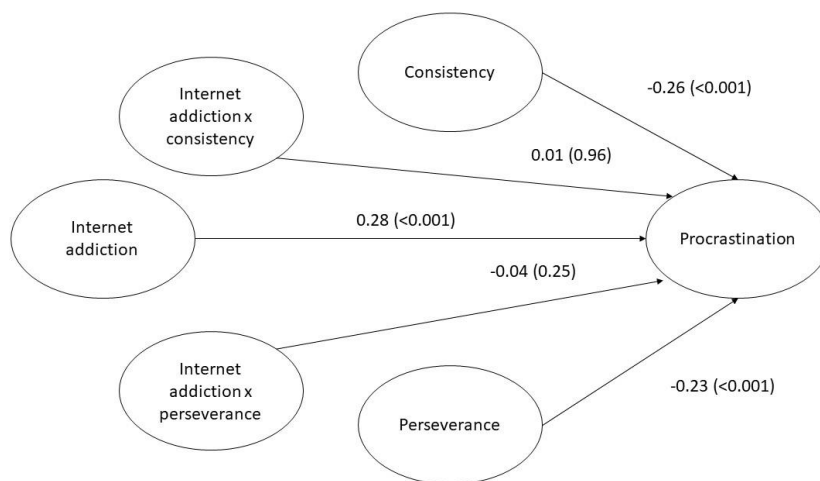
Fig 2. Path coefficients (p-values) of the moderating structure model

Discussion

A significant factor relevant to academic procrastination among undergraduate students is their level of internet addiction. Many of these young adults who have just left their homes and stayed with their peers are easily addicted to the Internet for the pleasure of getting immediate gratification (Thatcher et al., 2008). Another factor accordant to procrastination is grit personality. This is evident in one of the past studies, which concluded that grittier individuals are less likely to have the problem of procrastination (Wolters & Hussain, 2015). Nonetheless, since no study reported the relationships triangulated these three variables, the first aim of this study is to examine the connection between procrastination, grit level, and internet addiction. Furthermore, by engaging the essentialist and contextual perspectives as a research framework (Caspi et al., 2005), the second aim is to investigate whether grit personality is a mediator or a moderator for the effects of internet addiction on procrastination.

According to the findings of the first research question, as predicted, both internet addiction and grit are significant predictors of procrastination. Internet addiction is positively associated with procrastination while grit is negatively associated. These findings are not surprising as they are consistent with the analysis from other studies (Reinecke et al., 2018; Wolters & Hussain, 2015; Wyszyńska et al., 2017).

However, different from previous studies, the study found that internet addiction is only negatively associated with the consistency of interest but not with the perseverance of efforts. This is parallel with the findings of research conducted by Culin et al. (2014). They suggested that internet addiction only affects passion but not the motivation factors in grit personality. Perseverance is positively associated with pursuing engagement; however, consistency is inversely related to pursuing pleasure. Nonetheless, another study conducted by Siah et al. (2018) suggested that consistency has a long-term effect on academic performance than perseverance. To simply put, consistency is found to be associated with cumulative grade point average (CGPA) while perseverance is linked with grade point average (GPA). It is expected that the motivation of study among undergraduate students who were addicted to the internet would be affected because inevitably they would lose the passion for study in the long term.

As for the second research question, the results of structural equation modeling implied that grit is a statistical mediator rather than a statistical moderator for the effects of internet addiction on procrastination. In other words, the findings reject the essentialist perspective but confirm the contextualist perspective that one's personality could be changed by the social context one dwelled in. In this study, the social context of using the Internet for a long period would change the formation and development of the participant's grit level that

causes procrastination. As mentioned in the introductory section of this research, undergraduate students are found to spend more time surfing the Internet as a way to cope with their loneliness, personal relationships, and stress (Reinecke et al., 2018). The participants of this study were recruited from a university located in a rural area whereby fewer entertainments could be found and no students' hostels were provided by the authority. This social context is, therefore, more likely to increase their time of surfing the Internet when coping with their emotional needs, especially when they were free from the monitoring of parents and dormitory supervisors. Therefore, students' passion for the study was altered by immediate gratification from the Internet and this has increased the chance of procrastination of their academic demands. To sum it up, the findings also indicate that social context is important in influencing the formation and development of personality. It is suggested that the university should set up a more positive social environment for the students, hosting more social and community activities and providing a conducive living environment to the students.

Additionally, the findings asserted that consistency is the sore statistical mediator of the effects of internet addiction on procrastination. Though perseverance is negatively associated with procrastination, internet addiction does not show any significant relations with perseverance. On the other hand, consistency is negatively associated with procrastination, and internet addiction does show significant negative relations with consistency. These findings advocated that internet addiction would only reduce the consistency of interest among undergraduate students in their academic endeavors.

Nonetheless, it can be expected that the weakening of their consistency of interest would further increase their chance of procrastination in the long term. As mentioned above, the consistency of interest is relevant to an individual's passion while perseverance of effort coexists with one's motivation (Perez, 2015). Therefore, even grittier undergraduate students would have higher motivation to persevere in their study, their passion for study might be reduced because of the pleasure of surfing the internet. In a long term, the loss of passion would affect their motivation to study and thus the problem of procrastination might become even serious. This finding has strengthened the importance of including the consistency factor in the concept of grit, though some studies suggested that perseverance is a much better predictor of performance and it should be treated as a distinct construct (Credé, Tynan, & Harms, 2017).

Overall, the main implication of this study is to highlight the importance of providing undergraduate students a supportive context so that they would be able to retain the passion and motivation to study well, and eventually, it would improve their academic performance (Tezci, Sezer, Gurgan, & Aktan, 2015). Since they are undergoing a transitional period of life and need to adjust themselves to cope with challenges faced in their academic

performance, providing them a conducive environment in the university would be essential. The students would develop a positive personality and overcome the challenges proactively if they were granted comprehensive assistance.

Therefore, to increase the self-regulation of internet usage among undergraduate students, it is recommended to promote awareness of internet usage and help them to understand the negative impacts of internet addiction through various campaigns. In addition, extracurricular activities such as community events, hobbies, and sports clubs could be other alternatives supplementary to internet surfing. Furthermore, educators and policy makers should consider the enrichment of the ecological system in the university so that undergraduate students can develop a grittier personality and eventually reduce the problem of academic procrastination in this transitional point.

In conclusion, the findings of this study clarify the relationship between internet addiction, grit personality, and procrastination, which was not examined in past studies. Moreover, the study further explores the role of grit personality playing in-between internet addiction and procrastination. Concurrently, it also highlights the importance of catering a positive and contextualized environment for the undergraduate students, providing accommodation of hostels or dormitories on the campus to avoid them from chances of engaging themselves in other entertaining activities, such as internet café and game entertainment centers. More activities should also be regulated to these undergraduate students in hopes of improving their positive personalities and developing their social life.

Nonetheless, the interpretation of this study should be cautious as the current sample is taken from a university in the rural area where fewer entertainments are available and no accommodation on campus is provided. The participants in this context are therefore more likely to spend their time on the Internet for entertainment purposes. Thus, the impacts of internet addiction on procrastination and personality might be more overt in the current sample than undergraduate students in other contexts, where accommodation is provided and more variety of entertainment is available. Therefore, the findings of the study may not be able to generalize to other universities located in urban areas with a more conducive campus environment for their students. Future studies may consider recruiting undergraduate students from different backgrounds, such as age groups, different ethnicity, and locations to examine the contextual effects on the results. In addition, a cross-sectional design was used in this study and thus the cause-effect explanation should be cautious. However, a longitudinal or successive design may be adopted in future studies. Lastly, future studies may consider conducting a qualitative study or using the focus group method to find out reasons why undergraduate students are easily distracted by the Internet.

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ABUSING OTHERS BEHIND THE SCREENS: DEPRESSION OUTCOMES

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ABSTRACT

Cyber-bullying (CB) and its negative effects have been studied largely in high and middle schools, but less is known about CB in college students. This study aimed to investigate the relationship between CB exposure and depression among Hashemite University students (HU). The procedures and sample include One thousand, eight hundred and ninety-eight students from different colleges who completed the online Cyberbullying Questionnaire (CBQ) to assess their experience with cyberbullying as victims. Two hundred and fifty- six students out of 1898 were being recognized as victims of CB, completed online the Center for Epidemiologic Studies Depression Scale- 20 (CESD- 20) to assess depression symptoms. The results indicated that 13.48% of participants had experienced CB in college; participants who identified themselves as victims of CB had increased odds of depression in light of previous personal history with traditional bullying and a long time of internet access, but not in light of gender variable. Future implications indicate that future studies need to recognize the effects of possible and available interventions into young adulthood to deal with the negative effect of CB on student's mental health status.

Keywords: Cyberbullying, university students, Depression.

Introduction

Cyber-Bullying (CB), or using electronic technology to bully and abuse another person, or a group of people, is becoming more common among students today. Traditional bullying, which is practiced outside the family, either physically through pushing, or verbally, through name-calling, is no longer the only way of how to bully others (Nikki & Conti, 2013). The term "*cyberbullying*" is used to describe the individual(s) administering bullying to others through smartphones or the internet. Some attempts have focused on the statistical indicators and CB prevalence (Bennett, Guran, Ramos, & Margolin, 2011) revealed that 22% -92% of students were bullied either electronically or traditionally, at least once within their past school year. While other have shown that on average 20%–40% of children and 8.6%- 55.3% of college students have suffered at least once from CB in their lives (Udris, 2015; Kraft & Wang, 2010; Dilmac, 2009). These findings suggest that there is a common trend that leads to CB, and it needs to be investigated further. Smith and his colleagues (2008) have indicated that the CB is an aggressive, intentional behavior carried out by an individual \ group, using electronic methods of contact, repeatedly against victims who cannot easily defend themselves.

Li (2007) has listed seven different types of CB that constitute this new form of abuse. The 7 categories of CB are: online harassment, flaming, cyber-stalking, masquerading, denigration, outing, and exclusion. Hinduja and Patchin, (2009) argued that CB considered any act can be listed under, posting hurtful and humiliating comments or pictures, sending threatening e-mails or text messages, or spreading faked news and shameful rumors about others. Mostly of college students (86%) with high use of electronic social activity are at risk for CB (Smith, Rainie, & Zickuhr, 2018).

Cyberbullying is a recent phenomenon that harms today's youth. Victims of CB have been shown to have similar psychological sequelae, as victims of traditional bullying (Kowalski & Limber, 2013), including anxiety problems and low self-esteem (Smith et al, 2008), academic problems (Udris, 2014; Tynes, Rose, & Williams, 2010; Beran & Li, 2007), lack of social relations (Juvonen & Gross, 2008, Melander, 2010), depression and suicidal thoughts (Ramsey, Dilalla, & Mccrary, 2015; Messias, Kindrick, & Castro, 2014; Machmutowa, Perrena, Sticcaa, & Alsakerb, 2012; Schenk & William, 2012; Wang, Nansel, & Iannotti, 2011; Baker & Tanrıkulu, 2010; Hinduja & Patchin, 2010). Ramsey et al (2015) have argued that there is no studies have carefully examined the increased vulnerability of CB in young adulthood (18– 22 years) or in the college students population in particular, which justifies conducting researches to study CB at this developmental stage. In addition, the relationship between Cyber Victimization (CV) and some negative psychological consequences (e.g. depression) is unclear in these populations (Ramsey et al, 2015).

Bonanno and Hymel (2013) have found that suicidal thoughts and depressive mood are associated with CB in a unique way, separate from the contribution of traditional ones alone. Privitera and Campbell (2009) argued that a significant element defining CB is the negative differential that exists between the perpetrator and his \ her victim in that the cyberbully holds a

position of control within the relationship and that this power imbalance makes it difficult for some victims to defend themselves. The same holds for young adults and older adolescents in that the impact of CB can be extremely powerful that they avoid attending college academic activities, involving in practical training, or going to work (Mason, 2008). In some extreme cases, this abuse can be so tormenting and relentless that the victim turn to a depressive mood then to suicide as a means of escaping the abuse (Schenk & William, 2012).

Schenk and William's (2012) finding indicates the importance of learning more about the unique contributions of CV in depression and other psychological variables. Although one study (Menesini, Calussi, & Nocentini, 2012) did not find a significant interaction between CV in predicting depression in young adolescents, Menesini and his colleagues (2012) have recommended exploring this interaction between depression and CV in other populations (e.g. university students). Rivituso (2014) states that a gap in the literature exists about the study of CB victimization among college students and its negative psychological impact on developing depression symptoms, such lacking researches within this population means that the existing literature body lacks scientific evidence of CB victim experiences, as well as exploring of the meaning and interpretation victims students give of their negative experiences. In response to this dearth of evidence within education in universities, this research sought to gain a fundamental understanding of the impact of CB on college students by looking at its effect on developing depression symptoms.

It is particularly important to study the CV and its relation with depression in a college students' population, given that this population may still be in the process of developing personal identity, vocational paths, and intimacy trends (Ramsey et al, 2015).

Objective and hypotheses of the study

The present study aims to identify the relationship between CB exposure and depression among university students in the light of gender, personal history of exposure to traditional bullying, and internet accessibility time variables. This study assumes that there is a relationship between exposure to CB at the university and the developing depressive symptoms, in light of gender, previous personal experience of traditional bullying in school, and internet access time.

Method

Study population and sample
This study was conducted in the Hashemite University (HU) in Jordan. The HU was selected for its location in the middle of Jordan, where its population can present all university populations in the country. The study population consisted of all undergraduate students at HU ($n= 26967$) during the first and second academic semesters 2016-2017. The accessible or\ available study sample included 230 college students ages 18–23 years ($M = 19.70$, $SD = 1.48$), female and male students from different departments, different academic years, and all faculties. Chart 1 below describes the process of data collection and sample selection

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Chart. 1 the process of data collection and sample selection

Sending 18570 CBQs via HU academic email (68.86% of study

↓

1898 CBQs were received (10.22% of target population)

↓

256 out of 1898 students (13.48%) responded positively to CBQ had filled CESD-20 via email

↓

250 had replied and resent CESD-20 out of 256

13 questionnaires were omitted ← → 7 students did not reply

↓

230 total number of participants out of 256 (accessible sample)

Screening and classifying process: Collecting data started in 29th of October\2016 to 4th of June\ 2017, the target population (18570) students received an email from the author indicating the study objectives and procedures, copy of CBQ and author contact information, the students informed that they have to reply to author email within two weeks from date of receiving it. After receiving 1898 (10.22% of the target population) of CBQs, the author classified received questionnaires according to total scores in CBQ. Based on positive answers on CBQ, 256 (13.48%) students out of 1898 (target population) were identified to fill the CESD-20 via email (250 had replied, 6 students, did not reply). All received CESD-20 copies were checked for missing information or auto-response. As a result, 13 questionnaires were omitted from the statistical analysis for automatic responses, and for not answering all CESD-20 items, seven students did not reply. The total number of participants settled on 230 out of 256 students who were replying to a second email from the author (89.84%). Finally, data were coded, entered, and analyzed using SPSS. Table1 describes the study sample distribution broken by study variables (gender, internet access, and previous personal history with traditional bullying)

Table 1. Distribution of study sample broken by study variables (gender, internet access, and previous personal history with traditional bullying)

gender			Never exposed	3-5 times	> 3 times	Total
Male	**Internet accessibility time**	<5	20	21	13	54
		5-10	5	13	12	30
	Total		25	34	25	84
Female	**Internet accessibility time**	<5	34	48	6	88
		5-10	12	33	13	58
	Total		46	81	19	146
Total	**Internet accessibility time**	<5	54	69	19	142
		5-10	17	46	25	88
	Total		71	115	44	230

Instruments

Cyberbullying Questionnaire (CBQ). The CBQ (Calvete, Orue, Estévez, Villardón, & Padilla, 2010) composed of two sub- scales for measuring CB and CV. The initial version of the questionnaire (Calvete et al, 2010) consists of 16 items on CB and 11 items on the CV. In this study, we used the modified version of CBQ by (Gámez-Guadix, Villa-George, & Calvete, 2014) composed of nine items for CV. To adapt the CV part of the scale to the Arabic language, it was translated to Arabic by an authorized translator, several minor changes were taking place in the formulation of the items, replacing some words with alternatives appropriate to Jordanian culture. The Arabic version of the questionnaire was pilot-tested to 92 university students at UH who answered each scale item while the research assistants detected the possible difficulties in the comprehension of the items. The content of each item was discussed with the students to ensure that the items were well understandable and relevant to the CV issues. The victimization sub-scale includes 9 items about the frequency\ severity with which students have exposed different behaviors of CB or cyber-attacks. Each participant was asked how often he\ she had experienced different CB behaviors as a victim by the internet or via smartphones, such as receiving disesteeming topics or threatening images\pictures, or messages of themselves that were humiliating while using the internet or a smartphone. The author reserved the same response format used by (Gámez-Guadix et al, 2014) to assess how often each behavior had occurred as CB or is as follows: 0 (*never*), 1 (*1 or 2 times*), 2 (*3 or 4 times*), or 3 (*more than 5 times*). The scale total scores between (0-27), (0-1.00 low, 1.01-2.00 mid, 2.01-3.00 high). The high scores indicate high exposure to CB.

Center for Epidemiologic Studies Depression Scale (CESD- 20). The CESD- 20 (Varghese, & Pistole, 2017) measures depression over the past week in nonclinical populations. Sample items include "I felt depressed" and "I felt fearful." Respondent rates each item on a 4-point Likert-type scale ranging: 0 (rarely or never happened [less than 1 day]), 1 (most of the time [1 -3 days]), 2 (most of the time [3-5 days], 3(all last week). Responses are summed to a total (ranged between 0-60), with some items reverse scored (Zhang et al, 2012). According to Radloff (1977) and Zhang et al (2012), higher scores indicate more severe depressive symptoms and scores at or

above 16 indicate risky scores for depression. The reliability and validity of the CES-D in the Jordanian community were supported by Al-Modallal, (2010) work (*Cronbach's alpha*, 0.90). For this study's purposes, we established new psychometric properties, validity, and reliability values were obtained through interrater validity and Pearson (test-retest- three weeks) correlation coefficient (0.902) respectively.

Study Operational Definitions

- ***Depression:*** a common mental disorder or mood symptoms, recognized by loss of interest in social and personal activities that person normally attracts, sadness, and accompanied with an inability to carry out the daily activities for at least 1 week (WHO, 2018). Operationally, depression was measured by CESD- 20.
- ***Cyber- Bullying:*** intentional aggressive behaviors (online harassment, flaming, cyberstalking, masquerading, denigration, outing, and exclusion) carried out by an individual \ group, using electronic methods of contact, repeatedly against a victim who cannot easily defend him\ herself. Operationally, Cyber Bullying was measured by CBQ (Calvete et al, 2010)

Procedures

Data was collected through a confidential survey run through the internet. All data were collected from 230 students through emailing randomly 18570 (68.86% of the study population) students from all faculties, through their saved available personal and academic emails at the registration department, 1898 students had replied. This method facilitated the random distribution of participants according to faculties, departments, sections, and year of study. All instructions and consent forms are presented on the first page of the email, the consent form requiring each participant to check a box indicating consent. This type of implied consent to protect the participants' rights and confidentiality has been widely accepted for online researches (Walther, 2002). After giving the consent, the participant filled the attached CBQ according to the attached instructions. Students' names were not required (except for the consent form), but all participants were asked to approve to be connected by the author through email for proceeding next step of the study. This research was not supported or funded by any university or organization therefore no compensation had been paid for participants for their enrolling in the study.

Data Analyses

The study sample experiences with CB were examined using descriptive and inferential statistics (Means- *M* and Standard Deviations- *SD*); the study depended on a descriptive-analytic approach for answering its questions, examine its hypotheses and achieve its objectives. Descriptive statistics provide a comprehensible picture of the study results related to CB prevalence in the study sample according to different demographic variables.

Nonparametric variables in the study were inferentially analyzed using Pearson correlation (r) to determine the correlations between exposure to CB and depression ($p=0.01$). ANCOVA test was run to clarify the relationship between depression as a dependant variable and other study independent variables (gender, student's internet access time, and exposure to traditional bullying). All results were tested under statistical significance ($p< 0.01$).

Results

Table 2. Depression scores according to study independent variables

Internet accessibility	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
<5 hours	12.413a	.508	11.412	13.413
5-10 hours	16.597a	.621	15.373	17.822
Personal history of bullying				
never	9.961a	.723	8.535	11.387
3-5 times	15.598a	.504	14.605	16.591
> 5 times	17.956a	.776	16.427	19.485
Gender				
male	14.305a	.586	13.149	15.461
female	14.705a	.516	13.689	15.721

a. Covariates appearing in the model are evaluated at the following values: sum of items = 20.83.

The descriptive statics in table 2 indicated statistical differences in depression means according to internet accessibility, previous exposure to traditional bullying, and gender variables. According to results, 256 students out of 1898 (13.48%) reported that they had been exposed to CB from other students in a university. ANCOVA was run to indicate whether these differences were statistically significant.

Table. 3 Statistical differences in depression according to (gender, personal history in bullying, and internet access)

Covariance Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Cyber bullying	29.456	1	29.456	1.276	.260
gender	6.098	1	6.098	.264	.608
Personal history	1466.215	2	733.107	31.756	.000
Internet access	600.466	1	600.466	26.011	.000
gender * personal history	68.926	2	34.463	1.493	.227
gender * internet access	12.011	1	12.011	.520	.472
Personal history * internet access	96.616	2	48.308	2.093	.126
gender * personal history * internet access	2.296	2	1.148	.050	.952
Error	5009.559	217	23.086		

a. R Squared = .440 (Adjusted R Squared = .409). * The statistical processing was run on 230 students.

Table. 4 Pairwise comparisons for personal history with traditional bullying and internet accessibility

Independent variables	(I) person-history	(J) person-history	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
Personal history	never	3-5 times	-5.637[*]	.882	.000	-7.764	-3.510
		> 5 times	-7.995[*]	1.062	.000	-10.556	-5.434
	3-5 times	never	5.637[*]	.882	.000	3.510	7.764
		> 5 times	-2.358[*]	.922	.034	-4.584	-.133
	> 5 times	never	7.995[*]	1.062	.000	5.434	10.556
		3-5 times	2.358[*]	.922	.034	.133	4.584
Internet accessibility	< 5	5-10	-4.185[*]	.821	.000	-5.802	-2.567
	5-10	< 5	4.185[*]	.821	.000	2.567	5.802

* The statistical processing was run on 230 students.

According to displayed data in table 3, the results revealed significant effects of a personal history of traditional bullying exposure (F=31.756, p= 0.000, df= 2) and internet access time (F=26.011, p= 0.000. df=1) as independent variables in depression, but there were no statistical differences in depression according to gender variable (F=0264, p=0.608, df=1)

Table (4) revealed statistical differences in depression for those who have repeating traditional bullying history as victims (> 5 times) comparing with those without such bullying exposure history. In addition, statistical differences in depression were more related to a long time of internet access (5-10 hours) comparing with a short time of internet access (< 5 hours). In other words, our results indicated that the student who was a former victim of physical or verbal bullying in school and who uses the internet longer is at risk to develop significant levels of depression. Data displayed in table 4 clarifies the relationship between CB and depression, Pearson correlation formula was used (r) and being tested under (p=0.05, p= 0.01). The correlation between CB and depression was (r= 0.313, p=0.00).

Discussion

It was hypothesized that college students who were Cyber-bullied would have increased rates of depression, with the highest rates in those who had been victims of traditional bullying in schools, long time using the internet, and female students. It was found that students who are victims of CB in university, who have reported traditional experience of bullying (F=31.756, $p < 0.000$) and who were using the internet more than 5 hours daily (F= 26.011, $p < 0.000$) have increased odds of meeting criteria for depression compared to students with no traditional bullying experience and short hours of internet access

At the same time, the results indicated no significant differences in depression between male and female students who suffer from CB in university (F=.264, $p < .608$). The CB has a limited but significant effect on depression, the results indicated that (0.098) of covariance of depression can be explained by CB exposure, while the findings revealed a significant correlation value between the two variables (r= 0.313, p< 0.00). Our results can be supported by other findings (Varghese & Pistole, 2017; Rivituso, 2014; Lenhart, 2010; Ireland & Power, 2004) which linked CB and depressive symptoms and low self-esteem for undergraduate students.

The findings suggested the potential negative impact of Cyberbullying on university students, thus adding to the growing body of literature on cyber-talking and internet abuse.

This finding further highlights the vulnerability of this high-risk population for developing depressive reactions in light of previous experience in traditional bullying and a long time of using the internet, consistent with the theoretical perspective that underlies the relations between personal history with traditional bullying and the possibility of exposure to CB in adulthood (Kraft & Wang, 2010). The more specific finding is that those who were identified as victims of CB at university with a long time of using the internet reported significantly higher levels of depression than those who were not.

Findings suggested that college students are as susceptible to the negative psychological consequences of CB as younger adolescents under some variables. This finding can be discussed and explained by participants who had experienced CB in college had also experienced other bullying forms in earlier years. Some findings have shown that involvement in bullying as a victim in adolescence or childhood stages can contribute to developing depressive mood and alcohol use in young adulthood (Kraft & Wang, 2010).

Existing mental health concerns manifest as depressive symptoms, might be related to the previous personal experience in traditional bullying particularly in middle school and early high school, previous studies (e.g. Sourander et al, 2007) have shown low self-esteem (as one symptom of depression) can be predictive of being depressed in later years at college. In addition, bullying could violate personal security and safety feelings, which forces a student to keep himself\ herself away from others.

Being alone, vulnerable, and separated from social activities could increase student's internet login time. Students who were being victims of bullying could try to help themselves through cyber interaction with other students in their university, but unfortunately, this interaction could be negative and abusive, which could increase vulnerability, in light of their low self-esteem, social isolation, low-security feelings, and previous personal history of traditional bullying. These negative circumstances might increase the possibility to be vulnerable. As a result, the empty circle was formed, students who are suffering from depression may recognize the university environment as less attractive and more passive; this leads them to be socially isolated with less opportunity to receive social support from their peers in a stressful situation, so they

intensively using the internet as a possible gate to interact with their external environment (Mikulincer & Shaver, 2007).

An additional explanation could be related to possible available help and support received from others to cope with CB. It is clear that students who were victims of CB were isolated from any support services or other personal supportive relations, they were suffering silently from their invisible wounds, which could increase their problems and suffering. In this line Lenhart (2010) reported statistics on CB, indicated that over 70% of the CB victims know their attackers, offering the possibility that most of the perpetrators may have been friends or in relations with their victims.

Findings from current work have supported those within the literature (.e.g. Rivituso, 2014) suggested that low self-esteem, depressive mood, and embarrassment are very common consequences of cyber abuse among university students. Each participant of this study has revealed that he\ she felt significant amounts of loneliness, hopelessness, and embarrassment during his\ her period of victimization.

Recommendations and Implications for college mental health specialists and future research

1- There were enough CB victims in universities; CB as a phenomenon is not limited to school students, that college counselors and mental health specialists need to address it by offering the necessary method for assessment and evaluation.

2- Implementing outreaches mental health activities to leverage change in counseling when CB affected negatively student's psychological variables.

3- More intensive activities for increasing student's awareness, towards CB and its negative psychological impact (e.g. depression) in light of gender, excessive using internet, previous experience of traditional bullying variables to buffer its negative consequences.

4- Counselors, social workers, and students' mental health specialists at different universities can design their outreach programs to form a coherent understanding of CB prevalence and its possible negative effects to discover at-risk victims (students) who might not seek help or recognize that they are suffering an abuse problem.

5- The results of the study can be used by the school counselors to identify the impact of traditional bullying on student's psychological variables in long term, which may help them to utilize psychological services to deal with CB cases in their schools.

6- Future researchers could use qualitative methods to examine the effects of CB on other psychological variables (.e.g. anxiety, academic adjustment, or future resilience), differences between CB victims and offenders, coping with CB by victims including resiliency, social support as possible protective factors and psychological interventions.

Limitations

Several limitations of this study should be noted. First, 1898 students who replied (out of 18570) reported having CB experience in college. Therefore, the sample for CB victims is limited, and the CB scores clustered close to 0. Although expected, because CB is a non-normative act, this small sample may harm power (being lower than desired), thus results cannot be generalized to other university communities. Our used statistical design (cross-sectional correlation) might prevent us from elaborating a causal relationship between CB and our other variables. Longitudinal researches could provide deep knowledge and data on CB precedents, such as whether depression precedes or reflects a changed style following the CB experience. In Jordan, CB is not considered yet as abuse or a human right violation, for that might students who were being victims of CB, did not recognize or perceive those experiences as a violation of their rights, thus they would not report these experiences as such.

Conclusion

The findings revealed that the prevalence of CB among university students was (13.48%), the results confirmed that there was a relationship between exposure to CB and depression symptoms in the light of the previous personal experiences in exposure to traditional bullying and length of internet access variables. The gender factor was not determining factor in finding differences in depressive symptoms for bullied university students.

