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

1. Significance in contributing new knowledge
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Editorial

It was with great regret that Professor Nirwan who had helmed the JIRSEA as the second Editor for many years announced his retirement and thus passed on the heavy responsibility of my editorial of this JIRSEA Issue: Vol. 16 No. 1 May/June 2018.

This issue covers diverse topics ranging from wellness in the workplace and the practice of the workplace core values and the degree of organizational commitment of teachers in the Philippines. These two studies found significant relationship and their importance to the functioning of the staff engagement.

From Thailand, the two main papers looked at the EFL and English Language teaching using line applications and the effect of group-work and learning strategies by EFL students with different cognitive styles. Both of these papers highlighted that group work and the use of technology can support and close gaps in learning of languages.

At a higher level of administration of university, a Vietnamese case study identified the need of quality implementation as a key solution needed to improve on overall administration of a national university.

Three papers in three different countries studied the undergraduates' relationships among sleep quality, grit personality and academic performance among undergraduates and freshmen's attitudes and learning preferences and teaching styles on the mental perception to intermediate education stage. These three papers demonstrated that understanding what and how the undergraduate students learn and cope, their preferences and the teaching styles with can affect their performance.

This issue rounded up with the development and testing of a measure of Lecturers' Teaching Practices through the Raasch Model. The Key Synopsis of the papers are as follows:

- **Mostajo, Rasing and Flores** studied Wellness and engagement in the workplace in "A glimpse of the wellness and engagement of administrators from La Salle schools in the Philippines". Results revealed a significant relationship between wellness and engagement of the participants.

- **Madrigal, Oracion and Temporosa of *University of Negros Occidental-Recoletos, Bacolod City*,** researched into practice of the workplace core values and the degree of organizational commitment of teachers in "Workplace Core Values and Organizational Commitment of Basic Education Teachers in a Philippine Catholic University". It found that the practice of the workplace core values and the degree of organizational commitment of teachers are related.

- **Suthiwartnarueput and Ratanakul *of Mahidol University, Thailand*** explored the effects of using LINE as a channel for improving English writing ability of Thai EFL students in "Using LINE as an alternative channel for improving English writing ability of Thai EFL students". The study showed that those who practiced writing on LINE claimed that they felt more enjoyable and had less learning anxiety. They believed that LINE was an effective language learning tool.

- **Parnrod and Darasawang of *King Mongkut's University of Technology Thonburi, Bangkok, Thailand*** investigated learning strategies used by EFL undergraduate engineering students with different cognitive styles undertaking a group-work task in

"Group-work and learning strategies by EFL students with different cognitive styles: Closing gaps for implementing cooperative learning in language classroom". The findings revealed that there are interactions among three variables: group-work task, learning strategies, and cognitive styles.

- **Hoai Oanh and Hai of *Vietnam National University, Hanoi*** studied the autonomy in developing curricula can be granted to member universities and faculties in "Autonomy in teaching curriculum development at Vietnam National University, Hanoi: Current situation and solutions".

- **Siah, Ong, Ngiam and Tan of *Universiti Tunku Abdul Rahman, Malaysia*** investigated the relationships among sleep quality, grit personality and academic performance among undergraduates, and whether grit is a mediator for the effects of sleep quality on academic performance among undergraduates in Malaysia in "The Mediating Effect of Grit on Sleep Quality and Academic Performance among Undergraduates in Malaysia". The results supported the mediating effects of grit on the relationships between sleep quality and GPA, the relationship between sleep quality and CGPA and that the gritter undergraduates would be affected by poor sleep quality.

- **Cheng, Hou, Agrawal and Hsu of *Chaoyang University of Technology, Taiwan*** discussed freshmen's attitudes and learning preferences in "The influence of freshmen's psychological characteristics