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IMPLEMENTING SCHOOL-WIDE COLLABORATIVE LESSON RESEARCH IN QATAR

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ABSTRACT

To develop and nurture Qatari teachers' capacity to teach mathematics through problem-solving, a 3-year professional development project was implemented in which the participants engaged in Collaborative Lesson Research (CLR), an enhanced version of Japanese lesson study. During the first year, the four Professional Development Specialists from Qatar University engaged in CLR to gain first-hand knowledge of teaching through problem-solving and CLR. In Years 2 and 3, teachers from 4 Qatari schools participated in the project. This paper reports the findings of the research that examined the viability of this innovative project design. Overall, the participants gained much insight into teaching mathematics through problem-solving and CLR. The results also confirmed the significance of knowledgeable others for teacher learning in CLR. The findings also revealed some challenges for the future scaling up efforts in Qatar such as the lack of resources in Arabic.

Keywords: Collaborative Lesson Research, Mathematics teaching.

Introduction

School education in Qatar in general, and mathematics education in particular, has been going through a major reform since 2001 when the Supreme Education Council (now Ministry of Education and Higher Education) launched a comprehensive education reform initiative. Many independent schools have been established, and an assessment system has been designed and implemented. Furthermore, world-class curriculum standards in four subjects, including mathematics, have been developed (Zellman, Constant, & Goldman, 2011).

Despite these changes, Qatari students' mathematics performance in international studies continues to lag behind their peers across the globe. Even though a major emphasis of the Qatari mathematics standards is problem-solving, many teachers are finding it difficult to develop and foster students' problem-solving capacity. To address these challenges, Qatar University College of Education and the International Math-teacher Professionalization Using Lesson Study (IMPULS) at Tokyo Gakugei University implemented a 3-year professional development project for Qatari primary and preparatory school teachers starting in the 2014-15 school year. In this QU-IMPULS project, Collaborative Lesson Research (CLR), an expanded and improved form of lesson study (Takahashi & McDougal, 2016), was used to increase Qatari teachers' capacity to teach mathematics through problem-solving. This paper reports the findings from the study that examined the project participants' learning.

Mathematics education in Qatar: Trends and issues

In the 2011 Trends in Mathematics and Science Study (TIMSS), Qatari 4th graders' average performance was ranked 44th among the 50 participating education systems, and 8th graders ranked 33rd among 42 participating systems (Provasnik et al., 2012). Their average scores, 413 and 410 respectively, were far below the cut point for International Benchmark of Intermediate, 475, for both grades. In the 2012 Program for International Student Assessment (PISA), Qatari 15 year-olds average performance in mathematics was ranked 63rd of the 65 participating countries and economies (OECD, 2014). Although Qatari students' average mathematics scores improved slightly in the 2015 TIMSS, their ranking among the participating systems was virtually unchanged, 41st out of 48 in Grade 4 and 28th out of 37 in Grade 8 (Provasnik et al., 2016).

In addition to these disappointing performances in international studies, a recent national report on the national educational assessment in Qatar showed that the mean score for students remains less than 40 (Ministry of Education and Higher Education, 2017). Moreover, the

Social and Economic Survey Research Institute (SESRI) at Qatar University conducted a study to investigate Qatari students' motivation towards education. The results revealed that although students generally exhibited positive attitudes towards mathematics in general (73% from governmental schools and 91% from other schools), only 11% of students in the government schools and 19% of students in other schools plan for future work in the field where mathematics is an essential subject in that field (SESRI, 2012). This study explains why the number of students enrolled in Biology, Chemistry, Physics, and Mathematics at Qatar University declined from well over 1300 students in 1999 to less than 400 in 2011. Furthermore, Said and Friesen (2013) found that the number of students enrolled in science courses in Grade 12 has become less than half since the mid-1990s. They suspect that this decline may be due to cumulative negative experiences at schools, whether due to uninteresting content, poor teaching, or various other factors.

Brewer et al. (2007) argued that Qatar needed much stronger results from its primary and secondary education system in the form of a standards-based system consisting of rigorous standards, a standard-aligned curriculum, assessments, professional development, and data use. However, Zellman et al (2011). point out that teachers in Qatar rarely have professional development opportunities. Although ministry inspectors regularly visit classrooms for inspections such as curriculum use—they do not visit classrooms to support teachers in improving their teaching. Thus, even though world-class standards were released in 2005, and the expectations for teachers and school leaders have been available as "National Professional Standards for Teachers and School Leaders", the actual classroom instruction does not appear to have changed. Schools in Qatar require a systematic supporting structure for teachers to implement standards into their classrooms.

QU-IMPULS project

Collaborative lesson research and teaching through problem-solving

Stigler and Hiebert (1999) introduced a Japanese lesson study to a worldwide audience. A major reason lesson study attracted so much attention from mathematics educators internationally was because videotaped Japanese mathematics lessons from the 1995 TIMSS reflected so many features of exemplary mathematics lessons, and Japanese lesson study was credited as the main mechanism that transformed Japanese mathematics instruction. Stigler and Hiebert (1999) labeled Japanese mathematics lessons as "structured problem solving" (p. 27) lessons, and Japanese mathematics educators call it *mondai kaiketsu gakushuu*, or teaching through problem-solving (TtP). A TtP lesson typically consists of 4 stages: (1) posing of the problem, (2) independent problem solving, (3) sharing and critical discussion of students' solution strategies, and (4) summarizing (Shimizu, 1999). According to a survey conducted by the Japan Society of Mathematical Education (JSME), virtually all Japanese teachers consider TtP to be an effective way to teach mathematics (JSME, 2001). Japanese mathematics

educators developed TtP through lesson study, and they continue to develop their expertise in implementing TtP in their classrooms by continuously engaging in lesson study.
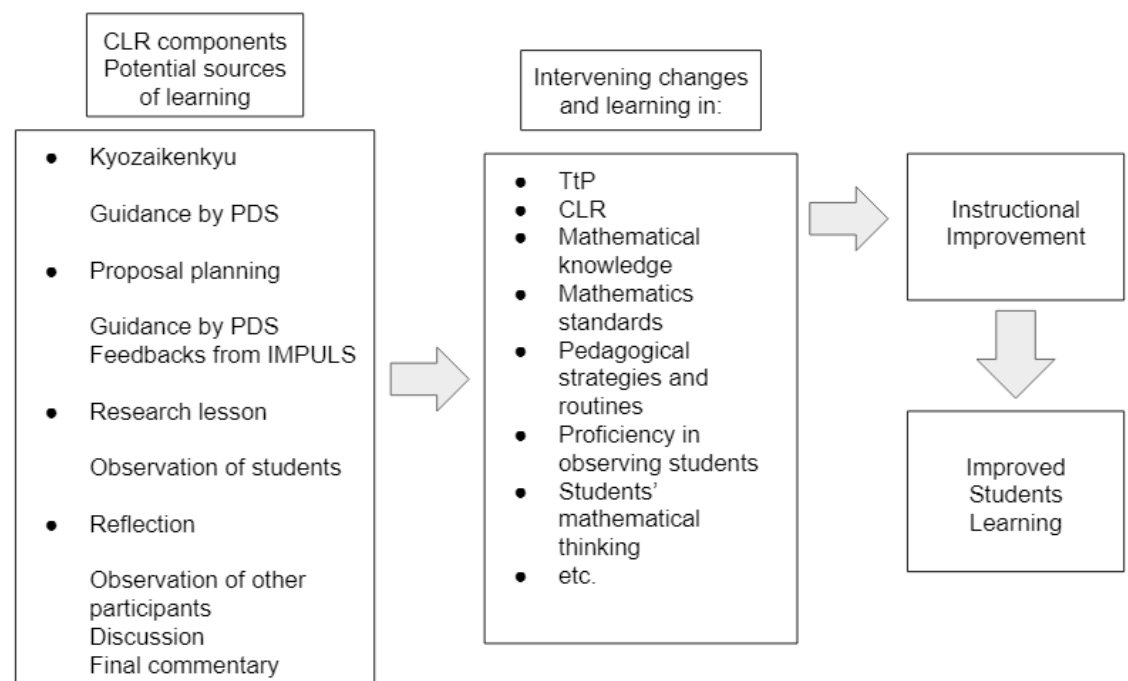
The QU-IMPULS project utilized Collaborative Lesson Research (CLR) to help Qatari teachers develop and enhance their capacity to teach mathematics through problem-solving. After a broad review of the literature, Seleznyov (2018) noted that there is no internationally shared agreement on the critical components of Japanese lesson study. CLR, on the other hand, has a clear definition, and it is more similar to Japanese school-wide lesson study, *jyugyou kenkyuu*, than many other lesson study implemented in projects outside of Japan. CLR was created to help teachers outside of Japan who want to bring the success of *jyugyou kenkyuu* to their schools (Takahashi & McDougal, 2016). CLR has the following 6 components, details of which are discussed in Takahashi and McDougal (2016).

- Clear research purpose
- *Kyouzai kenkyuu* (study of materials for teaching)
- Written research proposal (lesson plan)
- Live research lesson and discussion
- Knowledgeable others
- Sharing results

There are several advantages to implementing CLR in Qatar schools. First, it allows teachers and schools to deepen their understanding of the curriculum and standards through *kyozai kenkyuu*, which helps them create better lesson research proposals. Through CLR, teachers have opportunities to see life lessons that use problem-solving to develop new ideas. They also have the chance to practice designing, teaching, and reflecting on these lessons with the support of their colleagues and IMPULS personnel as knowledgeable others. Thus, CLR provides a framework to examine and learn from teaching materials. In essence, through CLR, teachers can understand curriculum better, design units and lesson plans intentionally, observe lessons to better understand how students learn and discuss how to improve student learning.

Theoretical framework and project design

The QU-IMPULS project design was based on the cumulative knowledge of lesson study among IMPULS and other Japanese mathematics educators. The theoretical framework was consistent with the framework proposed by Lewis, Perry, and Hurd (2009). Figure 1 shows the framework, adapting Lewis et. al. (2009).

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┌─────────────────────┐
│   CLR components    │
│  Potential sources  │
│     of learning     │
└─────────────────────┘
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- Kyozaikenkyu

  Guidance by PDS

- Proposal planning

  Guidance by PDS
  Feedbacks from IMPULS

- Research lesson

  Observation of students

- Reflection

  Observation of other
  participants
  Discussion
  Final commentary

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┌─────────────────────┐
│ Intervening changes │
│   and learning in:  │
└─────────────────────┘
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- TtP
- CLR
- Mathematical knowledge
- Mathematics standards
- Pedagogical strategies and routines
- Proficiency in observing students
- Students' mathematical thinking
- etc.

Instructional Improvement

Improved Students Learning

Figure 1 Theoretical framework for QU-IMPULS Project, adapting Lewis et al. (2009)

Because CLR, or lesson study in general, is a new idea in Qatar, this project was divided into 2 phases. In Phase 1 (Year 1), 4 professional development specialists (PDSs) from QU engaged in CLR themselves so that they understand both TtP and CLR. They first participated in the workshop on TtP, including the observation of a public research open house at Japan School of Doha (JSD) where they observed teaching and post-lesson discussion of a research lesson for a combined class of Grades 3 and 4 students (9 and 10-year-olds). The lesson was a part of the school-wide CLR at JSD. Then, the 4 PDSs formed 2 two-person teams and each team taught two sets of 4-day research lesson series. For the first set of 4-day research lessons, the teams were provided with suggested lesson plans that were developed by Japanese teachers as the starting point. For the second set of 4-day lessons, each team developed its lesson plans. In this way, each PDS had an opportunity to plan, teach, observe, and discuss 4 research lessons using TtP. Their first-hand experiences in CLR and TtP were hoped to enable them to provide more immediate and frequent support of teachers than IMPULS personnel who visited Qatar only 4 or 5 times a year.

For Phases 1 and 2, the CLR research theme was set as "fostering students' ability for problem-solving and reasoning by using Teaching through Problem Solving." As the planning teams planned their research lessons, they were asked to use the lesson proposal template (see Appendix A). This template guided the teams' *kyouzai kenkyuu* and the writing of research lesson proposals.

In Phase 2 (Years 2 and 3), the focus was on establishing a few cohorts of teachers from each of the four schools the PDS worked with so that they may become the model schools for school-wide CLR in Qatar. The 4 PDSs led the cohort groups through CLR steps at their respective schools, while IMPULS personnel provided intensive support for the content specialists and schools as knowledgeable others. In addition, JSD hosted Public Research Lessons in the fall of each year to provide the participating Qatari teachers' opportunities to observe both TtP and CLR in action.

The first year of Phase 2 began with a workshop introducing CLR and TtP at each of the 4 participating schools. These workshops were conducted by IMPULS personnel, and the focus was on helping Qatari teachers understand the process of CLR, with a major emphasis on *kyouzai kenkyuu*, as well as giving them some concrete image of TtP by engaging them in problem-solving. After this introductory workshop, participating teachers engaged in 4 cycles of CLR during the remainder of the school year. During the second year of Phase 2, each school team also engaged in 4 cycles of CLR. The 4th research lesson by the team from one of the schools was held as a public research lesson during a Lesson Study Forum held at QU.

In each cycle, a PDS led his or her school's lesson planning team with *kyouzai kenkyuu* and the preparation of a lesson proposal. They were encouraged to complete a draft of a proposal at least a week before the visit by IMPULS personnel. One IMPULS personnel provided comments on the draft proposal, making suggestions for clarifying, modifying, and generally improving the lesson proposal. The planning team, with the support of their PDS, then revised their lesson proposal before the day of the lesson.

On a research lesson day, participating teachers from the school and other educators engaged in the following activities:

- Pre-lesson discussion
- Observation of the research lesson
- Post-lesson discussion
- Final comment by knowledgeable other
- Writing a reflection journal

During a pre-lesson discussion, the planning team explained what their research focus was and why they chose the particular focus using the lesson proposal. Other observers had opportunities to ask clarifying questions about the research lesson. Finally, observers were reminded of the importance of carefully observing students' work based on the team's research focus.

After the research lesson, the participants engaged in the post-lesson discussion. The post-lesson discussion usually followed the following format:

1. Reflection by the teacher
2. Reflection by other members of the planning team
3. Sharing of observed data by other observers

4. Discussion

During the first year of Phase 2, this discussion was facilitated by one of the IMPULS personnel. During the discussion, a major point of emphasis was to base our discussion on observed data instead of simply stating our ideas and beliefs. It was also emphasized that we are not evaluating the teacher but examining the lesson carefully based on how students responded to the lesson. In the second year, the PDSs took over the role of the facilitator.

Finally, visiting IMPULS personnel provided the final comment. During the final comment, the knowledgeable other often used his notes and photographs taken during the lesson using a free application, Lesson Note. Thus, he demonstrated both how to observe a lesson and base his comments on observed data.

During Year 2, the 4 PDSs began to play more and more of the leadership roles including the facilitation of the pre-and post-lesson discussion and making summarizing comments at the end of the post-lesson discussion. This gradual release of the leadership roles was designed to develop the capacity of Qatari professionals so that CLR would continue to spread throughout Qatar.

Research Questions

This inquiry was conducted to examine the viability of the 2-phase program design in helping the participants gain an understanding of TtP and CLR. In particular, we were interested in the following three questions:

1. What did the participating Qatari teachers learn about Collaborative Lesson Study (CLR) and Teaching through Problem Solving (TtP)?
2. Which CLR components did the participants perceive to be helpful for their learning?
3. What factors hindered/promoted the implementation of CLR and/or TtP in Qatari schools?

Methodology

Participants

The first group of participants was the 4 professional development specialists (PDSs) affiliated with Qatar University. These PDSs each worked with teachers at one school site. The second group of participants was teachers from 4 independent schools, 2 primary schools, and 2 preparatory schools, located in Doha. Primary School AM is a girls school (Grades 1 - 6), and 18 teachers participated in the opening workshop. Primary School IS is a boys' school (Grades 1 - 4), and 4 teachers who taught Grades 3 and 4 participated in the opening workshop. Preparatory School MA is a girls school (Grades 6 through 9), and 6 teachers participated in the opening workshop. Finally, Preparatory School DP is a boys' school (Grades 6 through 9),

and 9 teachers participated in the project. Thus, altogether, 37 teachers participated in the opening workshop. However, for a variety of reasons, only 30 teachers (AM, 11 teachers, IS, 5 teachers, MA, 6 teachers, and DP 8 teachers) completed the project. All teachers from Primary Schools AM and IS and Preparatory School MA was female while all teachers from Preparatory School DP were male.

Data Sources

The primary data source for this case study was the final survey conducted in May 2017 (see Appendix B). This survey was completed by all 34 participants, 30 teachers, and 4 PDSs. In addition, the participants completed daily reflections after each research lesson at their respective schools during Phase 2. The IMPULS personnel also took various research memos during their visits.

The reflections after the research lesson and the free-response items on the final survey were analyzed to identify themes. While the reflections were translated into English so that they could be analyzed by the IMPULS team, the final survey responses were analyzed by the researcher from QU whose first language is Arabic.

Findings

Research Question 1: What did the participants learn?

Question 6 on the final survey (see Appendix B) asked the participants how much they learned about different aspects of mathematics teaching and lesson study. The items in the survey are the intervening changes and learning anticipated in the design framework. There were 20 items for the participants to respond on a 5-point scale from "Not at all (1)" to "A lot (5)." Overall, all 20 items received either 4 or 5 ratings from more than half of the teacher participants. The following 7 responses received the highest rating of 5 from at least a half of the participants (the number inside the parentheses indicate the number of teacher participants (N = 30) who gave the rating of 5):

> (b) How to support students' problem-solving ability. (19)
> (e) Collecting data on student thinking to inform instruction. (15)
> (f) Strategies for making students' thinking visible. (15)
> (q) Strategies for working effectively in a lesson study group. (16)
> (r) Analyzing written student work/responses. (16)
> (s) Analyzing and interpreting verbal student comments. (17)
> (t) How to lead less study. (16)

Items (b), (e), (f), (r), and (s) are directly related to TtP, one of the major foci of the project. On the other hand, items (q) and (t) are about implementing lesson study effectively. In

contrast to these items, items (d), (h), (m), and (n) received the highest number of either 1 or 2 ratings from teacher participants:

(d) How lesson study is conducted in another school. (6)

(h) Ways to build connections among educators at multiple levels of the education system. (5)

(m) Differentiating/offering support for struggling learners. (4)

(n) Cultural influences on mathematics teaching and learning. (6)

However, as noted above, even these items also received ratings of 4 or 5 from more than half of the participants.

The 30 teacher participants' responses to Question 1 on the survey are consistent with these findings. Many participants thought their participation in lesson study helped them teach mathematics through problem-solving. They also felt that their participation in the project helped them trust their students' ability to learn mathematics and solve problems. Many of them felt that they improved their ability to analyze students' responses to mathematics problems, and they are encouraging their students to tackle novel mathematics problems using what they have learned previously.

Although all 20 items in Question 6 received high ratings from all participants, we also noticed that there are some differences in responses between teachers from primary schools and those from preparatory schools. The average ratings for the teachers from primary schools ranged from 4.25 to 4.88 while the average ratings for the preparatory school teachers ranged from 2.62 to 4.00. While none of the primary school teachers gave the rating of 1 or 2 to any of the 20 items, at least one preparatory school teacher was giving the rating of 1 or 2 in all but item i, anticipating student responses. Moreover, item f, which is about strategies for making students' thinking visible was one of the 5 highest rated items for the primary school teachers, but it was the second lowest-rated item by the preparatory teachers. On the other hand, item p, which is about developing units and lessons, was the 5th highest rated item (tied with the item i about anticipating student responses) by the preparatory teachers, but it was the 5th lowest rated item among the primary teachers. Table 1 shows the 5 highest and 5 lowest-rated items for these groups of teachers.

Table 1: 5 highest and 5 lowest rated items on Question 6 by school levels

Levels	5 Highest Rated Items (in order)	5 Lowest Rated Items (in order)
Primary	(f), (b)/(e)/(s), (q)	(n)/(j), (m)/(d), (p)
Preparatory	(t), (b), (r), (s), (i)/(p)	(d), (f), (h), (n)/(m)

Question 7 on the final survey asked the participants to rank up to five items from Question 6 that they believed would be professionally most useful as they looked ahead. All 20 items

were included in at least one teacher's ranking. The following 3 items were picked by the most teacher participants as the most useful idea:

  (a) Mathematics content. (6)
  (e) Collecting data on student thinking to inform instruction. (9)
  (f) Strategies for making students' thinking visible. (6)

The participating teachers have rated items (e) and (f) highly in terms of how much they perceived to have learned from the project. Although item (a) was picked as the most useful idea by 6 teachers, only 4 other teachers have picked this item in their top 5 useful ideas. 3 items were picked as one of the 5 most useful ideas by more participants than this item was – items (i) (13 participants), (l) (15 participants), and (t) (12 participants). Item (l), which is about students' mathematical reasoning, was picked as the most useful idea by only 1 teacher, but altogether, 12 teachers picked it as one of the most useful ideas as they look ahead. All but 1 of the 12 teachers who included item (t) in their 5 most useful idea was rated as their 5th most useful idea.

Given Question 7 was asking the participants about the usefulness of the potential learning through the project participation, we did not expect too many teachers would select the items related to implementing lesson study as one of the 5 most useful ideas. As anticipated, items (d), (h), (k), and (o) were not picked by any teacher as one of the 5 most useful ideas. Interestingly, item (q) about strategies for working effectively in a lesson study group, was picked by 4 teachers. Items (q) and (t) were other items that related directly to lesson study, and they received the highest rating in terms of the amount of learning from more than half of the teacher participants. However, only a much smaller number of teachers included them in their 5 most useful ideas.

Research Question 2: What are the sources of the participants learning?

Question 9 asked the participants how much they learned through each of the 7 possible sources of learning in the design framework on a 5-point scale from "Not at all (1)" to "A lot (5)." Among the teacher participants, the average ratings on the 7 activities were rather high, ranging from 4 to 4.5. The three highest-rated activities were items (c), (e), and (g) (the numbers in the parentheses indicate the average rating and the number of teachers who gave the ratings of 4 or 5):

  (c) Lesson plan feedback by IMPULS. (4.4, 21)
  (e) Collecting data on student thinking during research lesson observation. (4.5, 23)
  (g) Final comments by IMPULS professors. (4.5, 25)

Although 25 out of 28 teachers rated item (g) either 4 or 5, there was one teacher who rated it as 1, Not at all. This rating was the only rating of 1 by all of the participants on the 7 items.

The items that received the lowest rating by the teacher participants were items (a) and (f) (the number in the parentheses indicates the average rating).

(a) Developing lesson plan. (4.0)
(f) Post lesson discussion. (4.2)

Research Question 3: What are perceived challenges?

Question 3 on the survey asked the participants to identify challenges to using lesson study in their schools. By far the two most commonly mentioned issues are the overcrowded curriculum/standards and students' weakness in mathematics in general and problem-solving in particular. These ideas were also frequently mentioned in the participants' daily reflections. The teacher participants often wondered if teaching through problem-solving is appropriate for all levels of students, in their daily reflection, on the final survey, and during the post-lesson discussion. They also mentioned time as another challenge in implementing lesson study. They felt they needed more time to become more familiar with the idea of teaching through problem-solving, examining curriculum, and plan research lessons. One challenge mentioned by PDSs several times throughout the project is the difficulty of conducting *kyozai kenkyuu* as a part of lesson planning. One specific issue they mentioned was the lack of resource materials in Arabic. Although many teachers are comfortable with English, it nevertheless posed challenges to investigate teaching materials in depth.

Despite these challenges, some of the participants indicated that their views about teaching and learning mathematics have changed in several ways. In particular, several teacher participants mentioned that they are giving students time to think mathematically and incorporate their ideas in-class discussion to enhance their mathematics learning. Some are thinking more about student-centered mathematics learning environments instead of teacher-centered approaches.

Discussion

Overall, the findings suggest that the project was well received by the participants, and they gained insights into both CLR and TtP, suggesting the viability of the design framework. In particular, the results from this inquiry confirm the critical roles knowledgeable others play in teacher learning. Takahashi (2014) discussed different ways knowledgeable others in Japan facilitated teacher learning, and the current case study suggests that future implementations of Japanese lesson study outside of Japan should seriously consider the roles of knowledgeable others in their designs.

Designing a mathematics lesson in which students are given opportunities to learn through problem-solving is a challenging task. The Qatari teachers who participated in this project also expressed the challenges of TtP while appreciating it at the same time. Their responses to the questions on the final survey seem to show that many of them are paying more attention to

students' thinking and trying to incorporate students' ideas in their mathematics lessons than they used to. The fact that many teacher participants picked "strategies for making students thinking visible" as something professionally useful is clear evidence of these participants valuing their students' reasoning.

21 out of 27 teachers rated the support by QU specialist during the lesson planning as either 4 or 5 on the 5-point scale (3 teachers did not answer this question). We suspect that spending the first year of the project fully immersed in TtP and CLR themselves helped them to be more effective as they guided the planning team at their respective schools. This finding suggests that any future effort to implement CLR or TtP should focus on developing the capacity of a few leaders who have first-hand knowledge of both ideas.

On the other hand, the fact that the participating teachers did not think they learned as much from developing lesson plans or post-lesson discussion as other aspects of CLR raises some concerns. For post-lesson discussion, we suspect it might be because it often ended with observers simply sharing what they observed. A similar phenomenon in some US lesson study implementation has been reported (e.g. Takahashi, & McDougal, 2016). This might be due to, in part, our emphasis on observed data during the post-lesson discussion.

The issue of challenges in developing lesson research proposals is also a common one across the world (Khokhotva, 2018, Quaresma et al., 2017, Takahashi, et al., 2005, Watanabe et al., 2008), but it also has a facet that is unique to Qatar. As mentioned above, English poses a significant challenge for some Qatari teachers. Unfortunately, there are few resources written in Arabic that can be useful during *kyozai kenkyuu*. The project provided an English-translated Japanese mathematics textbook series that might be used during this phase of CLR. However, many participants find it difficult to make full use of the textbook series, and oftentimes, QU specialists had to find resources (in English) for them. Lewis and Perry (2017) found educators who were provided with a tool kit to support their lesson study deepened their understanding of fractions more than those who simply engaged in lesson study without the tool kit. Thus, the development of Arabic resources to support lesson study in Qatar may be an important factor for future success.

The difference in Question 6 responses between the primary school teachers and the preparatory school teachers was a surprise. We anticipated what teachers learn would be influenced by the topic and the design of research lessons, which in turn affect the post-lesson discussion. However, with each teacher having opportunities to observe and discuss several research lessons, we did not anticipate the difference between the primary and the preparatory teachers. We also experienced some issues of the commitment of the school administration with one of the preparatory schools. Thus, oftentimes, participating teachers had to leave in the middle of the post-lesson discussion because their schedules were not adjusted for the project activity. This issue requires additional investigation.

Implications to Institutions of Higher Education and Future Research

Institutions of Higher Education (IHEs) are responsible for teacher preparations throughout the world. In addition, many IHEs throughout the world are also involved in the professional development of in-service teachers. Supporting teachers' life-long learning is a critical mission of IHEs. As a part of their efforts to support teacher professional development, Japanese lesson study has become a popular tool employed by many IHEs. The current report has a few implications for those who are considering the use of lesson study to support teacher professional development.

First, as stated earlier, Seleznyov (2018) reported that there is no internationally shared knowledge of critical components of lesson study. Many projects employ "modified" lesson study, but it is not often clear what modifications were made and why. We cannot simply transplant a learning activity developed in culture into a different culture and expect the same results. Adaptations are necessary, but adaptations should be made based on a clear understanding of the original activity. The current study shows that the use of CLR with a clear definition is a useful tool for teacher professional development.

The design of the project also affirms the critical importance of IHE personnel's understanding of CLR and TtP. The current project dedicated the first year to help QU specialists to experience CLR and TtP first-hand so that their understanding of both practices was well-grounded in their own experiences. When the project schools were engaged in their first cycle of CLR during the second year of the project, one of the specialists wondered why the teachers appeared to be catching on to the idea of TtP much more quickly than they did during the first year of the project. We believe that it was because the participating teachers were able to get ongoing and direct support from the specialists about both TtP and CLR while the specialists were able to receive support remotely in between the visits by IMPULS personnel. Thus, IHE personnel must be well-versed in a particular pedagogical idea they want to promote but also in CLR.

Finally, although the participating teachers' reflections and their responses to the final survey appear to indicate that their participation in the project has begun to influence their mathematics teaching, it is all based on self-reporting. Additional inquiries to examine the changes in teaching practices and students' learning must be conducted to fully assess the effectiveness of this project. Moreover, lesson study in Japan is not a one-time project. Rather, it is a part of ongoing efforts by Japanese teachers to continuously enhance their professional capacity. Thus, it is important to examine how such a culture may be nurtured through the leadership of IHEs.

Acknowledgment

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Appendix A   Lesson proposal template

LESSON RESEARCH PROPOSAL FOR [*GRADE AND TOPIC*]

For the lesson on [date]

At [name of the school], [teacher's name] class

Instructor: [name]

Lesson plan developed by: [names]

Experienced lesson study practitioners use a variety of formats for presenting the thinking behind their research lessons, but this template identifies important considerations of lesson study.

Red italicized text briefly describes what the sections are for; ***all red text should be deleted during the preparation of the actual research proposal.***

Title of the Lesson: <a descriptive title>

Brief description of the lesson
Just a few sentences…

Research Theme

Fostering students' ability for problem-solving and reasoning by using Teaching through Problem Solving (TtPS)

Goals of the Unit
a)   [include long-range goals as well as short-term ones] For students to become…
b)   To help students understand…

Goals of the Lesson:
a)   Students will understand …
b)   Students will be able to…

Relationship of the Unit to the Standards
DELETE RED TEXT This section typically describes how this unit fits between the standards from prior grades and the standards for this or later grades. Do not quote standards in their entirety, but excerpt the relevant clauses or use strike-through to show which parts of a standard are and are not being addressed.

Related prior learning standards

<u>Learning standards for this unit</u>

<u>Related later learning standards</u>

Background and Rationale
DELETE RED TEXT Justify your choice of theme and topic. Frequently this is expressed in terms of a contrast between the current state of students (or students in previous years) and what you and your colleagues want to accomplish.

Research and Kyozaikenkyu
DELETE RED TEXT Describe findings from looking at various curricula and any other resources, and rationales behind the particular tasks, manipulatives, and design of the unit and lesson.

Unit Plan
DELETE RED TEXT Shows how this lesson fits into a larger unit. Briefly describes lessons before and after the research lesson. A typical unit maybe 10 days, including practice; this is what it might look like for a 4-day unit in which the research lesson is lesson #2:

Lesson	Learning goals and tasks
1	<description>
2	**The research lesson:** <brief description of this research lesson>
3	<description of a later lesson>
4	

Design of the Unit and Lesson
This section typically discusses:

- *how the research theme will be addressed during the unit;*
- *how the lesson has been designed to address the research theme and learning goals.*

Research lesson plan

The sections of this lesson plan are based on a typical problem-solving-based mathematics lesson, which may or may not be appropriate for your lesson. "Anticipated student responses," however, should always be included.

Steps, Learning Activities Teacher's Questions and Expected Student Reactions	Teacher Support	Points of Evaluation
DELETE THIS ENTIRE ROW OF THE TABLE This column shows the major events and flow of the lesson.	This column shows additional moves, questions, or statements that the teacher may need to make to help students.	This column identifies what the teacher will look for (formative assessment) and what observers should look for to determine whether each segment of the lesson is having the intended effect.
1. Introduction This section may review ideas from a prior lesson or discuss a simple problem designed to prepare students for work on the main problem.		
2. Posing the Task This section describes a problem or task as it will be presented to students. Give the exact phrasing of the hatsumon (key question) and the specific numbers used.	Indicate here whether the problem will be written on the board, posted, handed out as a worksheet, or glued into student notebooks.	
3. Anticipated Student Responses This section describes how students might respond to the problem, including incorrect solutions and places where students might get stuck. It can be helpful to tag different responses in some way, e.g. "R1" for Response 1, etc. R1: 2 + (3 * 5) [correct] R2: 3 * 5 = 15; 2 + 15 = 17	Here the plan might describe how the teacher will handle the different student responses, especially incorrect solutions, students who get stuck, or students who finish early.	
4. Comparing and Discussing This section may identify which student solution methods should be shared and in what order, or generally how to handle the discussion.	What are the ideas to focus on during the discussion?	
(If needed, repeat 2, 3, & 4 above for additional tasks.)		
5. Summing up This section may describe how the teacher will summarize the main ideas of the lesson. It may also include an assessment activity.		

Evaluation

This section often includes questions that the planning team hopes to explore through this lesson and the post-lesson discussion.

Board Plan

This section contains a diagram showing how to work on the blackboard will be organized. A good approach is to run a simulation of the lesson and then take a photo of the board.

Reflection

After the research lesson, the team should append to the original lesson plan a summary of major points from the discussion. This may be a few paragraphs in length and makes the final document ***much more valuable*** *to an outside audience.*

Appendix B   Final Survey

Q0.   Your Affiliation

Omitted to protect the identity of the participants

Q1.   What do you think are the strengths/ benefits of using lesson study in your school?

Q2.   In your mind, what are the essential features of lesson study?

Q3.   What do you think are the challenges to using lesson study in your school?

Q4.   Please describe how you hope to use lesson study for educational improvement in your school after this program.

Q6. [1]   How much did you learn about each of the following during the IMPULS-QU Lesson Study Program?

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[1] There was a numbering error, and there was no question 5.

	Not at all (1)	A little (2)	Some (3)	Quite a bit (4)	A lot (5)
a. Mathematics content	❍	❍	❍	❍	❍
b. How to support students' problem-solving ability	❍	❍	❍	❍	❍
c. Evaluating lessons on the basis of the written plans	❍	❍	❍	❍	❍
d. How lesson study is conducted in another school	❍	❍	❍	❍	❍
e. Collecting data on student thinking to inform instruction	❍	❍	❍	❍	❍
f. Strategies for making students' thinking visible	❍	❍	❍	❍	❍
g. Analyzing/studying curriculum materials	❍	❍	❍	❍	❍
h. Ways to build connections among educators at multiple levels of the education system	❍	❍	❍	❍	❍
i. Anticipating student responses	❍	❍	❍	❍	❍
j. Writing a useful lesson plan	❍	❍	❍	❍	❍
k. Organizational/structural supports for lesson study	❍	❍	❍	❍	❍
l. Students' mathematical reasoning	❍	❍	❍	❍	❍
m. Differentiating/ offering support for struggling learners	❍	❍	❍	❍	❍
n. Cultural influences on mathematics teaching and learning	❍	❍	❍	❍	❍
o. Organizing a successful post-lesson debriefing session	❍	❍	❍	❍	❍
p. Developing mathematics units and lessons	❍	❍	❍	❍	❍
q. Strategies for working effectively in a lesson study group	❍	❍	❍	❍	❍
r. Analyzing written student work/ responses	❍	❍	❍	❍	❍
s. Analyzing and interpreting verbal student comments	❍	❍	❍	❍	❍
t. How to lead lesson study	❍	❍	❍	❍	❍

Q7.   Please select and rank in order of importance the five items from the previous question that you believe will be most professionally useful for you within the next year.

In order of importance, I anticipate I will find these 5 items the most professionally useful in the coming year:
_____ a. Mathematics content
_____ b. How to support students' problem-solving ability
_____ c. Evaluating lessons based on the written plans
_____ d. How lesson study is conducted in another school
_____ e. Collecting data on student thinking to inform instruction
_____ f. Strategies for making students' thinking visible
_____ g. Analyzing/studying curriculum materials
_____ h. Ways to build connections among educators at multiple levels of the education system
_____ i. Anticipating student responses
_____ j. Writing a useful lesson plan
_____ k. Organizational/structural supports for lesson study
_____ l. Students' mathematical reasoning
_____ m. Differentiating/ offering support for struggling learners
_____ n. Cultural influences on mathematics teaching and learning
_____ o. Organizing a successful post-lesson debriefing session
_____ p. Developing mathematics units and lessons
_____ q. Strategies for working effectively in a lesson study group
_____ r. Analyzing written student work/ responses
_____ s. Analyzing and interpreting verbal student comments
_____ t. How to lead lesson study

Q8:   How did your views about teaching and learning mathematics change as a result of this IMPULS-QU Lesson Study Program, if at all?

Q9:   In looking over all the activities during the IMPULS-QU Lesson Study Program, how much did you learn from each of the following?

	Not at all (1)	A little (2)	Some (3)	Quite a bit (4)	A lot (5)	N/A
a. Developing Lesson Plan	❍	❍	❍	❍	❍	❍
b. Support by QU specialist during the lesson planning	❍	❍	❍	❍	❍	❍
c. Lesson Plan Feedback by IMPULS	❍	❍	❍	❍	❍	❍
d. Teaching a research lesson	❍	❍	❍	❍	❍	❍
e. Collecting data on student thinking during research lesson observation	❍	❍	❍	❍	❍	❍
f. Post Lesson Discussion	❍	❍	❍	❍	❍	❍
g. Final Comments by IMPULS Professors	❍	❍	❍	❍	❍	❍

Q10:   In looking over all the research lessons during the IMPULS-QU Lesson Study Program, name one that was especially meaningful to you, and why:

Title and date of research lesson:

The reason this stood out for me:

Q11:   In looking over all the post-lesson discussions during the IMPULS-QU Lesson Study Program, name one that was especially meaningful to you, and why:

Title and date of post-lesson discussion:

The reason this stood out for me:

Q12:   Was there a conversation among participants during the IMPULS-QU Lesson Study Program that stands out to you? Please describe, and provide reasons that this stood out for you:

Q13   Anything else you'd like to add?

THE IMPACT OF INDIVIDUALISM AND COLLECTIVISM ON COMMUNICATION APPREHENSION: A STUDY OF UNIVERSITY ACADEMIC STAFF

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ABSTRACT

The purpose of this research is to examine the use of individualism and collectivist culture and its impact on communication apprehension on university academic staff. In this study, Quantitative methods were employed. The participants consisted of 264 academic staff at private universities in Jordan. These participants were invited to complete a Personal Report of Communication Apprehension (PRCA-24) to measure their levels of communication apprehension. Two communication apprehension theories, Individualism, and collectivism were applied in this study to assist in the provision of logical explanations in the discussion section. The findings of this research revealed that there is a significant relationship between individualism and collectivist culture and communication apprehension. It also revealed that Jordanians have higher levels of communication apprehension. This research contributes to the existing pool of knowledge on the relationships between the individualism/collectivism culture and communication apprehension. Different aspects and contexts of these variables were tested to provide a wider and more comprehensive understanding of the factors which affect the academic members of private universities in Jordan. Managerial implications are discussed in this research.

Keywords: Individualism, Collectivism, Communication Apprehension

Introduction

Individualism/Collectivism theories describe how individuals are related to their groups within the society (Hofstede, 2011). In collectivist societies, "people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty" (Hofstede, 2001, p. 225). However, in individualist societies, "people prefer to act as individuals rather than as members of groups" (Hofstede, 1984, p. 6).

Moreover, Hofstede, (2001, p. 212) highlighted that "High context communication fits the collectivist society, and low context communication is typical of individualist cultures." Consequently, in high-context cultures, communication information is established in the context of the communication rather than in the explicit spoken message, while in low-context cultures, the message is explicit in the spoken or written aspect of the communication (Dwyer, Mesak, and Hsu, 2005).

In terms of examining cultural dimensions, Triandis (2004) proposed that cultural values and dimensions can vary from a high to a low context at the individual level. Clugston, Howell, and Dorfman (2000) confirmed that when researchers examine differences within cultures, it is important to measure individual perceptions. Furthermore, culture was viewed by Thomas-Maddox and Lowery-Hart (1998, p. 5) as a "shared perception which shapes the communication patterns and expectations of a group of people". Ay and Turkoglu, (2018) and Croucher, (2013) proposed that the cultural perceptions, beliefs, values, and traditions of every culture have an instantaneous influence on the communication strategies of the people and society. According to Zhan (2010), this is the reason for which semantical challenges or obstacles could appear once individuals of various cultures communicate with one another. Yook (2015) proposed that communication is a very important facet of superior and subordinate relations among a corporation, and therefore the culture of the interactants can color the character of the communication. Moreover, Kim (2002) found that people who belong to collectivist cultures, namely Asians such as Koreans, Japanese and Chinese, are different from people who belong to individualist cultures, namely Western people like the British, French, and Americans. Yook (2015) proposed that individualist cultures appraise independence and the objectives of the individual over the objectives of the group. However, according to Gordon (2005) collectivist cultures, like China, are more likely to value coordination and concern for others and also the objectives of the group over the objectives of the individual. Additionally, Kim (2002) declared that, to varying degrees, Asian cultures recompense members for respecting the "face of the opposite", the connection, the facility differential, and also the cluster membership over acting individually. Nonetheless, the communication behaviors of Asians are misunderstood within the Western imagination; they are seen as obedient, soundless, and/or submissive and therefore seen as appearing less skilled. In addition, Kim (2002) suggested that in Asian cultures that value the group having a high Communication Apprehension (CA) and speaking less may be understood as a commitment to the collective and that these characteristics could, therefore, be helpful.

Otherwise, those who have a low CA may well be more talkative and could be seen as more individualist and therefore less interesting. From this cultural standpoint which eludes and diminishes assertive, individualistic communication, someone may still be extremely competent. Kim (2002) proposed that in collectivist cultures, those who direct speeches to groups and lead cluster discussions are perceived as attempting to categorize themselves as prominent and noticeable in a culture that values group consensus. This could be the reason why people belonging to collectivist cultures are more likely to speak less, they might be frightened of being rejected by their societies. Hence, this may explain the variation in apprehension communication found between individualist cultures and collectivist cultures. It may confirm the influence of the individualism and collectivist culture on communication apprehension and that may also influence the individuals' behavior towards their organizations (Croucher, 2013). As proposed by Hofstede and Minkov (2010) developed and Western countries are dominated by individualism, whereas the less developed and Eastern countries, where Jordan is located are dominated by collectivism. One may well anticipate that in regions and countries with high collectivism, such as the Middle East and especially Jordan, employees' cultural practices would seem to be an important determining factor concerning communication behavior between academic members of private universities in Jordan. Moreover, there is little research on communication apprehension in the private university context, or on its relation to the individualism and collectivism culture and communication apprehension among faculty academic staff and private universities' top management. Hence, the current study aims to gain insight into the academic staff's communication in Jordanian private universities and to examine the effect of culture concerning individualism and collectivism in Jordanian private universities and its influence on the academic staffs' communication.

The linkage between the Individualism and Collectivism Culture and Communication Apprehension

Communication is a fundamental aspect of superior and minor relations within a corporation, and therefore the culture of the interactants can shape the character of the communication (Barac, 2009; Yook, 2015). Communication apprehension between staff becomes more noticeable and causes more problems to the individuals who are apprehensive about communicating especially in those organizations which see employee communication as one of the more important skills present in an employees' competencies (Gray, Emerson, and MacKay, 2005; Gray and Murray, 2011). Triandis (1995) confirmed that dissimilarity between collectivists and individualists exists within the cultures that are based on people differences. Monthienvichienchai, Bhibulbhanuwat, Kasemsuk, and Speece (2002) also proposed that individualism and collectivism can reveal some of the basic differences and similarities in communication behavior among cultures. However, communication apprehension exists everywhere, such as in universities, schools, meetings, group discussions, and any organization. (Piyachat, 2009). Hassall, Arquero, Joyce, and Gonzalez (2013) suggested that communication apprehension may have various consequences on an individual such as educational, emotional, and social consequences. Falcione, McCroskey, and Daly (1977, p. 364) proposed that communication apprehension is "a broad-based fear or anxiety

associated with either real or anticipated communication with another person or persons". McCroskey (2001) who developed the Personal Report of Communication Apprehension (PRCA) proposed four categories to measure people's communication apprehension, and these categories are "group discussion, talking in a meeting, interpersonal conversation, and public speaking".

In addition, Daly, McCroskey, Ayres, Hopf, and Ayres (2009), confirmed that people who have high levels of fear or anxiety regarding communication often avoid communication. According to Oommen (2014), high levels of communication fear may hinder the usefulness and the value of an individual's communication. When examining the influence of communication on "Leader-Member Exchange", Bakar, Dilbek, and McCroskey (2010) found that top-quality supervisor communication may cause group commitment by subordinates. In addition to culture, hierarchical positions within a corporation, whether or not they are exceedingly social control positions is thought to influence levels of communication apprehension

Literature on communication apprehension reveals that culture is one of the main factors that may affect communication apprehension (Coetzee, Schmulian, and Kotze, 2014; Croucher, 2013; Madlock, 2012; Kim, Aune, Hunter and Kim, 2001; Piyachat, 2009; Yook, 2015). Coetzee, Schmulian, and Kotze (2014), when exploring the influence of culture and the distinction between home language and the medium of instruction on the fear of communication of South African accounting students, suggested that the fear of communication differs among cultural groups, not carelessly defined by the appearance. Croucher (2013) studied the relationship of cultural variables, specifically religious identity, individualism, and collectivism with communicative traits in France. Communication apprehension (CA), self-perceived communication competence (SPCC), and willingness to communicate (WTC) were tested among self-identified Catholics and Muslims. The result of this study revealed that CA is negatively related to both SPCC and WTC, while SPCC and WTC are positively related. Furthermore, Muslims have higher levels of CA and Catholics have higher levels of SPCC. Additionally, higher levels of collectivism are related to higher levels of CA and lower levels of SPCC and WTC, and higher levels of individualism are related to lower levels of CA. Madlock (2012), studied the impact of cultural congruency between micro- and macro-cultures concerning power distance on Mexican employees' communication behaviors, job satisfaction, and organizational commitment. The results supported the value of cultural congruency between the macro-culture which is the societal culture and the micro-culture which is the organizational culture.

Further results, showed that power distance, avoidance messages, communication apprehension, and communication satisfaction were all positively related to the job satisfaction and organizational commitment of Mexican employees. Kim et al., (2001) examined the effects of culture and self-construal on predispositions toward verbal communication and applied this study to undergraduates studying in Korea, Hawaii, and mainland U.S. The results suggested that when culture-level individualism increases one's construal of self as independent, it leads to a higher degree of argumentativeness and a lower level of communication apprehension. However, when culture-level individualism decreases one's construal of self as interdependent, this leads to

a lower degree of argumentativeness and a higher level of communication apprehension. Piyachat (2009) proposed that communication apprehension appears to be nearer to individuals than anticipated, and it is clear that it will reveal an impact on an individual's life. Additionally, communicatively apprehensive workers will often choose not to communicate, and "that silence can exact a high psychological price on individuals, generating feelings of humiliation, pernicious anger, resentment, and the like that, if unexpressed, contaminate every interaction, shut down creativity, and undermine productivity" (Perlow and Williams, 2003, p. 52).

Consequently, communicatively apprehensive employees have low-status positions, participate less, and have low organizational stability (Winiecki and Ayres, 1999). Hye and McCroskey (2004) demonstrated that culture affects thought, feelings and actions. In a cross-cultural analysis of communication apprehension between French and American managerial and non-managerial employees, Yook (2015) found that the non-managerial employees have higher levels of apprehension than the managerial employees, while the variable of culture is not a significant source of difference. Hye and McCroskey (2004) verified that norms of communication behavior are different across cultures. The culture theory reveals that several people are closer to individualism than the collectivist culture; they are the people who have independent personalities and the ability to carry on the responsibility (Piyachat, 2009).

On the other hand, those who belong to the group or collectivist culture are more able to be effective in their communication than the "individualism" people (Piyachat, 2009). The collectivist culture encourages people to support and cover each other even if one of them has fewer qualifications than someone else in the same group (Gudykunst et al., 1996). Consequently, "collective" people prefer to work as a group to guarantee agreement from others for what he or she is doing in the workplace, at home, and elsewhere. For this reason, those who belong to the collectivist culture have higher communication apprehension than the people who belong to the individualism culture (Piyachat, 2009). Moreover, Monthienvichienchai et al. (2002), who performed their study on communication competence, cultural awareness, and the communication apprehension of UK teachers in a British curriculum international school in an Asian context (Bangkok, Thailand), found that the respondents have a high level of self-reported communication competence, high levels of cultural awareness, and low communication apprehension. Klopf (1997) proposed that people are different in their communication apprehension across cultures and even within the same culture or countries that have similar characteristics. For instance, Klopf (1997) found that the Japanese have higher communication apprehension than Koreans because Japanese culture supports the group and collectivist culture, whereas Korean culture promotes a more individualist environment. Based on the above review, the following relations are hypothesized as shown in the research model in figure 1:

H1. There is a significant relationship between Individualism and Collectivism Culture and Communication Apprehension

H2. There is a significant relationship between Individualism and Collectivism Culture and Communication Apprehension of "Group Discussion" among private universities' academic staff.

H3. There is a significant relationship between Individualism and Collectivism Culture and Communication Apprehension of "Talking in Meeting" among private universities' academic staff.

H4. There is a significant relationship between Individualism and Collectivism Culture and Communication Apprehension of 'Interpersonal Conversation among private universities' academic staff.

H5. There is a significant relationship between Individualism and Collectivism Culture and Communication Apprehension of "Public Speaking" among private universities' academic staff.

H6. There is an impact of Individualism and Collectivism Culture on all Communication apprehension dimensions (group discussion, talking in meetings, interpersonal conversation, and public speaking) among private universities' academic staff.

Figure 1. Research Model of the relationship between IND and COL Culture and Communication Apprehension
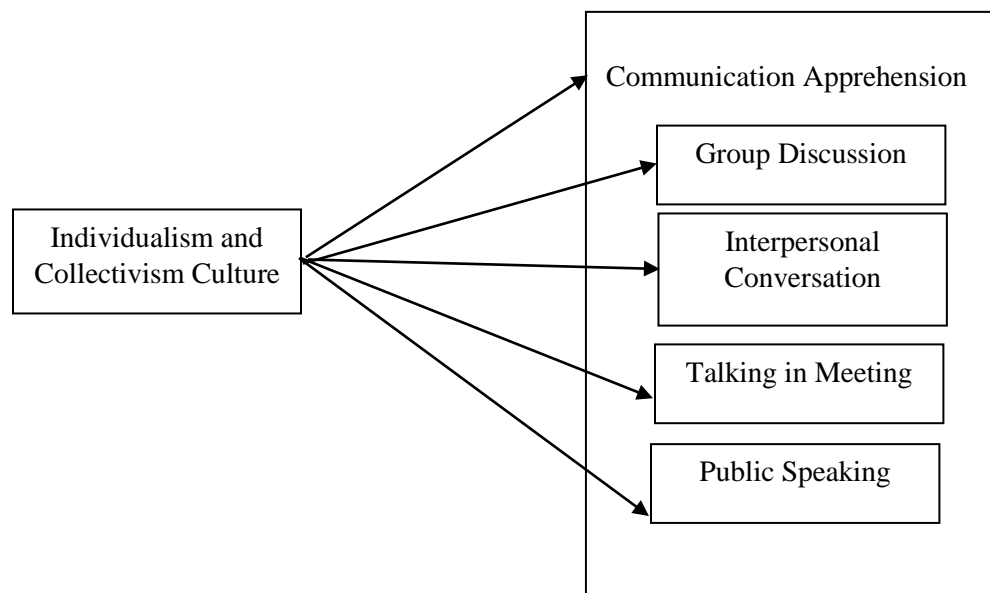
Methods

Participants

As the purpose of this study was to test the relationship between Individualism (IND) and Collectivism (COL) and Communication Apprehension (CA) in an academic setting, the participants of this study comprised all academic staff from managerial and non-managerial levels in private universities in Jordan. A total of 400 academic staff were invited to participate

in this study from the four largest private universities namely Applied Science University, Al-Zaitonah University, Al-Isra'a University, and AzZarqa Private University. One hundred questionnaires were used for each university and distributed by using a randomly chosen sample from the targeted academic members who are working at these four universities. A self-administered questionnaire was distributed containing measures for assessing IND and COL and CA as well as questions inquiring about demographic data. In total, 264 lecturers returned usable surveys (response rate = 66%). Among the 264 respondents, 35.2% were female and 64.8% were male. Lecturers with a master's degree comprised 26.1% and those with a Ph.D. degree, 73.9%. Lecturers holding managerial positions comprised 8%, while 92%. of the respondents held a non-managerial position. Lecturers with at least seven years of experience comprised the largest percentage of the research population (63%) while respondents who were graduated from Jordanian universities comprised 62.5%. There were 27.3% from regional Arabic universities while only 10.2% was graduated from foreign universities. In addition, the majority of the respondents were from Jordan (95.5%) and only 4.5% from Iraq, Egypt, and Palestine.

Procedures

Pilot Study
To ensure that the scales used in the formal study were statistically reliable, a pilot study of university academic staff in Jordanian private universities was conducted. Seventy questionnaires were distributed in the largest two private universities in Jordan which are Applied Science University and AzZarqa Private University by distributing thirty-five in each. The total number of questionnaires collected from the universities was forty (57% response rate). The questionnaire was designed in English and translated into Arabic. The Arabic version of the questionnaire was back-translated into English by a Jordanian doctoral student. The researchers compared the original English questionnaire and the back-translated questionnaire. After making some minor adjustments, the sense of the two questionnaires matched and met Brislin's (1970) rules for back-translation. The pilot study results show that the measurement of the study scales was statistically reliable and valid to be used in the formal study. Therefore, there was no difference and limitation between the formal and pilot study results.

Instrument
A self-administered quantitative questionnaire was employed in this study to measure the impact of the individualism and collectivist culture on the faculty academic staff's communication apprehension at the Jordanian private universities. The IND and COL is a six-item instrument that assesses the level of agreement with items using a 7-point Likert-type scale ranging from strongly disagree (1) to strongly agree (7). The IND and COL instrument was developed by Dorfman and Howell (1988). Prior research has shown scale reliability from the Robertson and Hoffman (1999) scale. Reliability estimates for the IND and COL scale were .87. Cronbach's alpha for the present study was .77.

According to the result of Hofstede's et al. (2010) study, Arab countries are classified as highly collectivistic culture societies. The results of this current study are in line with Hofstede's et al.

(2010). In the current study, the participants have a high score ($M = 5.23$, $SD = 1.00$) on collectivism.

Communication apprehension (CA) was measured by the Personal Report of the CA (PRCA) consisting of 24 items developed by McCroskey (2001). CA was presented using four categories (group discussions, meetings, interpersonal conversations, and public speaking). Each factor represents a six-item measure of an individual's perceived CA in the previous four contexts. Examples of communication items include "I am tense and nervous while participating in group discussions" and "I'm afraid to speak up in conversations."

According to McCroskey (1984) who suggests that individuals who score one standard deviation above and below the mean have relatively high or low CA and corresponding scores would be above 3.37 or below 2.09, respectively. All measures were anchored on a seven-point Likert scale from 1 (Strongly Disagree) to 7 (Strongly Agree). The Reliability estimates for these four contexts range from .7 to .9. The scale was recorded so that higher scores reflected higher levels of communication apprehension. This measure allows for the calculation of CA in each context as well as an overall CA score determined by summing or averaging responses across all four contexts (24-items). Based on that the present study result, the mean score for communication apprehension was ($M = 4.58$, $SD = .95$), which proposed that the participants in this study have a high level of communication apprehension. The alpha coefficient for overall CA (24-items) for the present study was .88. Prior research has revealed scale reliability of .94 (Madlock and Martin, 2009).

Analysis

To test the first five hypotheses of this research as mentioned in the earlier section for the hypotheses and research model, Pearson product-moment correlations were used to examine the relationship between research variables. Descriptive analysis was employed by using SPSS statistics. Means, standard deviations, inter-correlations, and scale reliabilities are presented in Table 1. Moreover, Regression analysis was used to test the sixth hypothesis as mentioned in the earlier section for the hypotheses and research model, and its result is shown in Table 2.

To assess the size and direction of the linear relationship between the individualism and collectivism culture and communication apprehensions' four dimensions were used (group discussion, talking in meetings, interpersonal conversation, and public speaking) and a bivariate Pearson's product-movement correlation coefficient (r) was calculated. The bivariate correlation between these variables was measured as displayed in Table 1. Results show that the correlation between IND and COL and each of communication apprehension was significant (r = .149, p < .001), group discussion was significant (r = .159, p < .001), and interpersonal conversation was significant (r = .148, p < .001). While, the correlation between IND and COL and the other two communication apprehension dimensions (talking in meetings, and public speaking) was non-significant as shown in Table1.

Table 1
Means, Standard Deviations, Cronbach's Alphas, and Correlations Among Variables (N = 264)

		Mean	SD	1	2	3	4	5	6
1	Individualism and Collectivism	5.23	1.00	0.771					
2	Communication Apprehension	4.58	0.95	.149*	0.881				
3	Group Discussion	4.46	1.18	.159**	.866**	0.70			
4	Talking in Meeting	4.60	0.98	.115	.898**	.741**	0.873		
5	Interpersonal Conversation	4.57	1.07	.148*	.905**	.781**	.769**	0.840	
6	Public Speaking	4.68	1.07	.101	.886**	.650**	.732**	.775**	0.894

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

To estimate the impact of individualism and collectivism on communication apprehension, a standard multiple regression analysis (MRA) was performed. Before interpreting the results of the MRA, several assumptions were evaluated. First, stem-and-leaf plots and boxplots indicated that each variable in the regression was normally distributed and free from univariate outliers. Second, an inspection of the normal probability plot of standardized residuals as well as the scatterplot of standardized residuals against standardized predicted values indicated that the assumptions of normality, linearity, and homoscedasticity of residuals were met. Third, relatively high tolerances for predictor variables in the regression model indicated that multi-collinearity would not interfere with our ability to interpret the outcome of the MRA (Allen, Bennett, and King, 2010).

Individualism and collectivism culture demonstrated a predicted 34% of communication apprehension (CA), and accounted for a significant 11% of the variability in CA, R Square = .115, adjusted R Square = .112, F (34,039) = 1.096, p = .000. Unstandardized (B) and standardized (B) regression coefficients, and square semi-partial (or part) correlations (sr square) for predictor variable on the regression model are shown in Table 2.

Table 2
The Prediction of Individualism and Collectivism Culture of Communication Apprehension

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
Model	B	Std. Error	Beta	T	Sig.	Zero-order	Partial	Part
(Constant)	5.525	.342		7.387	.000			
IND and COL	.374	.064	.339	5.834	.000	.339	.339	.339

a. Dependent Variable: Communication Apprehension.
b. Predictors: (Constant), Individualism and Collectivism
R = 0.339, R^2 = 0.115, adjusted R Square = 0.112
F (34,039) = 1.096, p = .000

Discussion

The result indicated that there was a significant relationship between the constructs measured by the two instruments, IND and COL, and communication apprehension "PRCA-24", used in this study. The individualism and collectivism culture scores were significantly correlated with the total communication apprehension PRCA-24 scores. This result supports the first hypothesis H1. This outcome showed consistency with the literature and researches conducted by Hye and McCroskey (2004); Kim (2002); Piyachat (2009); and Kim et al., (2001) who studied the effects of culture and self-construal on predispositions toward verbal communication and found that culture dimension of individualism and collectivism has a positive relationship with increases communication apprehension. However, when culture level individualism decreases, this leads to a higher level of communication apprehension and vice versa. The result of the current research indicates that the communication apprehension level of academic members in Jordanian private institutions has been affected positively by the level of their culture of individualism and collectivism. This is confirmed by Hofstede et al. (2010) who proposed that Arab countries belong to a collectivist culture. Therefore, the responses of the academic members who participated in this research confirmed that they belong to the collectivist culture and the findings showed that those who have high collectivism culture have high communication apprehension and specifically in group discussion and interpersonal conversation context. In addition, the finding revealed that there is a significant relationship between IND and COL and CA of the group discussion and interpersonal conversation which supports H2 and H4. Hence, the academic members when their culture level collectivism increases, leads to a higher level of communication apprehension of group discussion and interpersonal conversation. That refers to their traditional culture which proposes that older people in the group discussion have the priority to talk or the people who have a higher position in the institution should talk, while others should listen and agree in most discussion cases.

Indeed, these results are found to be related with the previous researchers' findings who conducted their research in the Asian context and found that there is a relationship between the cultural dimensions of individualism and collectivism with the communication apprehension, and confirmed that more cultural awareness leads to lower communication apprehension (Monthienvichienchai, et al., 2002). In addition, several studies (e.g. Kim et al., 2001; Piyachat, 2009) presented a consistent result in their research when examining the effects of culture and self-construal on predispositions toward verbal communication. The study was applied to undergraduates studying in Korea, Hawaii, and the mainland U.S. The result suggested that when culture-level individualism increases one's construal of self as independent, it leads to a lower level of communication apprehension. In addition, when culture-level individualism decreases one's construal of self as interdependent, it leads to a higher level of communication apprehension (Kim et al., 2001). However, the findings of this research revealed that there is no significant relationship between IND and COL culture and the other two dimensions of CA, i.e., talking in meetings, and public speaking. These results confirmed the rejection of H3, and H5.

This result is inconsistent with the previous studies in the literature (Piyachat, 2009; Kim et al., 2001; and Klopf, 1997) which found that culture affects all communication apprehension factors regarding the Japanese and Korean respondents. This inconsistency in the results, concerning the literature, was unexpected in the current research and may indicate that the society and the academic employees in Jordan may start to change somewhat in their collectivist culture. It has been noticed in the Arab countries in general and in the academic people context that their ability in talking loudly in meeting and publicly have increased and become noticeable in the society after the Arab spring in the region and this may explain these unexpected results and show some changes happened with the Arab countries people.

The hypothesized model advanced above predicted positive relationships between IND and COL, and CA, and this supports H6. This result indicates that when the collectivist culture of academic members at Jordanian universities increased, this predicts high communication apprehension among the academic members, and when the collectivism level decreased, this predicts low communication apprehension. This result is consistent with the previous studies conducted by Hye and McCroskey (2004); Kim (2002); Piyachat (2009); and Kim et al., (2001) who examined the effects of culture and self-construal on predispositions toward verbal communication and found that when culture-level collectivism increases, it leads to a higher level of communication apprehension. However, when culture-level collectivism decreases, this leads to a lower level of communication apprehension (Croucher, 2013).

Managerial Implications

This study finding offers some understandings and direction to managers who seek to develop the efficiency of their employees by understanding the fact that they may differ from their social culture. Additionally, the finding suggests that the cultural dimensions of individualism and collectivism have a relationship with the communication apprehension dimension of group discussion and interpersonal conversation. Whereas, the academic members' culture of individualism and collectivism has no relationship with communication apprehension dimensions of talking in a meeting and public speaking.

Practically, the academic institution leaders may understand the fact that the academic members' culture starts to be changed where they are more likely to participate in meeting and share others their ideas and knowledge with. Moreover, the managers have to be aware of the academic member's behavior toward their ability to speak loudly and publicly about their job issues and needs.

This fact may allow the academic institutions' management to obtain more understanding of their academic members' culture and its changes in the academic environment and may help them to find the best management practice that they may propose to know how to deal with these changes to develop the work efficiency.

Limitation and Future Research

This research has several limitations. First, the finding is extracted from the private academic environment so it may not be applied to other sectors. Future researchers may investigate different environments, such as the academic public sector. Second, the research has focused on only one direction of the relationship between the culture of IND and COL and Communication apprehension. Future researches need to find out the relationship between other cultural dimensions such as "uncertainty avoidance, power distance, femininity and masculinity, and the long term orientation" on a person's level of communication apprehension.

Moreover, additional studies could develop the previous researches in the literature by focusing on employees' job satisfaction levels with individuals of differing levels of communication apprehension in the Arab context. An extension of that research could examine employees' commitment concerning the communication apprehension level. Third, because of the convenience sample, the population of this study was not optimally diverse. A larger, more diverse sample in terms of age, ethnicity, gender, and education may help future research to have more strong results. The sample used was accepted to be adequate for this study; however, a larger and more diverse pool for the sample would improve the generalization of the implied findings.

Conclusion

The present research concludes that communication apprehension is affected by individualism and collectivist culture. The Result examined six research hypotheses. The study result supports hypotheses 1, 2, 4, and 6, while it rejects hypotheses 3, and 5. It indicates that the academic members who work in private universities and who belong to the individualism culture have less communication apprehension and can participate in interpersonal conversation and group discussion. Alternatively, the academic members who belong to the collectivist culture have higher communication apprehension and dislike to participate in public speaking and talking in meetings.

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SOCIAL MEDIA IN ENHANCING ENGLISH LANGUAGE COMPETENCE AMONG UNDERGRADUATES

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ABSTRACT

Even though there have been many empirical investigations reporting on the use of social media for learning a language in the classrooms, it has yet to receive complete acceptance from educators and the public. Hence, this study took a closer look at the importance and efficacy of the use of social media platforms in mastering the English language among undergraduates in Malaysia. A quantitative approach was employed in data collection. A set of questionnaires was administered and semi-structured interviews were carried out to elicit information. This study looks at how different social media platforms are used among (n=200) undergraduates from various public universities to learn the English language through social media and the extent to which social media helps in enhancing their academic performance. From the survey, it was found that among the different platforms used to learn, YouTube was the most preferred (47%) and that 42% of the students spent between 3 to 4 hours on social media daily. The results also showed that while many respondents somewhat agreed social media facilitates their English language learning; there was, at best, only a weak relationship between the grades they obtained for English and the time they spent learning through these online platforms (r=0.062). The study concludes that social media platforms have much potential among undergraduates in learning the English language and their use as a pedagogical approach can improve students' learning outcomes in acquiring the English language. Suggestions are made on how social media can be used in the language classrooms and thus, further qualitative and longitudinal research is recommended to investigate further the impact of social media as a tool to improve the academic performance of students.

Keywords: Social media, Twitter, active learning, Youtube, academic performance

Introduction

The English language has become one of the most important languages in the world and in fact, acts as a second language in many countries around the globe. Most people also use the English language as a medium of communication to converse with people around the globe (Kanpp & Meierkord, 2002, as cited in Dewey, 2007). Many universities and higher learning institutions in Malaysia use English as their medium of instruction. Furthermore, most of the subjects learned by the students here are also in English. This proves that the English language is widely used in higher learning institutions.

With the advancement of technology, social media has been a big influence on everybody nowadays. There are so many social media platforms such as YouTube, Facebook, Twitter, Instagram, and Google Apps that operate as a medium for undergraduates to learn English if used wisely. According to Shih (2011), social media helps people to connect and build a good network with others as well as create a platform to expand the circle of friends all over the world. Hence, people can share all types of information and knowledge on online discussion boards or share status. Birch and Volkov (2007) strongly believe that learners can be encouraged to engage in discussion through online forums. This explains that social media gives bountiful benefits in learning the English language among undergraduates since they can contribute information and knowledge, and thus, increase their English language proficiency. On the other hand, Chun (2016) shared that learning English solely in the classroom, in an exam-oriented way results in intense pressure on students.

Social Media

Currently, social media plays an important role in social communication as a platform to share knowledge and access information. It allows users to compare the information with other sources to ensure its accuracy (Pavlik, 2015 as cited in Ayaz, Faheem & Khan, 2016). Websites, online groups, and micro blogging have become resourceful platforms for users to exchange messages, thoughts, and concepts as well as to communicate with people around the globe as a way to expand social and professional networks (Mubarak, 2016).

As social media offers English language learners ways to enhance their English language skills; (writing, reading, and vocabulary), it plays an important role among the users (Ayaz, Faheem & Khan, 2016). Mingle and Adams (2015) expressed that cyberspace has become a reliable platform for learners to participate in academic and formal discussions at their own pace and availability where they share their ideas via written communication. This also gives time for learners to present their ideas in a more structured way.

Web-based discussions can add to the progress of students' insightful ability and critical thinking skills (Deng & Tavares, 2013 as cited in Mingle & Adams, 2015). Compared to face-to-face

interaction, learners have the liberty to voice their opinions, agreement, or disagreement in online discussions.

Language educators would be excited to use social media as a medium of learning with students (Apeanti & Danso, 2014 as cited in Mingle & Adams, 2015). The students would score better grades if they have a means of communicating with their instructors as well as a way to be engaged in online classes via social media (Mingle & Adams, 2015).

Facebook

Facebook is one of the common social media platforms where educators can share notes, assignments, online assessments, academic forums, academic teaching, and learning tools like videos, quotes, images, boards, and sample essays. Dhanya (2016) indicated that the endless benefits of using social media platforms are not merely for social gains but also academic enhancement. He also shared that the use of social media not only fosters good rapport among learners but also gives dynamics in classrooms by encouraging student attendance as well as enabling them to follow their course.

YouTube

Online YouTube videos such as technology, entertainment, design (TED) talks focus on real speakers in a natural environment and appeal to many young viewers. Beare (2008) said YouTube samples are better than live shows as viewers can watch the videos of speakers repeatedly. Besides, they also give opportunities for students to create a network around the globe (Ybarra-Green, 2003). Beare also added that online videos and materials help learners to learn the English language or any other language. Ewing (2009 as cited in Essays, 2013) opined online videos and materials appear to be one of the best ways to watch and communicate with native speakers.

Twitter

Twitter is another well-known online social network that allows users to tweet; send, and read short character messages. Mubarak (2016) claimed that many learners and educators find Twitter as a useful way to keep in touch with each other. Aydin, Taşkiran, and Bozkurt (2016) found Twitter to be a useful educational instrument that heightens collaborative language learning especially reading and writing skills.

English Language Learning

Al-Rahmi and Othman (2013b) justified that as the use of social media tools in the classroom has facilitated social communication and enhanced knowledge, academics and the public view it optimistically. Besides, the use of social media motivates students to connect themselves academically and creates a computer-generated community, which leads to better content learning by expanding their learning environment. In other words, social media integration expedites students' academic performance (Al-Rahmi & Othman, 2013a). Social media

assimilation upsurge the interaction among peers and instructors by increasing students' participation and collaborative learning (Olaleke, Iroju & Olajide, 2015). This introduces a common hub for learners to acquire the language outside the traditional classroom environment.

According to Mubarak (2016), many individuals have improved their second language by using their preferred modern gadgets to watch movies as well as videos. This gives learners opportunities to learn new vocabulary to enhance their language skills. Social media has created a platform for collaborative learning among students (Waleed Mugahed, Mohd Shahizan, & Lizawati Mi, 2015). They said that collaborative learning via social media helps to enrich the academic achievement of students. In New Zealand, social media is predominantly utilized for informal collaborative learning with peers to expedite education and social support (Penekham, 2014). In Japan, Facebook is used to help lower stress levels in the quest to improve language proficiency, especially among less proficient learners to ensure that the class is more comfortable for online discussion to motivate the learners to express ideas and justify their opinions (Promnitz-Hayashi, 2011). Briefly, social media supports and facilitates teaching and learning activities at the same time supplements the students' learning experience. Wang (2016) delivered a comprehensive picture of how WeChat facilitates language learning. It is not only used in language learning but also used for medical teaching and has proven to enthuse learners' inquisitiveness and exhilaration in learning by cultivating self-directed learning ability among medical students (Zeng et al. 2016)). Given the benefits one can gain from the use of social media, hence, it is imperative to find the role of social media among Malaysian undergraduates in enhancing their English language performance.

Social media and ESL students

Social media tools such as Facebook, YouTube, and Twitter enrich communication and theoretically encourage learners to explore language learning (Thurairaj, Roy, & Subaramaniam, 2012). Reinhardt and Zander (2011) suggest that using social media in English as a Second Language (ESL) classroom expedites language learning. Social networks in academic settings could enhance communication skills between students and teachers; stimulate students' commitment, aid collaborative learning as well as promote academic relationships among peers (Gurcan, 2015). Thus, social media takes a significant role in the exchange of information by offering an opening for learners to continually stay connected and learn within academic environments.

Statement of the problem

Despite empirical investigations reporting the reputation and integration of social media into second language learning classrooms, it has yet to receive complete acceptance from educators and the public (Mubarak, 2016). Not all social media platforms have the same or similar features. Chua, Fong, Goh, and Wong (2018) emphasized that social networks do not only connect people from around the world but also act as a medium for sharing information. A good example is Facebook which offers a feature called Pages. This feature empowers all to open a page to share

information, promote websites, links, and news (Chua, Fong, Goh & Wong, 2018). Some platforms of social media offer good information and features that can be used to learn English (Mubarak, 2016). Facebook is one of the most preferred social networks with more than 1.2 billion active users in 2014 (Chua, Fong, Goh & Wong, 2018). There are also many other social media platforms with different features and uses such as Twitter, YouTube, Instagram, and other programs (Chua, Fong, Goh & Wong, (2018). This research is aimed at studying the benefits of using social media as a platform to learn the English language and to investigate if the use of social media helps undergraduates to improve their English language learning through the following research questions:

1) What are the perceptions of undergraduates on the role of social media in learning the English language?
2) To what extent does the use of social media correlate with their academic performance in the English language?

Significance of the study

This study will benefit educators to encourage their students to use social media platforms to learn English. Most students have devices that allow them to access various English language learning methods at their convenience. Social media can also be useful for educators in selecting the best platforms to teach the English language. They can adapt to current technology to teach and help them to improve their English language to complement the lessons they share in class.

Methodology

This study adopted a quantitative approach. The primary data source used in this study was through survey questionnaire which was adapted from Kabilan, Ahmad, and Abidin, (2010) and Mubarak, (2016) to tailor to elicit information from 200 first-year undergraduates from three public higher learning institutions located in Klang Valley, Malaysia. Participants were selected through random sampling. The age of the participants ranged from 19-23 years. The questionnaires were distributed to three selected institutions (Universiti Teknologi MARA, Universiti Malaya & Universiti Putra Malaysia) via Google forms. This process took about one month for the undergraduates to complete and submit their responses.

The questionnaire consists of three parts: Part I is related to the demographic profile of the undergraduates' sample, Part II is related to students' perceptions in learning the English language through social media while Part III attempted to assess how social media helps to enhance undergraduates' academic performance. On the whole, the questionnaire was aimed at obtaining information about undergraduates' perceptions and attitudes towards using social media in ESL classrooms.

Subsequently, semi-structured interviews were undertaken to elicit information about the effectiveness of social media in learning the English language. Five participants (three female undergraduates from Universiti Teknologi MARA and two male undergraduates from University Malaya) were selected randomly to respond to semi-structured interviews to substantiate survey data. These participants responded to the invitation via WhatsApp text to indicate their agreement to be a part of a semi-structured interview. Upon obtaining the participants' consent, the researchers conducted the semi-structured interviews in a place and a time agreed upon by participants.

Data from the survey were analyzed using simple frequency and percentile. All strongly agree and agree responses were categorized as "agree" while strongly disagree and disagree responses were categorized as "disagree". Pearson correlation coefficient analysis was used to investigate if the respondents considered social media as a beneficial means to support their English language learning and to determine the relationship between the total time spent using social media and their academic performance in English. The responses from the semi-structured interviews were then verbatim to triangulate quantitative findings.

Theoretical Framework

This study adopts the Vygotskian sociocultural approach (1978) which underlines that language and social interaction play a crucial role in human development, and serves as cultural practices that can lead to the structuring of knowledge shared by members of the community. Learners' virtual connections with their peers and professionals around the globe can create plenty of opportunities for a socio-cultural language exchange (Harrison & Thomas, 2009; Harrison, 2013). Social media generates favorable opportunities to learn through observation, where students can witness others, construe their behaviors, and regulate their styles of interacting in the social media platform. This study associates the use of social media platforms to learn and acquire new knowledge in the English language. This construction of knowledge is learned through active participation; it is built and constructed by each learner in interaction with social media. Vygotsky (1978) examines how the individual's participation in social interactions affects his/her individual's linguistic, cultural, and intellectual development. He points out that language is acquired via discovery, observation, and using it in social interactions when the learners are actively involved in the learning process in which the learners continually construct meaning (Piaget, 1963; cited in Cox, 2008). Therefore, the experience of students using social media context to enhance language learning is an integral part of this study.

Demographic Profile of Respondents

A total of 200 undergraduates from three public higher learning institutions in Klang valley, Malaysia participated in this study. The respondents were 43% males while the rest were females. Among the respondents, the highest percentage (33%) obtained the grade of A in the *Sijil Pelajaran Malaysia* (the Malaysian Certificate of Education, is the equivalent to the O- level examination). English subject while in MUET, 38% obtained Band 4. Only 2% scored the

grades C and D in SPM. As for Malaysian University, English Test (MUET, a prerequisite test in applying for admissions into all public universities and colleges in Malaysia) Band 2 and Band 6 were obtained by 2% of the respondents. Table 1 summarizes data relating to the different social media platforms used by the students. Table 1 indicates that undergraduates' favorite social media for English learning is YouTube (M=3.60, SD=1.24). They also used Twitter (M=3.41, SD=2.43) and Facebook (M=1.92, SD=1.21). There was no significant difference in the mean scores between genders in terms of the three prevalent social media for English learning was found. It is noted that female undergraduates accessing YouTube were marginally higher than male undergraduates while the Facebook platform was preferred by female undergraduates to males. On average, males preferred Twitter more than female students.

Table 1: The Use of Social Media for English Language learning

	Female (N=115) Mean	SD	Male (N=85) Mean	SD	Overall (N= 200) Mean	SD
YouTube	3.63	1.29	3. 58	1.2	3.60	1.24
Twitter	3.12	1.21	3.62	1.22	3.41	2.43
Facebook	2.63	1.6	1.21	0.82	1.92	1.21

Results and discussion

Research question 1: What are the perceptions of undergraduates on the role of social media in learning the English language?

Social media in learning the English language

The results are presented in Table 2. Social media has a lot of functions to help undergraduates in improving their English language. This includes providing sufficient practice in speaking, writing, and reading in English. It is believed that the features of social media can help undergraduates to learn English in many ways just by accessing the items through the Internet.

93% of the respondents agreed that social media enhance their communication skills while the remaining 7% disagreed with the statement. This concurs with Khan, Ayaz, and Faheem (2016) who said social media is beneficial in communication and sharing knowledge. Furthermore, 79% revealed that social media enhanced their writing skills and 21% of the respondents disagreed with the item. 92% stated that social media enhanced their reading skill while on the contrary 8% disagreed with the statement. It is proven that social media had a prevailing role in English language learning as it gave a lot of opportunities to learners to improve English writing and reading skills as well as also improve students' vocabulary (Khan, Ayaz, & Faheem, 2016).

Table 2: Undergraduates' perceptions in learning English on social media

	Items	DISAGREE (%)	AGREE (%)	MEAN	SD
1	Social media enhances my English communication skills.	7	93	4.06	1.06
2	Social media enhances my English writing	21	79	3.97	1.06
3	Social media enhances my English reading	8	92	3.67	1.21
4	The features of social media stimulate my learning interest.	12	88	4.15	0.88
5	My interaction with teammates is enhanced through social media platform.	15	85	3.62	1.2
6	Social media develops a more positive attitude towards learning English as a second language.	11	89	4.25	0.82
7	Social media website makes me more confident in communicating with others in English	7	93	4.06	1.06
8	I believe that using an online instant messaging system through social media with native speakers helps me practice the English language.	7	93	3.25	1.3
9	I take my studies more seriously when learning through social media.	25	75	3.25	1.3
10	I can learn English grammar and structures through peer/friend feedback on social media.	20	80	3.56	1.2

Moreover, 88% of the respondents agreed that the features of the social media stimulated their learning interest and 12% disagreed with the item. 85% of the respondents also agreed that their interaction with teammates was enhanced through social media platforms while the remaining 15% disagreed with the statement. 89% also stated that social media helped them develop a more positive attitude towards learning English as a second language compared to 11% of the respondents. 93% also revealed that social media websites made them comfortable interacting with others in English while 7% disagreed with the item. Besides, 93% of the respondents agreed that using online instant messaging through social media with English speakers helped them practice the English language and the remaining 7% disagreed with the statement. Through such interactions between the native users of English and non-native users, a "neo-apprenticeship style learning" can occur where they can practice speaking in English (Gannon-Leary & Fontainha, 2007, as cited in Kabilan, Ahmad & Abidin, 2010).

75% of the respondents concurred that their learning attitude became more serious through learning on social media though 25% contradicted this statement. Lastly, a total of 80% of the respondents agreed that they were able to learn English grammar and structures through peer assessment on social media. In the semi-structured interview, the majority of the responses were positive towards the use of social media in improving their English language performance. An undergraduate shared:

> "In the initial stage, I used to have several spelling errors and misused
> sentence structures. After, sometime, I made fewer English language

> *mistakes in writing my comments via FB. I began to be more fluent. I could give comments without worrying of being wrong".*

Another said;

> *"I gained better skills in conversation and my comments are more accurate and meaningful. I could choose the appropriate words that conveyed the right meaning. I am confident posting meaningful and clear messages."*

Social media facilitates the English learners to learn new words and vocabulary easier compared to book reading and other text materials (Khan, Ayaz, Faheem, 2016). Moreover, this study revealed that undergraduates are aware of the use of social media in facilitating English language learning. Social media expedites English learning among students through sharing, listening, and producing English Language materials on social media (Mubarak, 2016). Designing a proper learning atmosphere is the prime contribution of social media in the learning environment (Wang & Vasquez, 2012, as cited in Mubarak, 2016).

The mean value of the analysis indicates that positive attitude (M=4.25), stimulation learning (M=4.15), increase confidence (M=4.06), and enhancing communication (M=4.06), seemed to supersede the benefits. This indicates that although the use of social media brings about a lot of general benefits to learners, it is pivotal in learning English as a second language as many of them lack the positive attitude and enthusiasm when forced to learn in the traditional classroom that focuses on one-way communication. To sum up, the majority of the undergraduates have a similar perception towards social media where they agreed that social media facilitates their English language learning in many ways such as improving their communication, writing, reading skills, and also their grammar and vocabulary of English. Social media allows people to create, share, and download English materials as a method of digital interaction (Gonzalez, 2012, as cited in Mubarak, 2016, p.118). This proves that social media provides many benefits especially in facilitating their English language learning. Mubarak (2016) shared that social media assists to expand students' motivation and academic writing (White, 2009). This means that academic performance in the English subject is affected by the use of social media as a learning instrument to learn the English language.

Research question 2 will be discussed in the next section*:* To what extent does the use of social media correlate with their academic performance in the English language?

Social Media & Academic Performance

This section discusses how the use of social media correlates with the students' academic performance in English. Social media offers a lot of benefits and helps in many ways for the students to learn English. Social media can also be considered as a platform to create a good study environment and also a safe and less intimidating space for undergraduates to practice the

language in an informal context (Samano, 2014). Table 3 shows social media's impact on academic performance in English. The results for each statement are presented in percentages.

Generally, it was found that 70% agreed that social media influenced their academic performance positively, while 30% did not agree with the item. Moreover, 73% of the undergraduates agreed that social media helped their spelling when writing in the examination and 27% of them were on the contrary where they said that social media did not help their spelling when writing their examination. A study done by Shih (2010) revealed that online learning and instruction bring constructive effects on language learning and academic writing especially when students are keen to learn and are skilled users of Internet-based tools and applications.

Besides, 68% agreed that their grades improved when they participated in social media while the balance 22% disagreed with the statement stated. Meanwhile, when being asked if social media could be used for educational purposes, 92% of the undergraduates agreed with the item but only 8% of them did not agree. A total of 87% of undergraduates agreed they used materials obtained from social media to complement the topics discussed in class, though 13% contradicted the item stated. To complete their assignments or homework, social media could be one of the alternatives for the students to share materials with their friends via their favorite social media channels (Li, 2017). The data is presented in Table 3.

Table 3: Social Media Impact on Academic Performance

	Items	DISAGREE %	UN-CERTAIN	AGREE %
1	Social media influence my academic performance positively	30	-	70
2	Social media helped my spelling when writing Examination	27	-	73
3	My grades improve when I participate in social media	32	-	68
4	Social media can be used for educational purposes	8	-	92
5	I spend a lot of time participating on social media than reading my books	18		82
6	Addiction to social media is not a problematic issue that affects my academic life	41	-	59
7	The use of social media affects my vocabulary knowledge	14	-	86

The results also revealed that 82% of undergraduates spent a considerable of time using social media than reading books, and only 18% read more books rather than spend a lot of time participating on social media. Meanwhile, 59% also agreed that addiction to social media was not an issue that affected their academic performance. However, 41 % of the undergraduates disagreed with the item. This can be proved by (Hamid, Waycott, Kurnia & Chang, 2015; Li, 2017) where they stated that social media helped the students with their communication and encouraged swift sharing among users.

Next, 86% of the respondents agreed the use of social media affects their vocabulary knowledge and it would improve the undergraduates' English understanding while 14% disagreed with both

statements. Meanwhile, 79% said group discussions on social media returned good results as far as their academics were concerned and 21% did not agree with the statement. Based on the study done by Shih (2010, p. 841), it has been proved that "students were able to improve their organization, grammar, and structure, content, vocabulary, and spelling" by using social media.

Most of the undergraduates agreed that social media assisted them in their academic performance in the English language specifically. They also added that social media did not lower or give a negative impact on them but facilitated their learning and improved their performance in English. Koivuniemi (2012) stressed that using social media in learning English is beneficial to improve English Language skills and indicated one's vocabulary range broadened when spending more time on English websites.

Social media can be very beneficial and provides a positive impact on language learning if it is used wisely. Research question 1 showed the use of social media at the stage of learning orientation has greatly assisted the undergraduates regarding learning English effectively and improve their delivery of the message as well as the content. Besides motivating and triggering the interests of students, social media also assist students to improve their comprehension, presenting interesting information. This can be proven by looking at the statements in the questionnaire saying that social media developed a more positive attitude towards learning English as a second language. This got the highest score from the respondents. Besides, we also found that the undergraduates agreed social media gives an impact on their academic performance especially on the item that stated social media can be used for educational purposes. The majority of them agreed with the statement.

For further investigation, the data in Part C was analyzed by using SPSS software to investigate the relationship between the social media impact on academic performance and total time spent using social media daily. We compared the academic performance in English with the time spent because we would like to see the impact of social media on the undergraduates' academic performance specifically and how well it would help them to perform regardless of the times they spent on social media, did it help them to improve their English language or not. In SPSS, we used the Pearson Correlation Coefficient test to study the relationship mentioned above.

Table 4: Total time spent on Social media daily

Time Spent	Percentage (%)
1 -2 hours	17
3 - 4 hours	42
5 - 6 hours	20
More than 6 hours	21

Table 4 shows the total time spent by respondents using social media in daily life. The highest percentage 42% spent between three to four hours on social media in their daily life. Next, about 21% of total respondents spent more than six hours on social media. This is followed by the

respondents who spent five to six hours on social media (20%) and 17% of the respondents spent between one to two hours online. The related data is summarized in Table 5.

Table 5: Relationship between Academic Performance and Time Spent on Social Media

		Academic_ Performance Academic performance in the English Language	Total time spent using social media daily
Academic performance in the English Language	Pearson Correlation	1	.115
	Sig. (2-tailed)		.253
	N	200	200
Time spent On social media daily	Pearson Correlation	.115	1
	Sig. (2-tailed)	.253	
	N	200	200

The correlation of social media impact on academic performance and the total time spent using social media daily shows a positive relationship. However, the strength of the correlation shows a weak relationship among them with a significance of 0.115. This means that the total time spent using social media is significant but it does not give a big impact on the academic performance in English. This can be proven by the results obtained through the questionnaire in the demographic profile where most of the students admitted they spent lots of time on social media but still most of them agreed it does not affect their academic performance which shows a positive sign that the undergraduates learn and make use of the social media on a positive side. Research done by Mubarak (2016, p. 125) has proven that "students' knowledge; attitude and learning attainment were positively affected by the usage of social media".

Many undergraduates somehow agreed that social media facilitated their English language learning. The majority of the undergraduates stated that social media enhanced their reading, writing, and communication skills. They also revealed that features of social media stimulated their learning interest. Furthermore, undergraduates also felt that social media helped them in building their confidence to interact using the English language with others. Despite helping them in developing a positive attitude towards learning English, they also revealed that they were able to grasp English grammar and structure through peer evaluation via social media. Two participants shared in the semi-structured interview that social media assisted them greatly and their fluency had progressively developed as the undergraduates actively engaged in social media communication. It is also signifying that undergraduates enriched their confidence gradually over time as they communicated through interaction on social media, Facebook, and Twitter. However, there were some negative responses as well. One response was

> *"... no doubt social media allows us to exchange our knowledge and chat with our friends but mostly our friends do not comment or correct our English. So, sometimes we continue making the same errors"*

Another said,

> *"It takes a lot of time. I want to just check something online but was side-tracked when my friends started chatting with me; I got immersed and end up spending a lot of time".*

Undergraduates also agreed that social media can be a useful educational tool to bring about a positive change in their academic performance. Although some of them spent quite a lot of time on social media, their grades still improved. They were positive that addiction to social media is not a problematic issue that affected their academic life. The undergraduates using social media to obtain materials to complement academic discussions in class and group obtained good results. Furthermore, they also believed the use of social media improved their English understanding and their vocabulary knowledge. Social media was also able to help with their spelling when writing in their examination.

Implications of the study

Since educators are the frontrunners in the teaching of the English language, it seems best to keep themselves in the know of all these technologies and social media. Having language teachers who are social media-adept will be of great advantage in teaching and guiding language learners. Once we know what sites the learners prefer, and knowing how to make use of these media in language teaching are things to consider when educating today's undergraduates.

Also, each social platform provides numerous advantages in the educational process of learning a language. Hence, when educators decide to use social media in the classroom, they need to know which social media platforms can support and improve their students' learning outcomes and which tools they can use with students to help them acquire the English language.

In dealing with the pitfalls of social media in English language learning, it is suggested that the learners would need to be educated to choose the right kind of media and activate their filters to distinguish between what is fake and real information, what are wholesome and not, and what are unscholarly or ungrammatical and sound language texts.

In dealing with the drawbacks of social media in English language learning, it is suggested that learners would need to be educated in selecting the right kind of media and activate their filters to distinguish between what is fake and real information, and what are ungrammatical or unsound ideas and factual data.

Recommendations of the study

The findings of this study are important to the existing literature on using social media as a major platform in learning the English language. The results obtained from the students' responses have shown that social media plays a crucial role in stimulating students' interest in learning the language as well as enriching their language skills. To obtain a comprehensive finding/knowledge on the use of social media in learning the English language, it would be useful to gather information from educators and language instructors. This aspect has not been widely researched or overlooked (Annamalai, 2018). In addition, more research is needed to investigate the use of social media in language classrooms as an approach to teach English. More longitudinal and qualitative studies need to be carried out to establish the correlation between the use of social media in the classroom and the implication in helping students to perform better academically.

Conclusion

To conclude, social media is an important platform for learning English among undergraduates. It is increasingly becoming common for undergraduates to use social media platforms to communicate as well as to retrieve information related to their studies and assignments and these respondents have realized this potential. This reflects the benefit of undergraduates accessing social media platforms for academic benefits which in return enhances their mastery of the English language. In learning English, social media has offered opportunities for learners to share information, create conversations and develop their ability in conveying any information.

Social media facilitates undergraduates to learn English and improve their vocabulary. Undergraduates have to operate over subject knowledge and deconstruct the known subject to understand its internal dynamics, structures, and logic. They also appeared to be enthused to learn more from various websites anytime as they can access any information and knowledge spontaneously from anywhere. Moreover, they can ask questions to have feedback from others from different parts of the world and compare their opinions too. Such opportunities and avenues via social media gradually expedite the acquiring of new words and vocabulary aptly as well as arousing the interest of undergraduates towards the English language learning without boredom. This also encourages undergraduates to consolidate their experiences and acclimatize them to their environments by assimilating as advocated by Piaget (1963, cited in Cox 2008). Thus, this creates a platform for learners to add new information to what they already know. The students also said that social media is a powerful tool especially for learning the English language. This is agreed by Mubarak (2016) who believed that the use of social media in education is mainly to improve the standard of teaching and learning. In a nutshell, this study shows that social media gives a positive impact on learning English. Undergraduates' time invested in using social media for academic purposes has certainly heightened the quality of their English language competencies. Social media too can help educators by providing additional academic and research materials to support their work with students.

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19th SEAAIR Conference "Best Paper" Award

ENTREPRENEURIAL PROPENSITY OF BUSINESS STUDENTS OF A CITY IN SOUTHERN PHILIPPINES: A STRUCTURAL MODEL

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ABSTRACT

With the aspiration of finding out what schools can do to improve instruction, curriculum, facilities, and support to improve academic programs related to entrepreneurship, this study aims to develop a causal model of the entrepreneurial propensity of students in selected colleges and universities in Cagayan de Oro City, Northern Mindanao, Philippines. This study is anchored on the assumption that school factors, personality, intention, and motivation may influence the entrepreneurial propensity of students. Four-hundred ninety-eight (498) 4th-year business-related students were respondents of this study. Using Structural Equation Modelling (SEM), the best fit model for entrepreneurial propensity was found. The model proposed that entrepreneurial propensity is best predicted by intention, school factors, and motivation - which indicates that regardless of personality, students are likely to choose entrepreneurship as a career path in the future when significant others such as family or colleagues approved of that choice and if they have a strong belief that they have control of the situation. The mediating effect of school factors and intention varies positively, which was found to enhance the effect of the respondent's motivation on entrepreneurial propensity. The higher the motivation, the higher the students' propensity to become an entrepreneur. Results point to the strong influence of education, particularly curriculum and school support in developing student's entrepreneurial propensity. The right combination of curriculum and facilities & support, especially when the academe is geared towards integrating both factors to entrepreneurship as part of their student development, enhances the effect of motivation and entrepreneurial propensity.

Keywords: Entrepreneurial propensity, best fit model, intention, motivation, academic influence on entrepreneurship, school factors

Introduction

How can a person be inclined towards entrepreneurship? And why do some entrepreneurs succeed, and others do not? Starting and maintaining a business would be a daring task. Many scholars agree that one should have the necessary skills and mindset to sustain the drive to meet the challenge. It is a known fact that behind every successful entrepreneur is a myriad of failures: opportunities missed, investments gone wrong. and many others. However, instead of stopping, an entrepreneur views them as part of the process to succeed.

One would question: What drives them to take the risk, the uncertainty, and the daunting task ahead in choosing this path? Volkman (2007) stresses that no one is born an entrepreneur, but one can develop through education and experience. For Segal, Borgia, & Schoenfeld (2005), being an entrepreneur poses many challenges, such as financial and market risks. A person's character plays an essential role in becoming a successful entrepreneur and no matter how difficult the challenge would be; it takes character and attitude to face the challenges ahead (Gibson, Harris, & Barber, 2008).

Entrepreneurship drives many nation's economies, innovation, and competitiveness. Its role in creating jobs and contribution to economic growth is universally recognized. Developing entrepreneurial minds is a challenge that would respond to this emerging trend (Kuratko, 2013).

To respond to this development challenge, this study aims to create a structural model for the entrepreneurial propensity of fourth-year college students from selected colleges and universities in Cagayan De Oro City. It is hinged on the assumption that intention, motivation, personality traits, and school factors cause an individual's tendency towards entrepreneurship. Specifically, it determined the following: (1) the influence of attitude towards entrepreneurship, subjective norms, and behavioral control towards entrepreneurship; (2) the influence of intention to motivation; and (3) the best fit model for student's entrepreneurial propensity.

Two theories are anchored in this study: Icek Ajzen's Theory of Planned Behavior (1991) and David McClelland's Human Motivation Theory (1987). The Theory of Planned Behavior (TBP) stresses that a person's general attitude, values, and beliefs could influence his intention to act, therefore explains a specific behavior, such as a person's tendencies towards entrepreneurship. This theory hypothesizes three key antecedents to determine a specific behavior: Attitude towards the behavior, subjective norms, and perceived behavioral control. The theory further argues that if people assess the suggested behavior as positive (attitude), believe that there are significant others who can influence them to perform that behavior (subjective norms), and thinks they control the behavior and can enact them successfully (perceived behavioral control); such belief will result in a higher motivation to act (Ajzen, 1991). Some studies looked at these antecedents as factors of entrepreneurial intention. For instance, the Sutanto & Eliyana (2014) and Utami (2017) studies on entrepreneurial characteristics of students in Indonesia find a positive association between students' entrepreneurial attitudes and intentions. Studies by Arshad, Farooq, Sultana, & Farooq (2016) and Wurthmann (2013) also stress that a person's attitude is a substantial predictor of entrepreneurial intentions. Utami (2017), as well as Yoon, Tong, & Loy (2011), discover subjective norms and perceived behavioral control to positively affect entrepreneurial intentions. However, Mohammed, Fethi, & Djaoued (2017) and Yang (2013)

find that perceived behavioral control has no or lower significant effect on intention than the other two factors.

On the other hand, McClelland's Human Motivation Theory (HMT) has been widely used to explain entrepreneurial propensity. This theory presents three dimensions of motivation: the need for achievement, the need for power, and the need for affiliation. A need for achievement is a person's drive to succeed, to accomplish something based on following a particular set of standards. The need for power is the desire to have influence or control over others while the need for affiliation is a person's inclination towards sociable interpersonal relationships. The study of Din, Anuar, & Usman (2016) shows that motivation has a positive effect on the achievement of entrepreneurship programs in public universities in Malaysia. Yoon, Tong, & Loy (2011) also found a dimension in McClelland's theory: that the Need for Achievement is positively related to student's entrepreneurial intentions. Furthermore, Botsaris & Vamvaka (2014) revealed the positive effects of this theory on entrepreneurial behavior.

The Theory of Planned Behavior and the Human Motivation Theory is used by many scholars in predicting action, such as a person's tendency to be entrepreneurial. These studies give valuable insights into how people enter into a new venture and understand the underlying reasons that motivate them. Given an individual's intention as an antecedent to actual behavior, such as a person becoming an entrepreneur, this study will help the academe understand students' intent to engage in entrepreneurship and create programs that will motivate them to pursue such intent (Nguyen, 2017; Solesvik, 2013).

Another dimension that the authors found to be associated with entrepreneurial propensity is personality traits. To some extent, personality can affect a person's intention and motivation (Karabulut, 2016; Khan & Ahmed, 2011). Ocean's Big 5 personality model has long been the standard framework: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Zhao, et. Al (2010), as cited by Yao et al. (2016). has studied the association between personality traits and entrepreneurial propensity and found that only openness to experience, conscientiousness, extraversion, and agreeableness are related to a person's tendency for venture creation while neuroticism failed to be associated. Ismail et. al., (2009) as cited by Phuong (2015) also found out that extraversion, agreeableness, and openness to experience are associated with entrepreneurial tendency. Similar research by Chen, Jing, & Sung (2012) and Koe, Nga, & Shamuganathan (2010) also reveals that extraversion, openness to experience, and conscientiousness are positively linked with people who have high entrepreneurial tendencies.

Finally, several authors have written about the role of education and the connection of intention and motivation to a person's propensity towards entrepreneurship. For instance, Mahendra, Djatmika, & Hermawan (2017), Solesvik (2013), and Trivedi (2017) found a positive effect of entrepreneurship education on students' intention and motivation to become entrepreneurs. Similar findings by Liñán, Rodríguez-Cohard, & Rueda-Cantuche (2011) reveal that there is a positive effect of educational institutions in shaping the entrepreneurial attitude of students.

Building up from these past results, this study explores the interplay of these variables (Figure 1) within the academic institution to discover the influence of schools, particularly its curriculum,

instruction, and facility support, in developing potential entrepreneurial students. It wants to see particularly how these factors influence the entrepreneurial propensity of Filipino students.
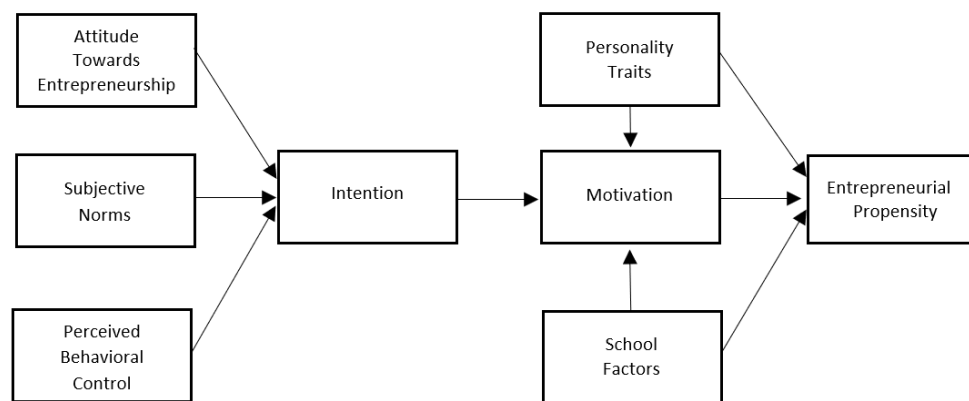
Figure 1: Schematic Diagram of the Study

The study, in its search for entrepreneurial propensity, is limited to these variables. Most of the constructs are internal to the students, and the school factors are the only external features assumed to affect the student's inclination toward entrepreneurship. The growing socio-economic environment of the city, and the government and private sector partnerships to support the rise of the small enterprises, were not included in the study to enable it to primarily looking at the role of the academic institutions on student entrepreneurship tendencies and their potential choices for the future.

Methods

This quantitative research involves randomly sampled 498 fourth-year students currently enrolled in a business-related course of selected Colleges and Universities in Cagayan De Oro City. The selection of the schools included in the study are based on the following criteria: (1) they are private tertiary institutions offering the degree Bachelor of Science in Business Administration, and (2) the institution's departments offering entrepreneurship and entrepreneurship-related classes are accredited with either of the country's voluntary accrediting agencies, the Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU) or Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA), to ensure their high standards. Five colleges and universities within the city meet the criteria.

The participating students are chosen with these considerations: (1) they are currently 4th-year students at the time of the study, (2) they are at least 18 years of age, and (3) they are taking or have taken subjects related to entrepreneurship, to ensure that the students as respondents have enough basic exposure to entrepreneurship and can provide the information sought out by the study. They are assured that their participation does not have any bearing on their status as

business students and that it is purely voluntary and they are free to withdraw from the survey at any time.

The total population of the 4th year enrollees from the five schools is 1,515. Using Cochran's formula, the sample size is computed as 498. Employing stratified random sampling, each of the five schools is assured to have proportional participation in the study. Particularly, the sample size of each school is as follows: School A, 141; School B, 39; School C, 60; School D, 20; and School E, 238; this totals to 498.

Personal visitation is made to the schools for the gathering of data. The participants are given a researcher-made survey questionnaire, except for variables Attitude towards Entrepreneurship, Subjective Norms, Perceived Behavioral Control, and Intention, which are patterned from Liñan and Chen's Entrepreneurial Intention Questionnaire (2009). An agreement scale of 6 (6 – Completely agree, 5 – Mostly agree, 4 – Slightly Agree, 3 – Slightly disagree, 2 – Mostly disagree, 1 – Completely disagree) was used to measure these variables. On the other hand, school factors use a likelihood scale of 6 (6 – Very great extent, 5 – High extent, 4 – Moderate extent, 3 – Low extent, 2 – Very low Extent, 1 – No extent).

Table 1: Reliability Tests

Variables	Cronbach Alpha
Attitude Towards Entrepreneurship	.900
Subjective Norms	.925
Perceived Behavioral Control	.951
Intention	.964
Motivation	
- Need for Achievement	.778
- Need for Power	.832
- Need for Affiliation	.833
- Other Motivators	.827
Personality Traits	
- Extraversion	.854
- Openness to Experience	.760
- Conscientiousness	.780
- Neuroticism	.863
- Agreeableness	.829
h. School	
- Teachers	.947
- Facilities and Support	.913
- Curriculum	.952
i. Entrepreneurial Propensity	
- Risk-Taking	.786
- Innovativeness	.873
- Creativity	.898

Before actual data gathering, a reliability test is conducted on 30 respondents using Cronbach Alpha. George & Mallery (2010) as cited by Cinches, Russell, Chavez, & Ortiz (2015) state that reliable scales must have values between 0.70 to 0.90. Table 1 reveals that the instrument used in this study is reliable.

Examining the variables in the framework of the study, Multiple Linear Regression is used to test the influence of attitude towards entrepreneurship, subjective norms and behavioral control towards entrepreneurial intention; the influence of personality traits and school factors towards entrepreneurial motivation; and the influence of intention to motivation. Using IBM Amos, Structural Equation Modelling was used to determine the best fit model for student's entrepreneurial propensity.

Results

The Influence on Entrepreneurial Intention

Table 2 presents the Multiple Linear Regression results to test the influence of attitude towards entrepreneurship, subjective norms, and behavioral control on entrepreneurial intention. These results will determine if the attitude towards entrepreneurship, perceived subjective norms, and perceived behavioral control can predict the entrepreneurial intention of the respondents.

Table 2: Multiple Linear Regression on Influence of
Attitude, Subjective Norms, and Behavioral Control on Intention

Independent Variables	B	T-Value	P
Attitude	.564	12.07	.000
Subjective Norms	.122	3.66	.000
Perceived Behavioral Control	.224	6.24	.000
Dependent Variable		Intention	
Constant		.553	
Adjusted R-Squared		.543	
F Value		197.46	
P		.000	

Intention = .553 + .564ATE + .122SN + .224PBC

Results reveal that the value of adjusted R^2 indicates that 54% of the variation of the respondents' entrepreneurial intention can be predicted by the attitude towards entrepreneurship, subjective norms, and perceived behavioral control. The adjusted R^2 value indicates the amount of influence of the attitude towards entrepreneurship, subjective norms, and perceived behavioral control on entrepreneurial intention. With an F-Value of 197.46, the model is highly significant at P=0.000. The figures of the table show that for every unit change in the respondent's attitude towards entrepreneurship (ATE), perceived subjective norms (SN), and perceived behavioral control (BC), there is a corresponding increase of 56%, 12%, and 22.4%, respectively in their entrepreneurial intention. This indicates that the higher the attitude, subjective norms, and

behavioral control, the higher the entrepreneurial intention would be. While these have proven the enhancing effect of the independent variables to entrepreneurial tendency, the missing 44% of attitude, 88% of subjective norms, and 77.6% of perceived behavioral control might be attributed to other influencing factors, which can be considered in future studies.

This result adds to the growing literature that confirms Ajzen's Theory of Planned Behavior (1991), which stressed that attitude towards the behavior, subjective norms, and perceived behavioral control are critical antecedents to intention. Many scholars used this theory in predicting action, such as a person's tendency to be entrepreneurial. These studies give valuable insights into how people enter into a new venture and understand the underlying reasons that motivate them. For instance, the studies of Sutanto & Eliyana (2014) and Utami (2017) reveal that attitude towards entrepreneurship significantly influences intentions to become an entrepreneur. Similarly, studies by Arshad, Farooq, Sultana, & Farooq (2016) and Wurthmann (2013) stressed that a person's attitude is a significant predictor of entrepreneurial intentions. On the other hand, Utami (2017) and Yoon, Tong, & Loy (2011) found subjective norms and perceived behavioral control to affect entrepreneurial intentions positively. Given an individual's intention as an antecedent to actual behavior, such as a person becoming an entrepreneur, this study will help the academe understand the reasons behind a student's intention to engage in a certain way, such as one becoming an entrepreneur.

The Influence of Entrepreneurial Intention on Entrepreneurial Motivation

Table 3 presents the multiple linear regression to test the effect of intention on motivation. This decides if respondents' intention has to influence power on their level of motivation.

Table 3: Multiple Linear Regression on the Influence of Intention on Motivation

Independent Variable	B	T-Value	P
Intention	.620	18.86	.000
Dependent Variable	Motivation		
Constant	2.07		
Adjusted R-Squared	.42		
F Value	355.68		
P	.000		

Motivation = 2.07 + .62I

Results reveal that the value of adjusted R^2 suggests 42% of the variation of the respondents' motivation can be predicted by intention. The adjusted R^2 value shows the amount of influence of intention on motivation. With an F-Value of 355.68, the model is significant to a high degree at P=0.000. The figures show that for every unit change in the respondents' intention, there is a corresponding increase of 62% in their motivation. This indicates that the higher the intention, the higher the motivation would be. While this has established the positive effect of intention on

motivation, the missing 38% of intention might be attributed to other dimensions that can be looked at in future studies.   The findings contribute to the growing knowledge of the influence of intention on motivation, which affirms several authors' findings. Sigmund Freud points out that when a person is performing a particular action, the intention is the first cognitive process he will experience.   The likelihood to perform a particular behavior is high when a person's intention is high, thus increasing his motivation to act. Raz (2017) also points out the sustaining power of motivation to intention. He emphasized that to keep tendencies to proceed with the directions one wants to go, intentions should be set and reaffirmed through motivation, which keeps a person going over the long run. In business, failures are imminent; the question should then be asked, "Why am I doing this?". A person's motivation will sustain the urge to continue. Conscious or unconscious, it fuels the person's drive to act in a particular way.

The findings above also draw similar findings to the studies of Mahendra et al. (2017), Solesvik (2013), and Trivedi (2017) that students' motivation in choosing a career in entrepreneurship is related to their intention to pursue such career option.   It confirms that the higher the students' intention, the higher they are motivated to become entrepreneurs.

The Best Fit Model for Student's Entrepreneurial Propensity

The best fit for the study is thus presented:

Table 4: Summary of the Model Fit Indices

	P	CMIN/DF	GFI	CFI	NFI	TLI	RMSEA
Model 1	.000	3.24	.920	.955	.937	.946	.067
Model 2**	.173	1.34	.991	.997	.990	.995	.026
Fit Criterion	>0.05	<5.00	>0.95	>0.95	>0.95	>0.95	<0.05

*** Best fit*

Figure 2 presents Model 1, which proposed that Entrepreneurial Propensity (EP) can be influenced by motivation, personality, and school factors and where motivation is the effect of a person's degree of intention to pursue a certain action, such as one becoming an entrepreneur.
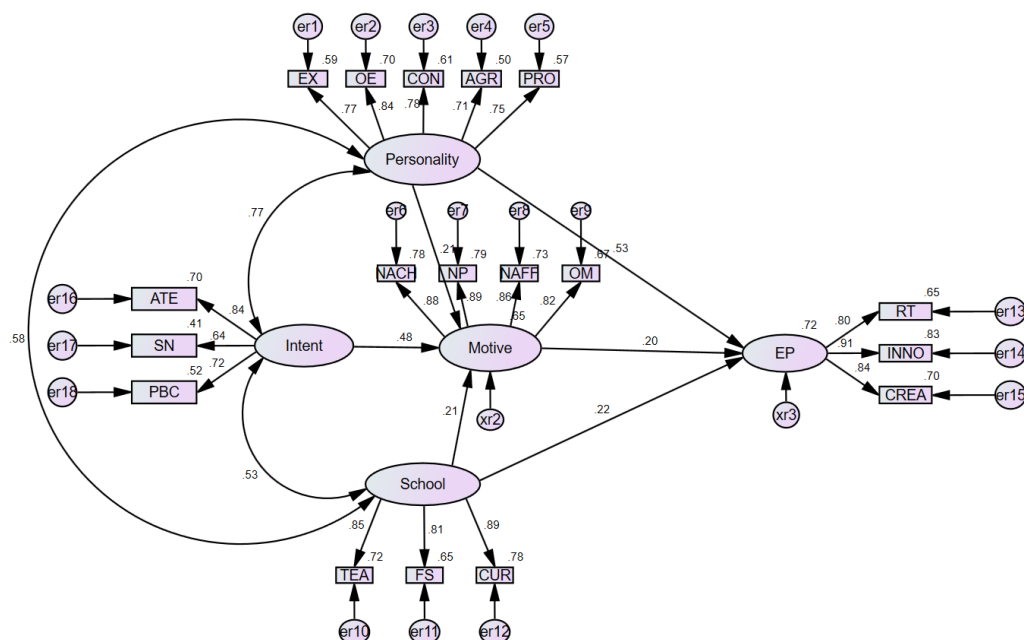
Figure 2: Model 1

MODEL 1 REVEALS THAT 72% OF THE CHANGES IN ENTREPRENEURIAL PROPENSITY (EP, R^2=.72) ARE EXPLAINED BY PERSONALITY (PERSONALITY, B=.53), MOTIVATION (MOTIVE, B=.20), AND SCHOOL FACTORS (SCHOOL, B=.22). MOREOVER, 65% OF THE CHANGES IN MOTIVATION (MOTIVE, R^2=.65) IS EXPLAINED BY PERSONALITY (B=.21), INTENT (B=.48), AND SCHOOL (B=.21). CORRELATIONS ARE ALSO SEEN TO BE SIGNIFICANT BETWEEN PERSONALITY AND SCHOOL (B=.56), PERSONALITY AND INTENT (B=.77), AND SCHOOL AND INTENT (B=.53).

The model further reveals a positive effect of the indicators on latent variables: Personality, Intent, Motive, School, and EP. *Personality* is influenced by extraversion (EX, β=.77), openness to experience (OE, β=.84), conscientiousness (CON, β=.79), agreeableness (AGR, β=.71) and proactivity (PRO, β=.75). The results of R^2 for EX (R^2=.59), OE (R^2=.70), CON (R^2=.61), AGR (R^2=.50) and PRO (R^2=.57) implies that 59%, 70%, 61%, 50%, and 57% respectively of the changes in Personality can be explained though EX, OE, CON, AGR, and PRO. The remaining 41% for EX, 30% for OE, 39% for CON, 50% for AGR, and 43% for PRO may be explained by other factors, which can be considered in future studies.

The intent is influenced by attitude towards entrepreneurship (ATE, β=.84), subjective norms (SN, β=.64), and perceived behavioral control (PBC, β=.72). The R^2 results for ATE (R^2=.70), SN (R^2 = .41), and PBC (R^2 = .52) indicate that 70%, 41%, and 52% respectively of the variation of the respondents' Intention can be predicted by ATE, SN, and PBC. The remaining 30% for ATE, 59% for SN, and 48% for PBC may be explained by other factors, which can be considered in future studies.

School is explained through the teacher (TEA, β=.85), facilities and support (FS, β=.81), and curriculum (CUR, β=.89). The R^2 results for TEA (R^2=.72), FS (R^2=.65), and CUR (R^2=.78) mean that 72% of TEA, 65% of FS, and 78% of CUR explains the variation of School. The

remaining 28%, 35%, and 22% respectively may be predicted by other variables, which can be considered in future studies.

Motive can be influenced by a need for achievement (NACH, β=.88), need for power (NP, β=.89), need for affiliation (NAFF, β=.86) and other motivators (OM, β=.82). R^2 for all indicators signifies that 78%, 79%, 73%, and 67% respectively of the changes of MOTIVE can be explained through NACH (R^2=.78), NP (R^2=.79), NAFF (R^2=.73), and OM (R^2=.67). The remaining 32% for NACH, 31% for NP, 27% for NAFF, and 33% for OM can be explained by other factors that can be included in future studies.

Entrepreneurial propensity (EP) is influenced by risk-taking (RT, β=.80), innovation (INNO, β=.91), and creativity (CREA, β=.84). The R^2 for RT (R^2=.65), INNO (R^2=.83), and CREA (R^2=.70) implies that 65% of RT, 83% of INNO, and 70% of CREA explains the changes of EP. This also means that the remaining 35% of RT, 17% of INNO, and 30% of CREA can be predicted by other factors that can be looked at in future studies.

Table 5 presents Model 1 fit indices. Although Model 1 reveals significant positive regression weights (B-Coefficient) and squared multiple correlations (R^2) for each line connecting all the variables, the result was a poor fit, considering that CMIN P (.000) was highly significant. Although CMIN/DF (3.24) and CFI (.937) are qualified, GFI, NFI, and TLI are less than the acceptable value of 0.95. Also, RMSEA (.067) is greater than the acceptable value of 0.05. This implies that this model does not represent the data. Therefore, Model 1 is not acceptable.

Table 5: Model 1 Fit Indices

Criteria	Acceptable Values	Model 1 Results
CMIN P	> 0.05	.000
CMIN/DF	< 5.00	3.24
GFI	> 0.95	.920
CFI	> 0.95	.955
NFI	> 0.95	.937
TLI	> 0.95	.946
RMSEA	< 0.05	.067

On the other hand, a second model is presented in Figure 3. The model suggests that entrepreneurial propensity (EP) is influenced by Intent, Motive, and School, where Motive is affected by the degree of intent to pursue entrepreneurship and the quality of school factors such as curriculum and facilities to support academic programs for entrepreneurship.

For Intent, the model proposes two indicators: subjective norms (SN) and perceived behavioral control (PBC). For School, both facilities and support (FS), and Curriculum (CUR) are retained. For Motive, two indicators are proposed: the need for achievement (NACH) and other motivators (OM). Finally, for entrepreneurial propensity (EP), the model maintains two indicators: risk-taking (RT) and creativity (CREA).
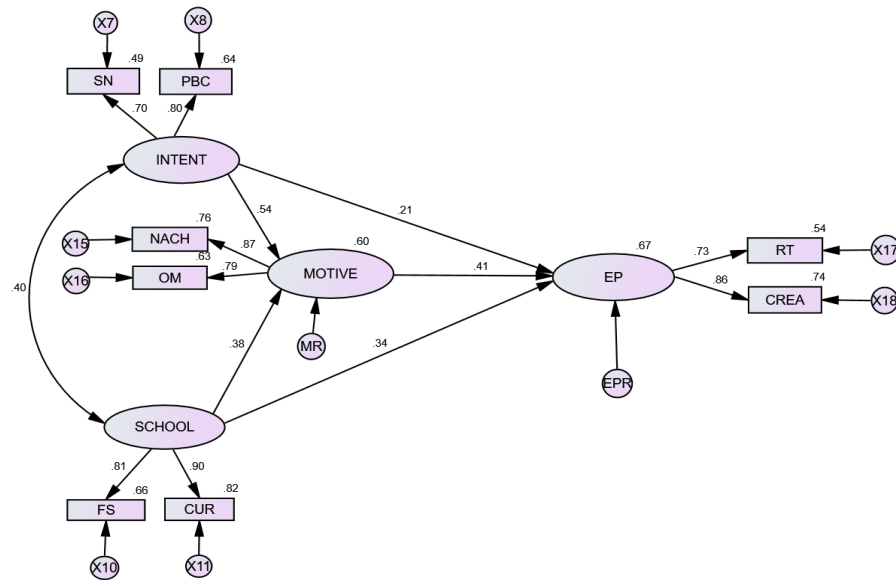
Figure 3: The Best Model

The model reveals that 67% of the variations in entrepreneurial propensity (EP, R2=.67) are predicted by intent (INTENT, β=.21), motivation (MOTIVE, β=.41), and school factors (SCHOOL, β=.34) presenting a structural equation of (EP = 0.21INTENT + 0.41MOTIVE + 0.34SCHOOL). Furthermore, 60% of the changes in motivation (MOTIVE, R^2=.60) are affected by Intent (β=.54) and School (β=.38) presenting a structural equation of (MOTIVE = 0.54INTENT + 0.38SCHOOL). Correlations are significant between Intent and School (β=.40), which implies that both variables move in one direction. When School increases, Intention also increases.

The results also reveal a positive effect of the indicators on latent variables Intent, Motive, School, and EP. For INTENT, it is influenced by PBC (β = .80), and SN (β = .70). The results of R^2 for both PBC (R^2 = .64) and SN (R^2 = .49) implies that 64% and 49% respectively of the variation of the respondents' Intention can be predicted by PBC and SN. The remaining 36% for PBC and 51% for SN may be explained by other factors, which can be considered in future studies.

On the other hand, MOTIVE is influenced by NACH (β = .87) and OM (β = .79). R^2 for both indicators signifies that 76% and 63% respectively of the variation of MOTIVE can be explained through NACH (R^2 = .76) and OM (R^2 = .63). The remaining 24% of Need for Achievement and 37% for Other Motivators can be explained by other factors that can be included in future studies.

For SCHOOL, CURR (β = .90) and FS (.81) are the best indicators. With R^2 of .66 and .82 respectively, it means that 66% of CURR and 82% of FS explains the variation of SCHOOL. The remaining 34% and 18% respectively for CURR and FS may be predicted by other variables, which can be considered in future studies.

Furthermore, ENTREPRENEURIAL PROPENSITY is best predicted through RT (β = .73) and CREA (β = .86). The R^2 for both RT (R = .54) and CREA (R = .74) implies that 54% of risk raking and 74% of creativity explains the variation of the respondents perceived Entrepreneurial Propensity. This also implies that the remaining 46% of risk-taking and 36% of creativity can be predicted by other factors that can be investigated in future studies.

Table 6: Model 2 Fit Indices (The Best Fit Model)

Criteria	Acceptable Values	Best Fit Results
CMIN P	> 0.05	.173
CMIN/DF	< 5.00	1.34
GFI	> 0.95	.991
CFI	> 0.95	.997
NFI	> 0.95	.990
TLI	> 0.95	.995
RMSEA	< 0.05	.026

Table 6 presents the fit indices for Model 2, the best fit model. Results disclose significant regression weights (B-Coefficient) and squared multiple correlations (R^2) for each line connecting all the variables. With CMIN P of .173, CMIN/DF of 1.34, GFI of .991, CFI of .997, NFI of .990, TLI of .995, and RMSEA of .026, all the criteria met the accepted values. Therefore, the best fit model for Entrepreneurial Propensity is found.

The best-fitting model suggests that *entrepreneurial propensity (EP)* is anchored on *Motive*, which is supported by *Intent and School*. The correlation between *School* and *Intent* is also positive. The best indicators for *Intent* are subjective norms (SN) and perceived behavioral control (PBC). For *School*, the best indicators are curriculum (CUR) and facilities and support (FS). For *Motive*, the best indicators are needed for achievement (NACH) and other motivators (OM). For *EP*, the best indicators were creativity (CREA) and risk-taking (RT).

Discussion

The results imply that students' entrepreneurial propensity can be formed when their intention and motivation to do so is high. Students were seen to rely on the influence of significant others to pursue a particular decision. Nevertheless, a show of even a slight belief on the matter sheds light on the positive attitude of the respondents in entrepreneurship, especially that they generally believe they have a great chance of success if they tried to start a business in the future and they are confident they can adapt to changes easily (Mahendra et al., 2017; Solesvik, 2013).

The findings confirm Ajzen's Theory of Planned Behavior and McClelland's Motivation Theory that students' intention and motivation predict a person's action of certain behavior. Findings by Mahendra et al. (2017), Solesvik (2013), and Trivedi (2017) also confirm how students' motivation in choosing a career in entrepreneurship is related to their intention to pursue such career options. The higher the student's intention, the higher they are motivated to become an entrepreneur. Solesvik (2013), Mihaela, et al (2015), Othman et al. (2012), and Cinches et al.

(2017) also confirmed that school factors affect positive student outcomes in their respective studies.

Results also imply the big role of schools in preparing the youth for their career. The variable School was found to have a crucial role in forming students' entrepreneurial intention and motivation, which contributes to the students' entrepreneurial propensity. Since SN and PBC are found to explain intention, NACH and OM affect motivation and, RT and CREA explain EP, the academe must identify and create platforms that are hinged in this direction. Particularly, the attention should be more focused on integrating entrepreneurial programs for curriculum and facilities and support, which are found to be factors that best contribute to successful academic programs for entrepreneurship.

Based on the findings, this study concludes that regardless of personality, students are likely to choose a career in entrepreneurship when significant others such as family, colleagues, or the community approve of that choice and if they generally believe that they have control of the situation they are in. Furthermore, students' entrepreneurial propensity can be formed when they are highly motivated and are aware of the factors they think are of importance. Providing them opportunities to develop risk-taking given, the appropriate space for innovation and creativity can boost their need to achieve.

The study also concludes that the role of schools in motivating students' decision to pursue entrepreneurship is vital. Results point to the strong influence of school factors such as curriculum, and facilities, and support in developing student's entrepreneurial propensity. It behooves business schools to urgently recognize the importance of reviewing their existing curriculum and further enhance existing programs geared towards entrepreneurship. The more programs and exposure relating to enterprising activities, the higher the tendency for students to be nurtured and/or developed in their entrepreneurial propensity.

From the preceding findings and conclusions, recommendations can be forwarded to schools, colleges, and universities to look at the curriculum, facilities, training, classroom activities, and teacher quality to usher students towards entrepreneurship.

The design and development of the curriculum are seen as critical in the effective delivery of entrepreneurship education. Hinging subjects related to entrepreneurship on experiential than theoretical context is important. This means that schools should consider provisions for more exposure to students. This can be done by putting more weight on the application in the design of the syllabus, as students will gain more interest when they are firsthand applicators of the theory and concepts taught in the classroom. Since creativity and risk-taking are seen to be relevant indicators to entrepreneurial propensity, the entrepreneurial-related subject may also emphasize developing creativity and risk management skills. For instance, the inclusion of rubric-based risk-taking and creativity assessment in all entrepreneurship-related subjects; the creation of business plans that include risk identification and management to develop skills in creativity and controlling and managing risks. In addition, schools may expose their students as early as their first year to different business establishments to give them an idea and to form their foundation towards entrepreneurial behavior. The provision of programs that provides links between schools and the industry can also be intensified. Finally, the offering of entrepreneurial

application subjects may be given in the 3rd year first semester and continue up to the 4th year 1st semester. This setup will give students more entrepreneurial exposure.

Schools may consider the possibility of creating facilities that support entrepreneurial activities and promotes student engagement. This can be achieved through the establishment of a training center for entrepreneurial activities such as the creation of a business incubation area where students can do brainstorm business ideas, do research, and create mini-companies. The use of case studies and real-world problems, the provision of spaces for entrepreneurial activities, linking curricula to real-world business challenges, partnering with businesses, helping and guiding students launch their business are also effective ways to engage students and increase interest in entrepreneurship.

In addition, a school may consider designing an intensive training program for teachers to develop their competencies. This may include essential business skills such as financial management, marketing, sales and customer management, communication and negotiation, handling people; outcomes-based teaching and learning in the application of the "learning-by-doing" concept and experiential learning; teaching and assessment methods and strategies related to entrepreneurship; and the creation of outcomes-based syllabus so that teachers may create teaching plans designed for entrepreneurship. Finally, a significant component of the school administration's job is to improve teacher quality, and teacher quality equals student quality. Thus, the administration may intensify their monitoring and evaluation processes to ensure teacher quality by giving a substantial performance assessment, offering constructive feedback/suggestions, and the provision meaningful professional development programs.

Students' motivation to pursue entrepreneurship is high. Therefore, teachers should continuously encourage and motivate students in their desire to achieve that goal.   Motivating students may be done by giving more engaging activities in the classroom, giving positive reinforcements such as recognizing and praising student accomplishments, and recognizing the learning styles of students.   To encourage entrepreneurship, teachers must give more practical coursework, blending the theory in the traditional economic literature with the tangible needs of everyday business management. The learning experience should be experiential, hands-on, and action-driven to give students real-world experience. With these efforts, their intention and motivation will be guided to their career in entrepreneurship.

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RVM PEDAGOGY: DOES IT MATTER ON STUDENTS' PRACTICE of SCHOOL'S CORE VALUES?

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ABSTRACT

The schools administered by the Religious of the Virgin Mary (RVM) Congregation in the Philippines used the RVM Pedagogy in their instructional processes. This study determined if the effects of the Pedagogy predict the students' practice of the school's core values of faith, service, and excellence. Involving 216 upper-class students in the tertiary level of two RVM schools in Northern Mindanao, Philippines, this investigation employed a concurrent, mixed-method research design. The instrument used was the scale in a previous study conducted by the researchers in 2018, and the items on values practices were based on the RVM Graduate Attributes. Qualitative data were taken from the focus group discussions. Descriptive statistics and multiple regression were employed to organize the data. Findings reveal that the effects of the pedagogy generally predict the participants' practice of the school's core values. Specifically, *Participation in Social Transformation* is a significant predictor of the three (3) core values; *Active Engagement* predicts the practice of Faith and Excellence; *Values Formation* is a predictor of Faith, and *Deep Understanding and Interrelatedness to Life's Realities* is a predictor of the practice of service. In a nutshell, the study concludes that the participants' perceived effects of the RVM pedagogy can make a difference in their practice of the school's core values of faith, service, and excellence. The findings of this study point to the need for institutions to examine their goal in developing graduates imbued with the school's core values according to their philosophy and avowed vision and mission.

Keywords: RVM pedagogy, Core values, Active engagement and collaboration, Values formation, Social transformation

Introduction

The search for teaching pedagogy that makes a difference in students' learning and their life, in general, has been an unending quest among educators. A teacher's pedagogy is crucial in addressing student's learning needs (Klotz, 2006; Stender, 2010; Buendia, Gitlin, & Doumbia, 2003). The critical importance of pedagogy on students' learning is highlighted in the empirical investigation of Chavez and Napiere (2017) on the effects of the pedagogy on their learning. The study revealed the factors of *Participation in Social Transformation, Values Formation, Active Engagement and Collaboration, and Deep Understanding of the Concept and its Interrelatedness with Life's Realities* as emerging themes of the effects of the pedagogy using exploratory factor analysis. It can be inferred from the study, then, that the pedagogy has far-reaching effects on the students' practices of the core values.

Further, Livingston (2010) espoused that pedagogy influences an individual's learning ability to align with the school's goal by enlightening the students and helping them excel. Students can excel when pedagogy is effectively disseminated. Kemp, Blake, Shaw, and Preston (2009) confirmed that when students absorb and apply knowledge, instructors disseminated pedagogy successfully. Moreover, Tannebaum and Hughes (2015) asserted that the aims of education were seen as larger than simply having students remember information for summative assessments. Instead, it prepares students to become citizens who participate in society, is open to new ideas, and are capable of voicing their opinion through a variety of mediums.

Barton (2012) likewise asserted that discussion in the classroom can assist educators in achieving the aims of developing students into rational, autonomous, and open-minded citizens capable of entering into a pluralist society. In addition, Gay (2000) explained that "Teachers must understand, facilitate, and appreciate pedagogy that is culturally responsive and responsible by creating educational environments that offer safe, welcoming, and caring communities of learners" (as cited by Gallavan, 2005).

In its effort to contribute to transformative quality education, the education ministry of the Religious of the Virgin Mary conceptualized an educational approach to guide the instructional processes of RVM Catholic schools throughout the country. This approach known as the RVM Pedagogy comprises four components namely: "1) constructivism (Piaget, 1970); 2) elements of understanding by design (Wiggins and McTighe, 2011); 3) differentiated instruction (Tomlinson, 2000); and 4) the 4-pronged approach which covers the integration of a) Ignacian core and related values, b) contemporary social realities, c) concepts across subject boundaries / other disciplines and d) Biblical texts reflection concerning the concepts taught" (Guillano, 2018).

Constructivism is exemplified in its approach of activating students' prior knowledge as well as encouraging the students to engage in meaning-making out of their learning experiences. The need to integrate social realities in instruction is upheld by Hahn (2010) who emphasized that "when students perceive that several sides of issues are presented and discussed, and when they

feel comfortable expressing their views, they are more likely to develop attitudes that foster later civic participation." The inclusion of biblical texts in the instructional process is supported by the postulation of Bowman & Small (2010) that the religious affiliation of the institution plays a key role in the spiritual development of the individual, which may be manifested through classroom learning and out-of-class events. This implies that student activities provided by the institution may be the conduit for this faith development and the enhancement of values which Oyserman (2015) described as "internalized cognitive structure that guides decision making by establishing basic principles of right and wrong, a sense of priorities, meaning, and patterns."

This pedagogy intends to lead learners to practice the school's core values of FAITH, SERVICE, and EXCELLENCE. The practice of these core values includes the following indicators:

FAITH. Indicators that the students practice this value include demonstrating faithful obedience to God's commandments through a life of witnessing; practicing discernment of God's will before making decisions; actively participating in activities that promote the health of mind, body, and spirit; and helping settle misunderstanding by clarifying various points of view. Related to this value is the work of Parks (2000), who proposes that faith development is a process of meaning-making, which connects to an individual desire for action that may result in social change.

SERVICE. The students practice this value as indicated by their active participation in church, civic, government programs for the poor; showing kindness in words and actions despite the negative experiences with others; serving without counting the cost; sharing resources to people in need, and preserving and protecting the environment.

EXCELLENCE. The practice of this core value includes demonstrating ethical behavior in dealing with others; expressing ideas tactfully and truthfully; producing quality work despite difficulties; managing time and responsibilities appropriate to effectively accomplish tasks, and demonstrating adequate knowledge and skills following high standards.

This empirical investigation argues that students' practice of the core values is influenced by their perceived effects of the RVM Pedagogy in their instructional experiences in the classroom. As cited earlier, the study of Chavez and Napiere identified the following factors that emerge as effects of the pedagogy as *Participation in Social Transformation, Values Formation, Active Engagement and Collaboration, and Deep Understanding of the Concept and its Interrelatedness with Life's Realities*.

Participation in Social Transformation. The participants believe that the effects of the pedagogy inspire them to become good stewards of God's creation; train them to be service-oriented individuals; make them reflect on current issues and do something about them; remind them to become responsible members of the society and to volunteer and contribute to social and economic development, and keep them vigilant with social issues. As noted by Levisohn (2012), a primary purpose of service-learning is to "effect some change in the world."

Values Formation. Indicators of the effects of values formation include inspiring them to do more for God's greater glory through biblical text reflections; helping them to be upright and God-loving persons; enabling them to become more compassionate, humble, faithful, persevering, resourceful, flexible, and open; encouraging them to be better persons and leaders; teaching them to face challenges and difficult situations courageously, and enabling them to think critically and analytically. Concerning this factor, Feenstra (2001) argues that service-learning activities may lead to a more defined sense of vocation, which is a key focal point in higher education.

Active Engagement and Collaboration. The effects of active engagement and collaboration comprise helping them to be disciplined/focused; making their class alive and active; encouraging them to do their part in doing projects; providing them the opportunity to generate ideas through group sharing; and enabling them to understand the lessons.

Deep Understanding of the Concept and its Interrelatedness with Life's Realities. The perceived effect of this factor includes the following dimensions: allowing them to acquire new knowledge that they could apply in their lives; enabling them to discover new things / see the bigger picture; helping them to understand by relating the lesson with the social realities; providing a concrete image of reality by reflecting the social world in the lesson; using relevant concepts to make me effective in my chosen career; broadening their knowledge through the construction of new concepts; helping them see the interrelatedness of the lesson to other disciplines, and expanding their knowledge with the integration of other subjects in the lesson, and making them relate the learned concepts to life's realities/ experiences.

In a nutshell, Figure 1 features the schema showing the interrelationship of the variables in the study, particularly the themes under the Effects of the RVM Pedagogy and the participants' practice of the core values of faith, service, and excellence.

Effects of RVM Pedagogy

-Participation in Social Transformation.

-Values Formation.

-Active Engagement and Collaboration.

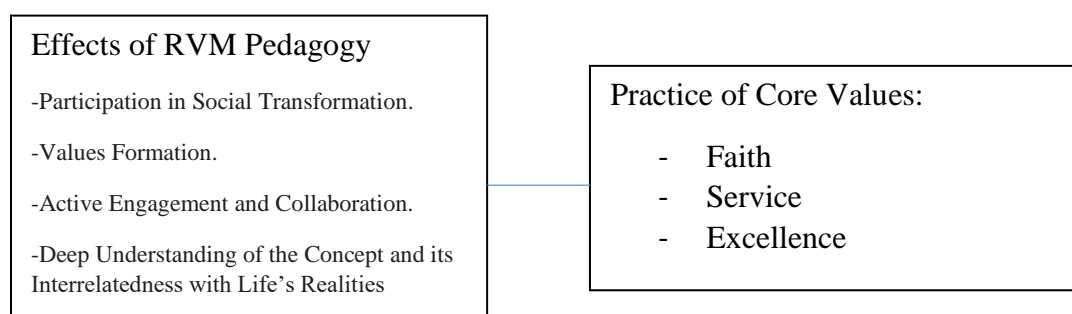-Deep Understanding of the Concept and its Interrelatedness with Life's Realities

Practice of Core Values:

- Faith
- Service
- Excellence

Figure 1. Schema Showing the Interrelationship of the Variables in the Study

To date, there is a dearth of study which attempts to determine the link between the RVM pedagogy and the extent of students' practice on the school's core values of faith, service, and excellence. This is an area of research that needs to be explored for the RVM schools throughout the country and abroad to enrich the implementation of the pedagogy to effectively respond to

its thrust for *Transformative Ignacian Marian Education* among its graduates. The study hopes to get a glimpse of the quality of graduates that the school commits to producing year-end and year out.

Statement of the Problem

This empirical study aimed to ascertain the link between the effect of the RVM Pedagogy on the students' practice of the school's core values of faith, service, and excellence. Specifically, it sought answers to the following questions: 1) How do the participants assess the effects of the RVM Pedagogy in terms of their active engagement and collaboration, deep understanding and interrelatedness to life's realities, values formation, and participation in social transformation; 2) To what extent do they practice the values of faith, service, and excellence? and 3) Does the participants' assessment of the effects of the pedagogy significantly predict their practice of the school's core values?

Research Method

The study employed the concurrent mixed-method research design (Creswell, 2011) which utilized both quantitative and qualitative data.   The instrument used to ascertain the effect of the implementation of the RVM Pedagogy was based on the scale developed by Chavez and Napiere (2018), and items on the practices of core values were from the RVM Graduate Attributes by the RVM Education Ministry Commission (2013). The items were internally consistent based on the Cronbach's alpha which ranged from .880 to .919.   A total of 216 upper-class college students from two (2) RVM tertiary schools in Northern Mindanao, Philippines, participated in the study. There are five (5) RVM schools in Northern Mindanao, and the other 3 schools are situated far from Cagayan de Oro City, and the choice of the 2 schools considered the proximity of such schools in the city, considering the similarity of the participants' cultural backgrounds.   The participants come from various courses such as teacher-education, nutrition and dietetics, hotel and restaurant management, information technology, accounting, business administration, library science, and social work. Focus group discussions were conducted to generate qualitative data that supported the quantitative data. Descriptive statistics were used to organize the effects of the implementation of the RVM Pedagogy and the extent of the student's practice of the core values. To ascertain whether the effects of the implementation of the pedagogy predict the students' practice of the core values, multiple regression was employed.

Results

Data on the effect of the RVM Pedagogy are shown in Table 1. Having experienced the RVM Pedagogy in their classes, the participants responded that the effect of the pedagogy was generally high and with relatively less dispersion (M=3.59, SD =0.35).   Among the factors, *Values Formation* got the highest mean (M=3.72) implying that the pedagogy has facilitated the

enhancement of their values. Sample items under this factor include their claim that the pedagogy enabled them to put God and His will first and they were able to act accordingly, and it helped them to be upright and God-loving persons (both with M=3.80).

Table 1. Mean Distribution of the Effects of the Implementation of the RVM Pedagogy

Effects	M	Interpretation	SD
Active Engagement and Collaboration	3.50	Moderate	0.46
Deep Understanding and Interrelatedness to Life's Realities	3.53	High	0.59
Values Formation	3.72	High	0.35
Participation in Social Transformation	3.61	High	0.40
Overall Mean	**3.59**	**High**	**0.35**

Legend:
$\qquad$ 3.51 – 4.0 = High $\qquad$ 2.51 – 3.50 = Moderate $\qquad$ 1.51 – 2.50 = Low $\qquad$ 1.0 – 1.50 = Very Low

Concerning these findings, a participant shared during the focus group discussion that she appreciated more deeply the importance of their profession as a nutritionist and that of professionalism, specifically in observing food ethics, as well as the way they appropriately handle patients.

This is followed by their *Participation in Social Transformation* which they also rated as high (M=3.61, SD=0.40). Under this factor, participants acknowledged that the pedagogy inspired them to be good stewards of God's creation (M=3.71, SD = 0.49); it developed their sense of respect towards other peoples' beliefs (M=3.69, SD=0.51); and it trained them to be service-oriented toward the less fortunate in the community (M=3.61, SD=0.54).

Such findings were supported by the qualitative responses of the participants. One of them said that the atmosphere in the classroom enabled him to internalize the value of respect. Another participant said that because the teacher led the class to see the broader picture of what is to be done with public health nutrition, she was prepared to use such a routine in the actual clinical practice during their internship. The participants likewise recognized that the RVM Pedagogy has helped them gain a deep understanding of the concepts and the interrelatedness of such concepts to reality to a high extent (M=3.53, SD=0.59).

However, while they recognized that the pedagogy enabled them to get *Actively Engaged and to Collaborate* in class, this factor was only rated as moderate (M=3.50, SD=0.46). The items that were rated as low are on making the class alive and active (M=3.50, SD=-0.62) although it can also be seen that the responses were more dispersed which may imply that there are students who may have assessed the pedagogy to be more engaging. This finding may be helpful to teachers for them to examine how they could improve the way they facilitate learning for more student participation.

Table 2. Mean Distribution of the Practice of Core Values

Core Values	M	Interpretation	SD
Faith	3.63	High	0.53
Service	3.56	Moderate	0.52
Excellence	3.48	High	0.42
Overall Mean	**3.55**	**High**	**0.38**

Legend: *3.51 – 4.0 = High*   *2.51 – 3.50 = Moderate*
            1.51 – 2.50 = Low   *1.0 – 1.50 = Very Low*

The participants' responses on the practice of their core values are presented in Table 2. Data reveal a generally high rating (M=3.55, SD=0.38) implying that students endeavor to put into practice the school's core values. The highest rating was made on *faith* (M=3.63, SD=0.53); followed by *excellence* (M=3.48, SD= 0.42), and the practice of *service* was rated as moderate. The qualitative responses complemented these findings.   Around three (3) students shared that the integration of reflections from the Biblical texts concerning their lessons enabled them to see the spiritual aspects of such lessons. One of them also pointed out that spiritual activities are given to both Catholics and non-Catholics alike in and outside the four walls of the classroom.

Concerning excellence, one participant shared that the quality of discussion and examinations given by the teachers challenged them to study and do their best so they could wholeheartedly and efficiently give service, especially when they were in their internship.

As regards their practice of service, although this was generally rated as moderate, one student shared that because the teachers enabled them to see the outside world in their discussion in class, they were able to see the peoples' lives and perspectives and they were able to practice setting limits or practice discipline.

Table 3. Regression Analysis of the Effects of the RVM Pedagogy as Predictors of the Practice of the Value of Faith

Effects of the Implementation of the RVM Pedagogy	Std.Err. - B	Beta	t	P
Active Engagement and Collaboration	.065	.155	2.03*	.044
Deep Understanding and Interrelatedness to Life's Realities	.069	.073	.926	.356
Values Formation	.071	.272	4.14**	.000
Participation in Social Transformation	.065	.329	4.77**	.000

Model Summary

R= .702 R^2 = .493   Adjusted R^2= .484   F= 51.37   p =.000

Regression Analysis was made on the effects of the RVM Pedagogy as predictors of the participants' practice of faith (Table 3). Findings reveal that the whole model is significant (F=51.37, p=.000) and 48.4 percent of the variability in the participants' practice of faith is explained by a combination of the four (4) factors (Adjusted R^2=.484).   Data also show that the

highest predictor is *Participation in Social Transformation* (t=4.77, p= .000), followed by *Values Formation* (t=4.14, p=.000) and *Active Engagement and Collaboration* (t=2.03, p=.044).

Furthermore, for every unit increase in the perceived effect of the pedagogy on the participants' *Participation in Social Transformation*, there is a corresponding .329 increase in their practice of faith. Thus the hypothesis is supported by the findings. Evidence from the study shows that students who assess the pedagogy as highly beneficial to them in terms of *Participation in Social Transformation, Values Formation* and *Active Engagement, and Collaboration* also tend to practice faith to a high extent. This must be attributed to the fact that serving as advocates of change built on a strong values formation and active collaboration enables them to demonstrate their faith in God by doing His will. This finding is supported by the sharing of the students in the focus group discussion. One student from the Bachelor of Science in Accountancy said:

> *"In this environment, it is easy to drift away, but with the pedagogy used by our teachers, we can uphold the values and see meaning in what we do in life; and we owe it to God."*

Such finding aligns with the postulation of Parks (2000) that espoused that faith development is a process of meaning-making, which connects to an individual desire for action that may result in social change. Further, Feenstra (2001) argues that service-learning activities may lead to a more defined sense of vocation, which is a key focal point in higher education.

Table 4 presents the regression analysis made on the effects of the RVM pedagogy as predictors of the participants' practice of the value of service (Table 4). Results show that the whole model is significant (F=40.55, p=.000) and 42.4 percent of the variations in the practice of service can be accounted for by a combination of the effects of the RVM Pedagogy in the four (4) factors, but most importantly, its effect on *Participation in Social Transformation* (t=5.26, p= .000), followed by *Deep Understanding and Interrelatedness to Life's Realities* (t=3.07, p=.002). Furthermore, for every unit increase in the perceived effect of the pedagogy on the participants' *Participation in Social Transformation*, there is a corresponding .383 increase in their practice of service.

Findings show that students who were helped to participate in social transformation, and who gained a deep understanding of life's realities tend to practice service to a high extent. One of the prongs of the pedagogy is relating the concept to societal realities and this is reinforced by the concept of generalization, part of the instructional process, which promotes essential understanding of the topic at hand. It is most likely to happen, then, that the participants would likely be moved into action and be propelled to be sensitive to the needs of others.

Table 4. Regression Analysis of the Effects of the RVM Pedagogy as Predictors of the Practice of the Value of Service

Effects of the Implementation of the RVM Pedagogy	Std.Err. - B	Beta	t	p
Active Engagement and Collaboration	.076	.000	.006	.995
Deep Understanding and Interrelatedness to Life's Realities	.081	.254	3.07**	.002
Values Formation	.084	.119	1.72	.087
Participation in Social Transformation	.076	.383	5.26**	.000
Model Summary				
R= .659 R^2 = .435 Adjusted R^2= .424 F= 40.55 p =.000				

This finding resonated with the disclosures of Tannebaum and Hughes (2015) which asserted that the aims of education were seen as larger than simply having students remember information for summative assessments. Instead, emphasis should be to prepare students to become citizens who participate in society, are open to new ideas, and are capable of voicing their opinion through a variety of mediums. As noted by Levisohn (2012), a primary purpose of service-learning is to "affect some change in the world."

This finding is supported by some responses from students in the focus group discussion such as the following:

> *"Because we have been trained to attend to the needs of others, like preparing menus for the sick, I have been inspired not to think only of my benefit but that of others" (BSND student)*

> *"Knowing that my companion in my On-the-Job training needs to rest, I need to come on time to replace her/him. Managing time effectively is my way of serving" (BSBA student).*

Table 5. Regression Analysis of the Effects of the RVM Pedagogy as Predictors of the Practice of the Value of Excellence

Effects of the Implementation of the RVM Pedagogy	Std.Err. – of B	Beta	t	p
Active Engagement and Collaboration	.101	.298	3.35**	.00
Deep Understanding and Interrelatedness to Life's Realities	.108	-.032	-.353	.72
Values Formation	.112	-.126	-1.64	.10
Participation in Social Transformation	.102	.441	5.49**	.00
Model Summary				
R= .559 R^2 = .313 Adjusted R^2= .300 F= 24.00 p =.000				

The effects of the pedagogy were likewise found to predict the practice of excellence as shown in Table 5. Findings reveal that the model is significant (F=24.00, p=.000). Furthermore, 42.4

percent of the variations in the practice of excellence can be accounted for by a combination of the four (4) factors, but most importantly, *Participation in Social Transformation* (t=5.49, p= .000), followed by *Active Engagement and Collaboration* (t=3.35, p=.001). Furthermore, for every unit increase in the perceived effect of the pedagogy on the participants' *Participation in Social Transformation*, there is a corresponding .441 increase in their practice of excellence. Responses of the participants related to this finding include the following:

"I learned to do my best, and not be sloppy, not mediocre in whatever I do" (BSA student)

"I love my work so even if I am tired, I maintain a joyful disposition in attending to the needs of the guests in the restaurant during my internship" (BSHRM student)

Table 6. Regression Analysis of the Effects of the RVM Pedagogy as Predictors of the Practice of the Core Values

Effects of the RVM Pedagogy	Std. Err. – of B	Beta	t	p
Active Engagement and Collaboration	.066	.208	2.72**	.007
Deep Understanding and Interrelatedness to Life's Realities	.070	.101	1.28	.201
Values Formation	.073	.063	.955	.341
Participation in Social Transformation	.066	.436	6.29**	.000
Model Summary				
R= .700 R^2 = .490 Adjusted R^2= .481 F= 50.72 p =.000				

As a whole, the pedagogy was found to be helpful in the participants' practice of the core values as shown in Table 6. The model is significant (F=50.72, p=.000). Furthermore, 48.1 percent of the variability in the practice of the core values can be explained by a combination of the four (4) factors, but most importantly, *Participation in Social Transformation* (t=6.29, p= .000), followed by *Active Engagement and Collaboration* (t=2.72, p=.007).   Furthermore, for every unit increase in the perceived effect of the pedagogy on the participants' *Participation in Social Transformation*, there is a corresponding .436 increase in their practice of the core values. This implies that students who are actively engaged in the instructional process and who are committed to social transformation are more likely to practice the school's core values.

This was supported by the qualitative data from the focus group sharing. Two of them shared that they learned discipline; they became respectful; they applied what they learned in specific competencies such as preparing liquidity ratios, calculating the nutrient content in food, and managing their finances. They admitted they became determined to move forward despite financial and emotional difficulties. Other responses include the following:

"I apply what I learned here at home such as mixing drinks. The pedagogy enabled me to serve without complaint" (BSHRM student)

"I became confident in leading the prayer in the bank where I was assigned." (BSBA student)

"I develop compassion. Here, the instructional process does not create anxiety so I can freely express my thoughts" (BSHRM student)

Discussion

Findings reveal that in general, the effects of the pedagogy (especially on enabling them to participate in social transformation and on their active engagement/collaboration in class) were contributory to the practice of faith, service, and excellence. The findings further imply that when students are exposed to pedagogical processes that integrate care for others, being other-oriented, and contributing to the upliftment of people in the community, they spontaneously transfer this learning and develop the passion to embody the values wherever they are.

Such finding is supported by Hahn (2010) which asserted that when students are exposed to social realities coupled with conducive environments, they most likely develop attitudes that promote civic participation. Moreover, they develop the ability to judge what is right, passionately pursue it and act accordingly. The contribution made by the RVM Pedagogy to students' values confirms what Astin, Astin, and Lindholm (2011) found that students' undergraduate experiences are significantly enhanced when qualities such as caring and equanimity are developed throughout their academic career; and facilitating an environment of transparency and consent encourages the development of values (Smith, Vicuña, & Emmanuel, 2015). The findings are also aligned with the thrust of UNESCO (2002) that the development of values has been a major concern to the most education system in different countries of the world.

Conclusion and Recommendations

In a nutshell, the study concludes that the participants' perceived effects of the RVM pedagogy can make a difference in their practice of the school's core values of faith, service, and excellence. This means that active engagement and participation in social transformation are contributory factors to the students' practice of core values. The findings of this study point to the need for teachers to examine their instructional processes to ensure that these are more student-centered so they can more actively engage. Furthermore, group activities or learning tasks that are more engaging, meaningful, and challenges have to be explored. They also need to implement innovative strategies that spur students to be more involved in community service. The study further recommends that school administrators consider revisiting their instructional practices if these align to develop graduates imbued with the school's core values according to the school's philosophy and avowed vision and mission.

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APPLYING MARKOV-BASED FORECASTING IN ENROLMENT PLANNING

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ABSTRACT

The education sector is a multidimensional and complex system, affected by numerous internal and external factors. Institutional planning in such a speculative environment demands appropriate tools, especially when forecasting and modeling the future is necessary. Predictive analytics can help executives to identify the likelihood of future outcomes of their institutions based on past and current data, as well as to consider internal and external influencing factors. Such analyses can utilize several approaches varying from simple statistical techniques, data mining, and predictive modeling tools to advanced machine learning algorithms. Selecting an appropriate yet effective model for two samples of enrolment planning is the goal of the current paper. The Markov Chain is a well-known technique to forecast stochastic time-series data and is used in the current research. The suggested model is a homogenous Markov Chain which is applied to modeling Course-enrolment. Generating the Transitional probability matrix is the core concept of the model. To achieve this, analyzing the historical data to identify all possible valid transitional states is the first essential phase. Calculating transitional probabilities among all states is the second major phase. We have utilized a frequentist approach to achieve the transitional probabilities. The rest is about computing the likelihood of possible future states by implementing different scenarios by way of tweaking the elements of the primary Transitional probability matrix and analyzing the results. In addition to its ability to forecast stochastic processes, another advantage of a homogenous Markov model is its simplicity in implementation.

Keywords: Student headcount prediction, Enrolment projection, Transition probability matrix, Predictive analytics, Homogeneous Markov Chain.

Introduction

International students are a significant cohort in major Australian institutions (DEFAT 2019). Respecting that fact, the quality and quantity growth of institutions in South East Asian countries will finally coincide with significant fluctuation in the demographics of student enrolment in Australian universities. From this will emerge the importance of predictive analyses for strategic and financial planning. This paper introduces a Markov-based model for forecasting institutional enrolment based on historical time-series data.

The result of recording sequential observations in a time sequence is called "*time series*". With this definition, a significant number of data sets can be categorized as time series and is the reason why analyzing time series data is important in a wide variety of disciplines such as engineering, economics, and business. The number of sick-leave requests in each month, the number of bottles of wine sold in a store (over any period), or the number of student enrolments in each semester, regardless of their differences in the context of data, are similar in this concept: all are regularly recordable in a time series.

Forecasting or estimating the future state is an integral part of time series analyses (Box & Ljung 2015). The observations in equal periods or equispaced intervals generate a sequence of discrete data in a balanced time interval: $T-3$, $T-2$, $T-1$ and T (current time). This characteristic brings the concept of predictability for the time $T+1, T+2$, etc. and it can be considered as an opportunity for more accurate planning and more effective strategies which can be crucial.

Mathematical modeling of physical phenomena is a well-established approach to study the dynamics of a system. If the mathematical model can calculate the exact components of the phenomenon and enable us to predict the future accurately, it is known as a deterministic model. However, the natural phenomena are not deterministic and are mostly under the influence of different external parameters and even unknown factors which can affect the accuracy of the model in the calculation of the component. Such models are known as probabilistic models or stochastic processes. Most behaviors observed in time series are the result of these stochastic models. In such time series, the current moment, including all the states of the internal component as well as the external parameters, plays the most important role in calculating the conditional probability distribution of the next events which leads us to predict the next step.
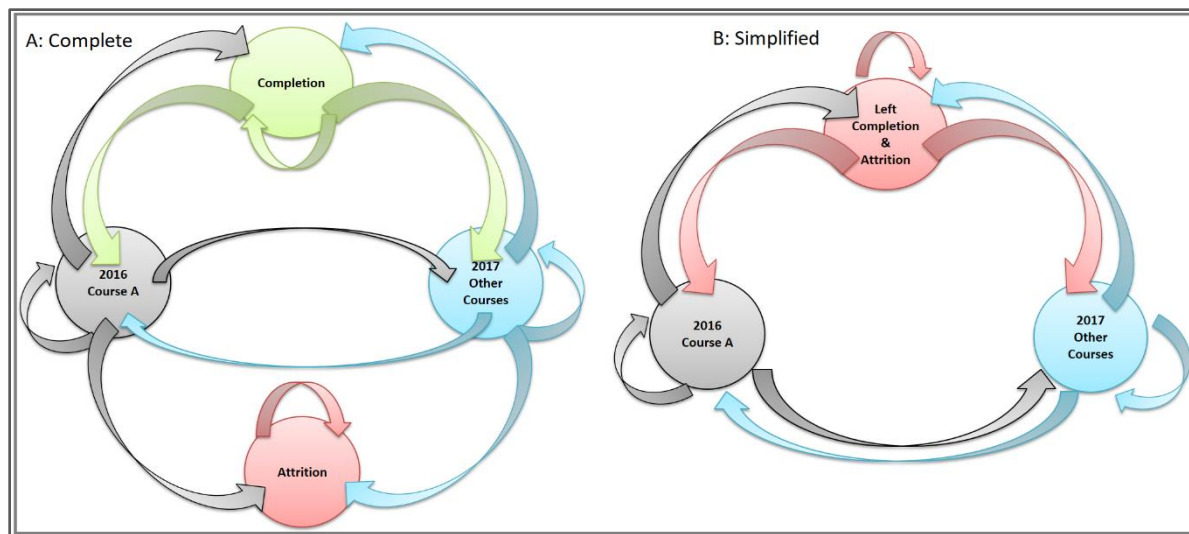
Figure 1: Enrolment states for a sample course: A from 2016 to 2017.

A: All the possible transitions and states. B: Simplified and practical version of the same transitions

In some time series, the conditional probability distribution of the next event is static and does not change over time. This statistical equilibrium, which can be distinguished by constant mean and variance, is the characteristic of stationary stochastic models (Tsay 2005). However, in some systems, where the dynamic of the system is high, and we can detect a moving average in the data set, they are categorized as non-stationary stochastic processes. Some models are involved in both stationary and non-stationary processes in real-world problems.

The Markov Chain is a series of discrete (finite and countable) values generated by the Markov process. This process is a stochastic process where the current state of the system is the only factor to predict the next state (Meyn, 2012). In other words, to generate the next state, past states are irrelevant if the current state is available. Metaphorically, we can label the Markov process as a "spiritual" approach in data analytics because, like most spirituality methods, the only important moment is the current moment and there is no recognizable pattern in the trend of events (stochasticity), as human life.

There are different types of Markov Chain. In a discrete-time Markov Chain, the state of the system changes in discrete time intervals. Most stochastic time series can be considered as a discrete-time Markov Chain (Feinberg & Schwartz, 2012). In such a sequence of random variables, each variable X_t in the chain, in time $t \geq 0$, the next variable in the sequence X_{t+1}, can take different values based on the conditional probability distribution of the current state of the data in the chain: $P(X_{t+1} | X_t)$. If these conditional probabilities remain the same for each sequence, the chain is known as a stationary (homogeneous) Markov Chain (Meyn, 2012).

In a continuous-time Markov Chain, the system condition can change in a continuous-time interval and the conditional probability of the next state is not relevant to the current state. However, we assume that the average time interval among events is known and follows a pattern such as a Poisson Process (Anderson, 2012).

The Markov Decision Process (MDP) is another kind of Markov Chain in which an agent can affect the conditional probability distribution of the next event. The focus of the current paper is using discrete-time homogeneous Markov Chain in institutional research.

Literature review

As explained earlier, unlike the deterministic approaches, the essence of the Markov Chain is randomness. Enrolment, as an institutional example, is a random process because we cannot deterministically say that 100% of the transition of a sample course, is reenrolling to the same course. There is always a probability of leakage, re-enrolment in other courses, or leaving. The same concept is applicable for the course intake. Such stochasticity in institutional events makes Markovian-based methods as appropriate tools for institutional applications and grabs the attention of IR researchers.

The University of California is one of the earliest institutions that utilized the Markov Chain for enrolment management (Oliver, 1968). In this research, the grade levels or class statuses construct the probability matrix and Oliver assumed that progress from a grade level to the same or another level is a random process and appropriate to utilize a Markov-based method.

Utilizing Markov Chain for investigating enrolment flow in higher classification levels (freshman, sophomore, junior and senior) was implemented at Stanford University (Hopkins and Massy, 1981). They considered three states for each student progressing to the next iteration and construct their transition matrix based on these states: 1- Number of students that stay in the same class, 2- Number of students that progress to the next class, and 3- Number of students that leave the institution, including attrition or graduates.

Yearly enrolment transition Borden and Delphin (1998) investigated the progression for each class level by their yearly transition matrix. They found that using the Markov Chain model is accurate enough to measure the student progress rate without relying on 6-year graduation rate models which need longer time lags. The current research is like Borden and Delphin (1998) for using yearly transition states. While they distinguished between absorbing states (drop-out or graduation) from non-absorbing states (class levels) in their research, they have been considered

together as non-absorbing states in the current research. In Markov Chain, non-

A	To Year X+1			
From Year X	To Course A	To Other Courses	To Completions	To Attritions
Course A	$A_{1,1}$	$A_{1,2}$	$A_{1,3}$	$A_{1,4}$
Other Courses	$A_{2,1}$	$A_{2,2}$	$A_{2,3}$	$A_{2,4}$
Completions	$A_{3,1}$	$A_{3,2}$	$A_{3,3}$	$A_{3,4}$
Attritions	$A_{4,1}$	$A_{4,2}$	$A_{4,3}$	$A_{4,4}$

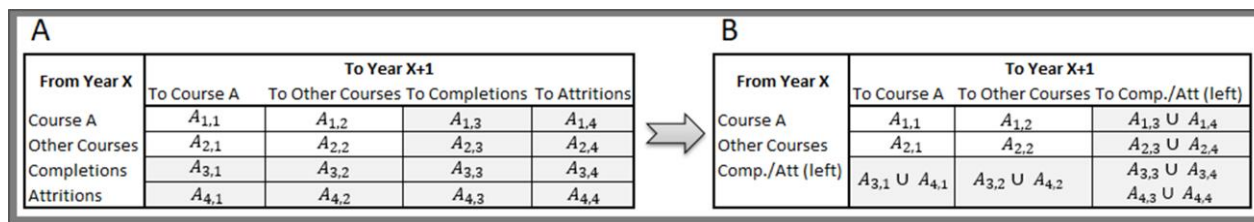| B	To Year X+1		
From Year X	To Course A	To Other Courses	To Comp./Att (left)
Course A	$A_{1,1}$	$A_{1,2}$	$A_{1,3} \cup A_{1,4}$
Other Courses	$A_{2,1}$	$A_{2,2}$	$A_{2,3} \cup A_{2,4}$
Comp./Att (left)	$A_{3,1} \cup A_{4,1}$	$A_{3,2} \cup A_{4,2}$	$A_{3,3} \cup A_{3,4}$ $A_{4,3} \cup A_{4,4}$

Figure 2: Actual transition matrix for a sample Course-A.

A. Comprehensive transitional states. B. Simplified and practical version of the Actual transition matrix. The two columns: Completions and Attritions are merged.

absorbing states allow transitions to other states but absorbing states do not.

A narrower application of the Markov Chain is implemented to investigate how students in English Language Institutes (ELI) progress through STEM (Science, Technology, Engineering, and Mathematics) programs (Gagne 2015). In this research, transitional states include non-absorbing and adsorbing states (students who left the institute, those who graduated in STEM programs, and those who graduated in non-STEM programs) together. Their research revealed that the progress of ELI students in STEM programs is higher than non-ELI students.

Another application of Markov-based models is in graduation time (Silver, 2016). He assumed that the future probability for the transition from one state, absorbing or non-absorbing (class level), to another state, depends on the present status only and there is no influence from the historical trend involved in this transition.

Recently Austin Peay State University used Markov Chain for enrolment projection (Gandy and Crosby, 2019). They used student credit hours (SCH) to investigate the student flow from one academic term to the next. The objective of their research is to detect the entering and leakage points in the enrolment process. Their transition matrix includes 24 states for 4 classes and 4 SCH groups and they investigated the progress from each SCH group to another for all major classes (freshman, sophomore, junior and senior). Their finding helps administrators to identify enrolment trend and anomalies.

As mentioned, enrolment management is the most popular application for Markov Chain models. The states of the models utilize various student classifications. In the following sections, the big picture of the proposed Markov model in enrolment planning is introduced and then two different applications of enrolment planning are introduced.

A

Year X to X+1 Actual	To Course A	To Other Courses	Left
Course A	$\frac{A_{1,1}}{A_1}$	$\frac{A_{1,2}}{A_1}$	$\frac{A_{1,3}}{A_1}$
Other Courses	$\frac{A_{2,1}}{A_2}$	$\frac{A_{2,2}}{A_2}$	$\frac{A_{2,3}}{A_2}$
Left	$\frac{A_{3,1}}{A_3}$	$\frac{A_{3,2}}{A_3}$	$\frac{A_{3,3}}{A_3}$

$$A_i = \sum_{j=1}^{3} A_{i,j}$$

$\sum = 1\ (100\%)$
$\sum = 1\ (100\%)$
$\sum = 1\ (100\%)$

Year X to X+1	To Same Course	To Other Courses	To Left
Course A	$T_{1,1} = 65.3\%$	$T_{1,2} = 11.3\%$	$T_{1,3} = 23.4\%$
Other Courses	$T_{2,1} = 1.6\%$	$T_{2,2} = 63.6\%$	$T_{2,3} = 34.8\%$
Left	$T_{3,1} = 1.6\%$	$T_{3,2} = 19.7\%$	$T_{3,3} = 78.7\%$

B 2

To Same	To Other	Left
$T_{1,1}$	$T_{1,2}$	$T_{1,3}$
$T_{2,1}$	$T_{2,2}$	$T_{2,3}$
$T_{3,1}$	$T_{3,2}$	$T_{3,3}$

Year X to X+2	To Same Course	To Other Courses	To Left
Same Course	53.0%	15.6%	31.4%
Other Course	2.2%	53.9%	43.9%
Left	2.2%	24.8%	73.0%

C 3

To Same	To Other	Left
$T_{1,1}$	$T_{1,2}$	$T_{1,3}$
$T_{2,1}$	$T_{2,2}$	$T_{2,3}$
$T_{3,1}$	$T_{3,2}$	$T_{3,3}$

Year X to X+3	To Same Course	To Other Courses	To Left
Same Course	43.2%	19.2%	37.6%
Other Course	2.6%	47.4%	49.9%
Left	2.7%	28.2%	69.1%

D

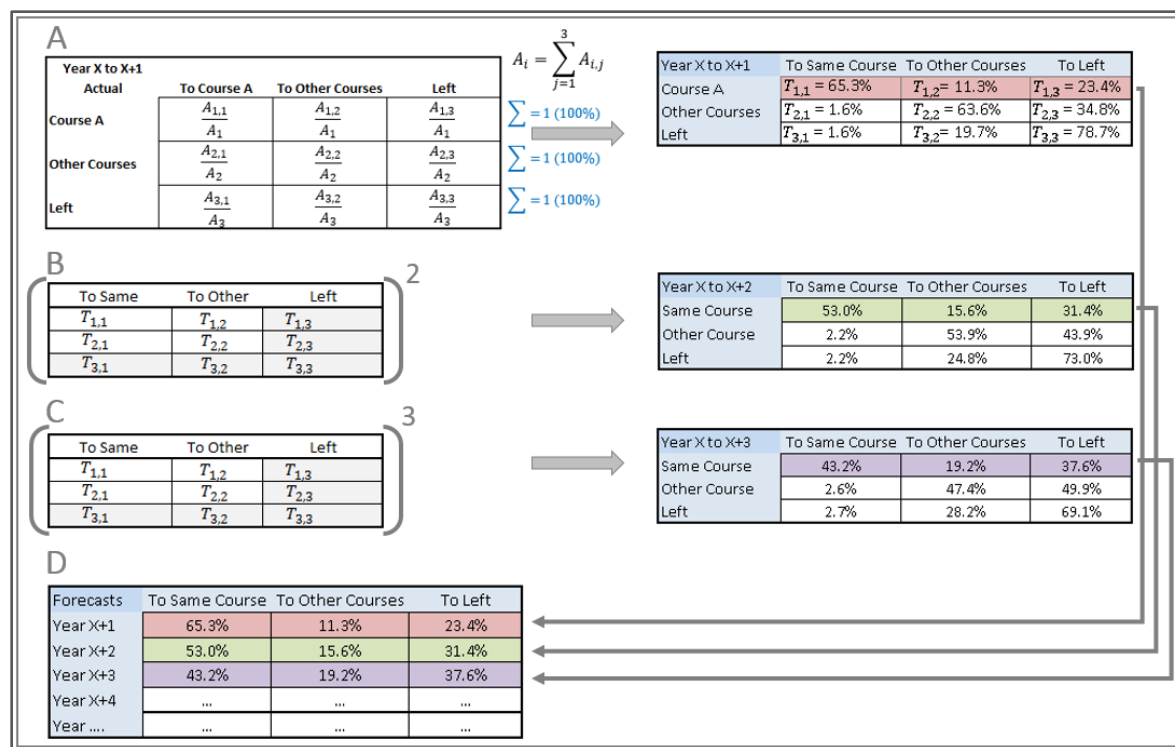| Forecasts	To Same Course	To Other Courses	To Left
Year X+1	65.3%	11.3%	23.4%
Year X+2	53.0%	15.6%	31.4%
Year X+3	43.2%	19.2%	37.6%
Year X+4	...	...	...
Year	...	...	...

Figure 3: Markov process diagram.

A: Calculating the main Transitional probability matrix from the Actual transition matrix. B: Square of the probability matrix to forecast the 2nd iteration probabilities and C: Cube of probability matrix to forecast the 3rd iteration probabilities. D: Extract the first row of each iteration matrix to construct the final forecasting table.

Enrolment planning utilizing discrete-time Markov model

Mission and vision are the two ends of the analytics spectrum in the institutions which finally develop the strategic plan (Hinton, 2012).

Conventional planning is generally based on what the members of the institutional community believe about the institution. However, at all levels of institutional planning - Strategic, Operational, and Tactical - those beliefs are supported by descriptive data analyses of available historical data (Hinton, 2012). But the question is: what is the role of predictive data analytics in institutional planning? And how can it be utilized for more effective strategic and operational planning? (Calderon & Webber, 2015). Hence the sum of each row should be 1 (100%) because all the possible transitions should be considered in columns and rows. However, this rule is not valid for the column summation.

An Institutional Strategic Plan should provide information about enrolment and student population objectives as well as the impact of changes in the enrolment flow. Hence, any kind of data related to enrolment, which is a periodic event, plays a significant role in institutional planning. Historical enrolment data can be represented as a time series that contains useful information. If it is modeled by an appropriate method to forecast the future, then it would be able to play a significant role in planning the future of institutions.

Enrolment can be considered as a discrete-time stochastic event in which the conditions of the present states if they are not the only effective factor for the next enrolment states, are the most important. Given these assumptions, and enrolment is an event that can be modeled by a discrete-time Markov Chain, and consequently, the future states can be forecast based on the current situation. To implement enrolment planning by predictive analytics based on the Markov Chain, we need to decide three important factors:

- Identifying the transitional states;
- Investigating the historical data for availability of the identified states, and
- Nominating the final transitional states.

The granularity level of the transitions is important. A more detailed transition matrix may provide higher accuracy, but in real-world applications, the availability of historical data at the most detailed granular level may not be possible, and this limitation can impose some constraints on the predictive models. This phenomenon is depicted in Figures 1.A & 1.B. In other words, the accuracy of the model depends on the tradeoff between the granularity of the transitional states and the availability of the data.
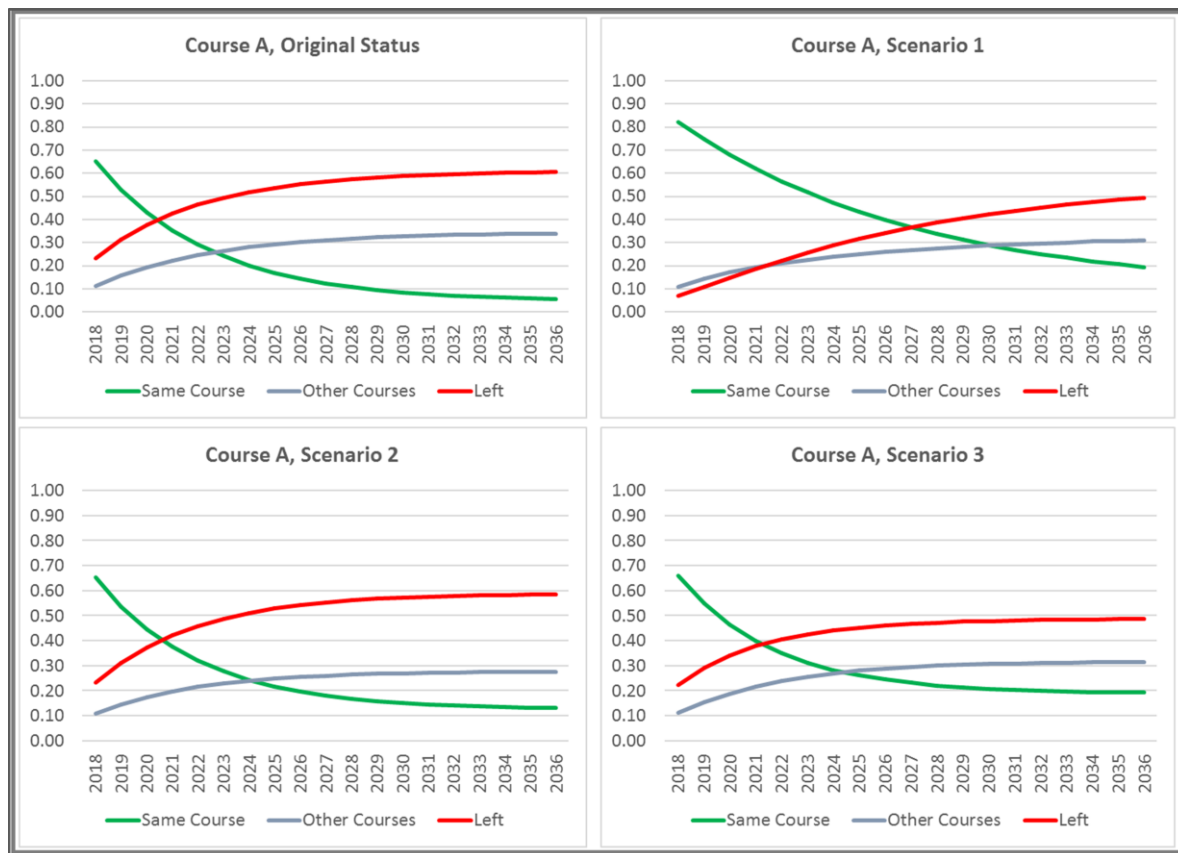
Figure 4: Estimating 20 years of transitional probabilities of enrolment trends.

The original trends are compared with 3 different scenarios. The more
changes depict a higher scenario impact.

In the following sections, two samples of institutional applications in enrolment
planning are provided. Before considering the details of the two applications, it is
necessary to define some terms to identify the transitional states in this context.
From the enrolment point of view, a student can possess one of the following four
states regarding a sample course, in an academic year:

- *Commencing*: The state of those students who are enrolling in a course for the
  first time in the institution;
- *Returning*: The state of those students who are already enrolled and are
  returning to the same course to take the rest of the needed subjects;
- *Completion*: The state of those students who have passed all the subjects and
  completed the course, or
- *Attrition*: The state of those students who have dropped the course before
  completion.

The total possible transitions are shown in Figure 1.A. These four states can cover all the transitional states, by a 4×4 matrix which covers all the possible distributions, is known as an *Actual transition matrix* and is depicted in Figures 2.A. and 2.B. The elements in the matrix represent the actual headcounts to transit from one state, represented in the row header, to the other states, represented in the column headers, i.e. $A_{1,1}$ represents the actual headcount value that transitions from Course-A in Year X to the same course in the following year. This value will generate the transitional probability $T_{1,1}$ which is represented in Figure 3.B.

Detecting the elements in the Actual transition matrix and computing the probabilities of the transitions *(Probability transition matrix)* is the core calculation of the Markov-based models. In some cases, the ideal transition matrix which covers all the possibilities, either cannot be extracted or is meaningless from a probability distribution point of view.

In such a situation, simplifying the matrix based on the potentials of the real-world data warehouse or realistic probabilities is necessary. Figures 1.B and 2.B represent the realistic transitions and related Actual transition matrix respectively. As can be seen, the two states *Completions* and *Attritions* are merged and labeled *Left*. The reason for this simplification, caused by the difficulties in extracting the required data from the available data warehouse, is the lack of information for the *Attrition* state in the last row of the Actual transition matrix. Any student, who drops a course before completing it, and does not enroll in any other courses, will be categorized in the *Attrition* state. Hence the transition from Attrition to the other states (the last row of the Actual transition matrix depicted in Figure 2.A), would be zero, except for the last column (Transition from *Attrition* to *Attrition*). This means that the probability of transition from students who had dropped their courses in Year X to *Attrition* state in the next year would be 100%, which does not convey any information to the model.
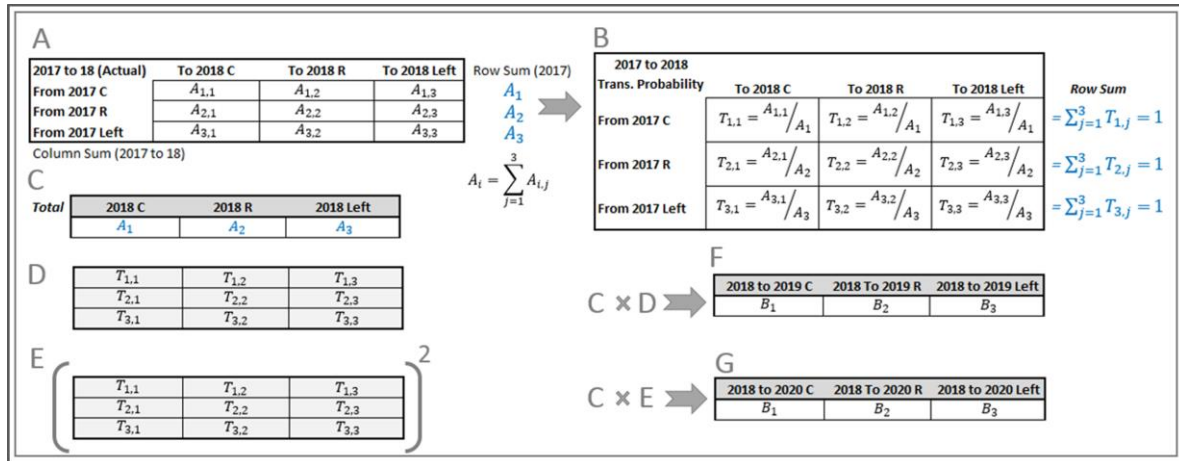
Figure 5: Actual transition matrix (2017 to 2018) (A) and its Transitional probability matrix (B). The multiplication of the actual 2018 data (C) as initial vector to the Transitional probability matrix and its square generates the 1st and the 2nd iteration headcounts: 2018 to 2019 (F) and to 2018 to 2020 (G).

The simplified version is used in this experiment. In this practical version, the two states, *Completions,* and *Attritions* are merged and labeled *Left*. The results would be a 3×3 Actual transition matrix shown in Figure 2.B and all the elements can be computed based on the available data.

The following two sections are dedicated to the two planning applications. The enrolment system in both applications is modeled by the homogenous Markov Chain. The subjective in both applications is forecasting enrolment in different planning scenarios and comparing the impacts by statistical significance test.

The first application is trend analysis of three proposed decisions in improving course enrolment strategy and how to detect the most effective method. The trend of changes of transitional probabilities resulting in different scenarios is compared to detect the most significant decision.

The second application is a projection of enrolment headcount to forecast the impact of shrinkage in international student enrolment. Unlike the first application, instead of the conditional probability analysis, the actual headcount is used to forecast the enrolment in different scenarios, compare the results and find the critical point.

Application A: Measuring decision impact on course enrolment planning

In course enrolment planning, a variety of possibilities can be considered in an action plan. However, which one has the maximum impact on the enrolment trend, regardless of the effectiveness of the results? Answering this question is the objective of this section.

To become familiar with the decision impact analyses by a Markov model, three sample scenarios among different decision possibilities are selected and the impact of each approach is compared with the original enrolment trend based on the actual historical data as the basis of the forecasting process. The possible transitional states for a sample Course-A are as follows.

- *Commencing Course-A:* The number of new students who enrolled in Course-A for the first year.
- *Returning to Course-A:* The number of students who re-enroll in the same course in the following year.
- *Returning to other courses:* The number of students who re-enroll but in other courses in the following year.
- *Leaving institution:* The number of students who leave the institution, either by completing or dropping the course
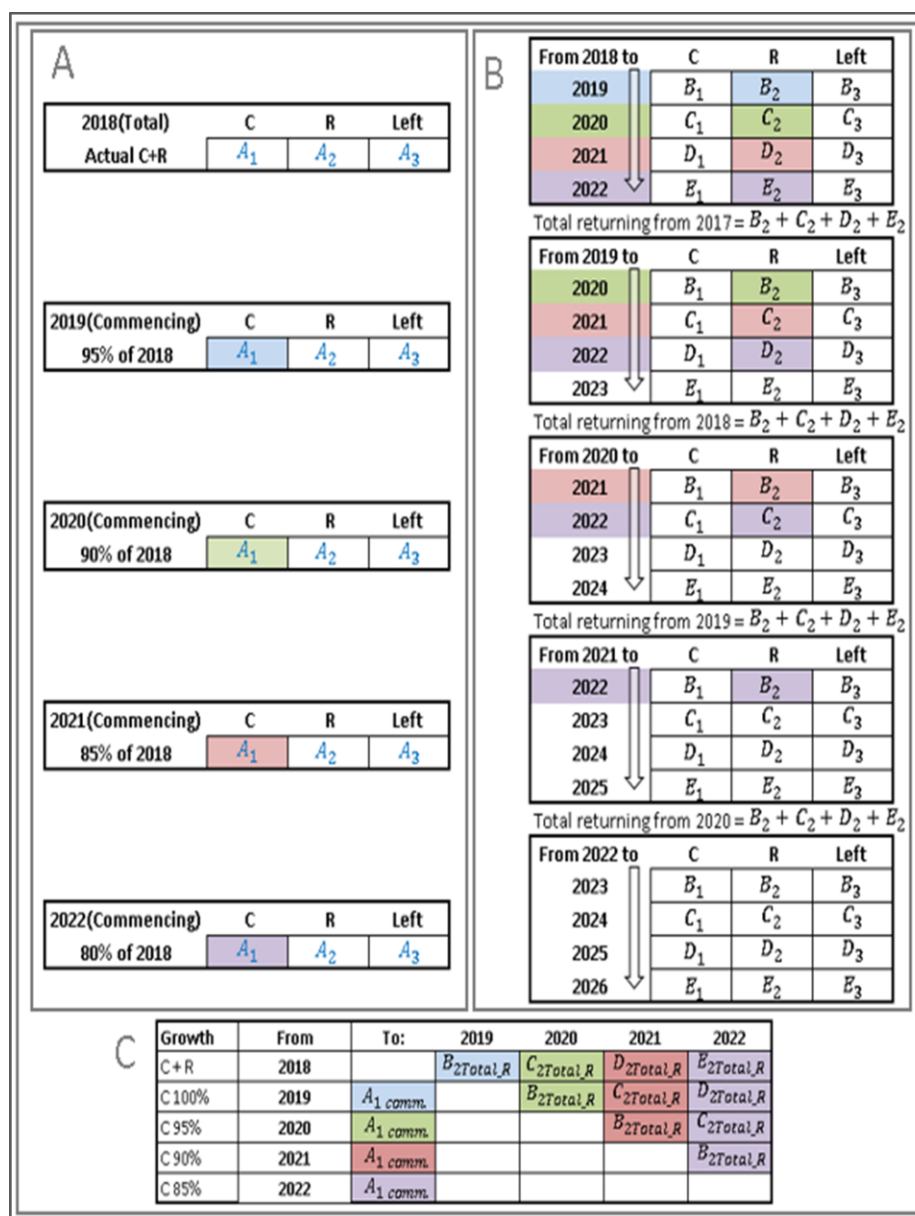
Figure 6: The process of the 1st Scenario. Section (A) shows the initial vector (actual and estimate) for each forecasting period. (B) focuses on the Returning

Based on the described transitional possibilities a set of selected sample scenarios is chosen. The original state and three selected scenarios to improve the course enrolment trend are defined as follows.

- *Original State:* The actual values transitional state based on the original Actual transition matrix elements.
- *Scenario 1:* Increase re-enrolment from the sample Course-A into the same course ($A_{1,1}$), and decrease the attrition ($A_{1,4}$),
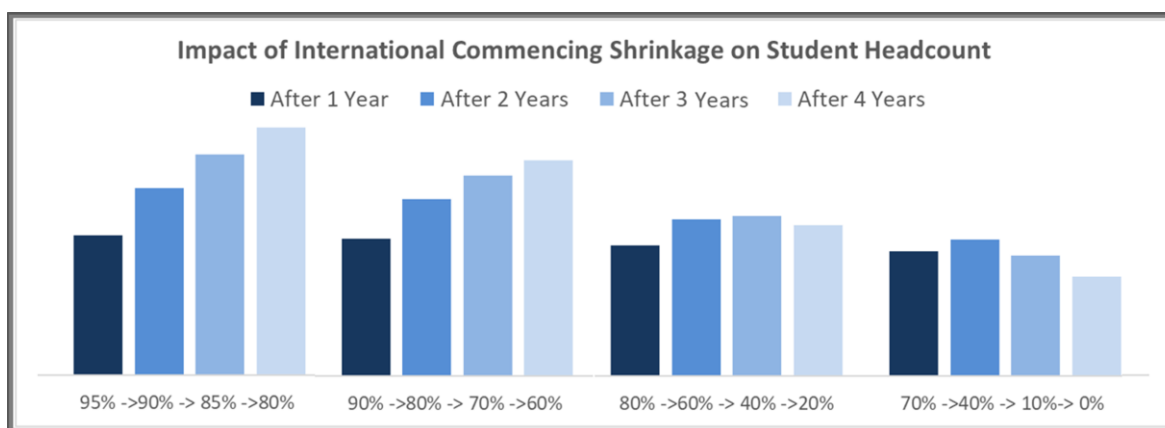- *Scenario 2:* Increase re-enrolment from the other courses into Course-A

Figure 7: Commencing shrinkage impact on total headcount.

Bar charts showing the impact of shrinkage of commencing international students to the total student headcount in four consecutive years.

    $(A_{2,1})$, and decrease the attrition $(A_{1,4})$.

- *Scenario 3:* Increase re-enrolment from the completion of other courses into Course-A $(A_{3,1})$ and decrease the attrition $(A_{4,4})$.

As explained earlier, there are numerous possibilities but experimenting on a limited version of the model would be adequate to observe the performance of the method.

The process of calculating the main Transitional probability matrix and predicting the next iterations (enrolment periods or years in this example) is simple. This process is depicted in Figure 3. Based on the homogenous Markov Chain, multiplying the Transitional probability matrix to itself, yielding the Transitional probability matrix of the next periods. Analyzing the probabilities in series of transitional matrices of different periods would be enough for trend analysis. However, multiplying the Transitional probability matrix of each period to the basic actual vector generates the forecasted headcount for that period. Simply put, the square and cube of the Transitional probability matrix provides the forecast for the 2nd and the 3rd year probability matrices (Figures 3.B and 3.C), and so on. The objective of the current experiment is to measure the impact on enrolment planning of a sample Course-A. The transitional probabilities from this course to the other three states are available in the first row of the forecasting probability matrix in each period which is highlighted in Figure 3. Figure 3.D shows the final table which contains all the projected transitional probabilities relating to the enrolments of Course-A.

Each scenario and the original state generate four transition matrices. The next step is applying the Markov process, mentioned above, to the four transition matrices, forecast the n following years, and comparing the results stored in the final forecasting tables (Figure 3.D).

One of the characteristics of a homogenous Markov model is reaching a state that the changes in the following forecast periods are not significant. This state is known as the steady-state. To depict this phenomenon, 20 consecutive periods of each scenario, as well as the original state, are shown in Figure 4. As can be seen, the rate of change will gradually decrease after a couple of periods in all three enrolment states.

To investigate the impact of different scenarios, we should calculate how different they are from the original state. Figure 4 shows a significant change in the shape of the graphs (maximum impact) as can be seen in Scenario 1. With the assumption of normal distribution of enrolment data, a statistical significance test (t-test) is utilized to measure the impact. The *P-values*, shown in Table 1, are calculated over the first five forecasting periods (years) which is a reasonable period for a Bachelor's Degree course. The smaller *P-value* is interpreted as the higher impact. If the *P-value* is less than 0.05, the impact is considered statistically significant and, in this application, belongs to the first scenario.

Application B: Commencing shrinkage impact on student headcount

Commencing enrolments in each year has a long-term impact on the institution's population over the next couple of years. Regarding recent changes in the population of commencing student cohorts, utilizing a model to forecast the student

TABLE 1: MEASURING DECISION IMPACT BY COMPARING THE *P-VALUES*

Decisions	Scenario 1	Scenario 2	Scenario 3
t-test (P-value)	*0.011*	*0.817*	*0.635*

The significant decision impact belongs to Scenario 1.

headcount in the following years is of interest to institutional strategic planners.

The objective of this section is to measure the impact of international student shrinkage on the university population in four years. Unlike the previous application, the major transitional possibilities in this application are not focused on a specific course. As the objective is to investigate the population of a cohort (international students), the major transitional states have been defined as follows.

- *Commencing students:* The headcount of newly-arrived international students

in each year,

- *Returning students:* The headcount of international students who re-enroll in the institution to complete their courses.
- *Leaving students:* The number of international students who leave the institution, having either completed or dropped their courses.

Similar to the previous application, a limited set of possible scenarios have been selected to investigate the commencing shrinkage impact, as follows

- *Base-year State:* The actual values transitional state of a year as base-year, considered as 100% of the cohort enrolment.
- *Scenario 1:* Commencing shrinkage with the rate of 5% in each of the following years.
- *Scenario 2:* Commencing shrinkage with the rate of 10% in each of the following years,
- *Scenario 3:* Commencing shrinkage with the rate of 20% in each of the following years.
- *Scenario 4:* Commencing shrinkage with the rate of 30% in each of the following years.

The above scenarios and the base-year generate five transition matrices that are the core for a homogeneous Markov Chain to forecast the next four years for each scenario. The enrolment year 2018 was selected as the actual base year (considering actual values for *C* and *R* and *Left* students are available at the end of 2019). Two transition matrices were extracted based on the latest available actual historical data (from 2017 to 2018), for total and for commencing students. The transition probability of the three elements: *Commencing, Returning,* and *Leaving* students for the following four years are forecasted based on the first order, square, cube, and the higher power of the Transitional probability matrix (powers 1 to 4). This process partially is depicted in Figure 5 for the 1st and the 2nd year forecast. Multiply the base-year actual values as the initial vector (2018) to the probability matrix provides the year 2018 to 2019 (Figure 5.F). For generating the headcount of the year X+2 (Figure 5.G) the square of the probability matrix is needed (Figure 5.E). The same process is applied for the 3rd and the 4th period after the base year.

The next step is to forecast the total number of students by headcount in each of the four following years after 2018 as the base year. A forecasting process was implemented for each shrinkage scenario to enable a comparison of the effects. This process is depicted in Figure 6 and depicts Scenario 1: 5% shrinkage in the commencing headcount of international students each year.

It is important to consider that the estimated headcount in each year is the sum of *Commencing* students in that year and the *Returning* students of the previous years. This process is shown by highlighted items in similar colors in Figure 6.

The results of the four scenarios can be seen in Figure 7. As can be observed, the increasing trend starts to decrease when the commencing international students reach 60% of the base-year which can be considered as an alarm point. This observation can be investigated and verified by the t-test *P-value* analysis shown in Table 2. The table also shows significant changes to the total headcount when the commencing headcount of international students reaches 60% of the base-year commencing headcount with the highlighted *P-values* in red in Table 2.

TABLE 2: MEASURING SHRINKAGE IMPACT BY COMPARING THE P-VALUES

	Scenario 1		Scenario 2		Scenario 3		Scenario 4	
	Shrinkage	Pvalue	Shrinkage	Pvalue	Shrinkage	Pvalue	Shrinkage	Pvalue
1st	*95%*	*0.808*	*90%*	*0.619*	*80%*	*0.307*	*70%*	*0.121*
2nd	*90%*	*0.619*	*80%*	*0.307*	*60%*	*0.040*	*40%*	*0.003*
3rd	*85%*	*0.449*	*70%*	*0.121*	*40%*	*0.003*	*10%*	*0.000*
4th	*80%*	*0.307*	*60%*	*0.040*	*20%*	*0.000*	*0%*	*0.000*

Accuracy analysis

Accuracy analysis is a *delicate* part of predictive analysis. The word *delicate* is used because accuracy can be measured from different aspects and they can show contradictory results. In the current research, an approach is performed on two categories of datasets. The approach simply extracts the transition of actual commencing headcounts within the base year (2012-13) and the following five years and compares it with the estimated headcounts for the same period. Then the accuracy is measured based on the sum of the all differences between the two vectors (actual and estimate) as the numerator, and the total actual vector as the denominator. The model was applied to two subcategories of commencing international students:

- All levels of tertiary education (Sub degrees, Postgrad, Undergrad, and Research), and
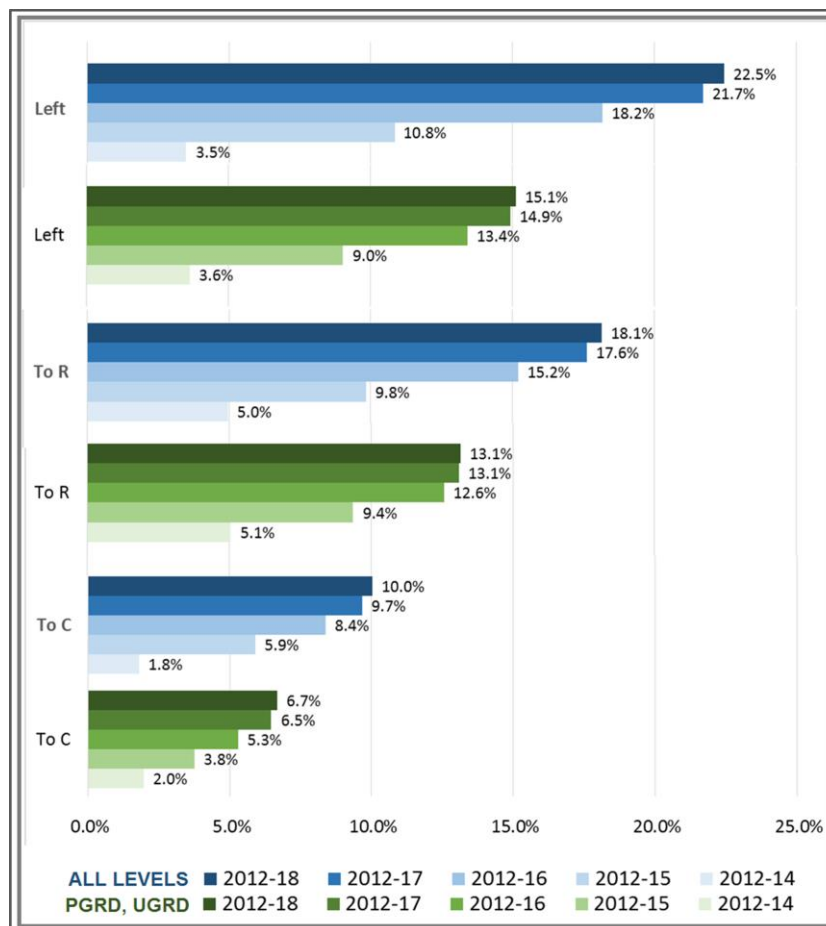- Postgraduate and Undergraduate only.

Figure 8: Accuracy rates for two categories.

Blue: All levels of tertiary education, Green: Postgraduate and undergraduate only.

The second category is a subcategory of the first dataset and includes a less diverse group of courses, compared to the highly diverse courses in the first group. The similarities among the courses in the second category were investigated based on the Pearson and Cosine similarity (Rouhi & Calderon, 2017) (Rouhi, 2018). It is designed in this way to investigate if there is any correlation between the diversity among the sub-groups and the accuracy of the predictive model.

The results show that greater accuracy can be seen in the less diverse group of courses. A possible reason for this observation is the correlation of the transition matrix rows and columns *(i.e. Commencing, Returning, Completion,* and *Attrition)* with the subcategories of data in the main dataset *(i.e. Undergraduate, Postgraduate)*. The transitional states among postgraduate and undergraduate courses are more similar to each other than to the other group which includes all levels.

Figure 8 depicts the accuracy values of the two categories for five years. The focus of the chart is on transitions of the commencing international students from the base-year 2012-13, into the three possible states in the following, 2nd, 3rd, 4th and 5th iterations (2012-14 to 2012-18) which are estimated by a homogenous Markov model based on the probability transitional matrix of the base-year (2012-14). Regardless of the more accurate results in the second category, a similar pattern can be seen in both categories. The accuracy is higher in the 1st year estimation compared to the 5th year estimation, and the transitions from commencing to commencing are higher than the transition from commencing to the other states.

Recommendation and implication for future study

This study was conducted on two different scales:

- Course level including all the cohorts (domestic and international students), and
- Total enrolments including all the courses (international students only).

Further investigation conducted by the RMIT/Analytics and Insight team, revealed that the accuracy of homogeneous Markovian-based forecasting depends on the dynamic of the system. The more homogenous behavior of the population in the consecutive years yields more accurate results for homogeneous Markov Chain. Our accuracy analysis revealed that when the international student population was segregated into two major groups: Research and Class-based (Postgraduate and Undergraduates), the accuracy of the model increased, because the dynamic of transitional probability in Research-based courses is not like the Class-based courses.

A Non-homogeneous Markov Chain is an alternate model which is under investigation by RMIT/Analytics and Insight team. Unlike the homogenous model, non-homogeneous models need historical data to extract the most appropriate transitional probabilities for each period. The primary analysis shows non-homogeneous can provide more accurate results for course enrollment forecasts. The reason is rooted in the dynamic of change in sequential periods. The transitional probabilities from the first year to the second and from the first year to the third (and subsequent) fluctuate significantly. Such a dynamic is also related to the length of courses.

Some technical debates in our team encouraged the author to make a technical recommendation about the method for matrix multiplication. Matrix multiplication plays an important role in calculating Markov Chain. Multiplying transition matrices to provide the next iteration transition matrices are always involved with $n \times n$ matrix multiplications. However, in estimating the headcounts we generally need to

multiply an initial vector to the $n \times n$ Transitional probability matrix. The conventional approach considers an $1 \times n$ vector as the initial vector. During the current study, the author noticed that the conventional homogeneous approach can be substituted by multiplying an $n \times n$ matrix of actual values (the source of the first Transitional probability matrix) as the initial matrix to an $n \times n$ Transitional probability matrix. The result of the second approach is an $n \times n$ forecasted value that the sum of the column would be the same as the results of the conventional method ($1 \times n$ initial vector to the $n \times n$ Transitional probability matrix). Although the second approach is more complicated, it provides more details in the $n \times n$ result matrix that may be useful in some applications. However, the current study experiments both approaches and provides the same results. Thus, for simplicity, we explained and demonstrated the conventional approach in the figures. However, the applicability of this approach for the Non-homogeneous model is under investigation.

The last recommendation is about the accuracy analysis method. Since comparing actual and estimated vectors are involved in measuring the accuracy, the conventional approaches consider all the vector elements to provide a holistic error measure similar to the one that used in this study (some of the deviation of all the forecasting vector elements with the historical actual values) or the Mean Square Errors (MSE and RMSE) (NCVER 2016, Mark and Karmel 2010). However, further investigation by our team reveals that the sum of the values is fixed in the estimated vectors; hence the forecasted values are interdependent to each other, and increasing one will affect the other figures in the vector. In such a situation, selecting the maximum error values between the two vectors can be considered as an appropriate representative of the total vector deviation. Compared to the previous method, this approach prevents evaluation of the error and enables us to provide a lower and more realistic error rate.

Conclusion

International students provide a significant cohort among Australian institutions. The quality and quantity growth of South East Asian institutions can cause significant fluctuations in the student demographics in Australian universities. In this situation, robust strategic planning, by utilizing advanced predictive analytical techniques, contrasted with conventional approaches, can provide not only a more realistic organizational vision but also more accurate operational and tactical objectives.

The availability of rich time-series data in institutional data warehouses provides a foundation for a wide range of tools and techniques for predictive analytics. In this paper, a classical artificial intelligence tool, the Markov Chain, is introduced to

estimate the next state based on the available current data. The core concept of Markov-based models lies in the following items:

- Distinguishing the most appropriate *Transitional states* of the current system,
- Extracting *Actual transition matrix* elements from the latest available historical data, and
- Computing the *Transitional probability matrix* which represents the probability distributions among the states.

A homogenous Markov Chain, simply by computing 2nd, $3^{rd,}$ and higher powers of the probability matrix, provides the estimation of the 2nd, $3^{rd,}$ and later periods of the system. In this research, a Markov model is utilized for two applications involved in enrolment planning. The first application shows how we can measure and compare the enrolment planning scenarios. The second application is more complicated and shows how to estimate the impact of international commencing enrolments shrinkage over total student headcount in the next four years. The significance of the impact of different scenarios has been measured by t-test. An accuracy analysis is also provided based on the actual historical data compared to the estimated values provided by the model. The results show the accuracy of the model will decrease when estimating longer periods. However, breaking down the large datasets into cohorts with more homogenous patterns, can reduce the diversity in the data and improve accuracy.

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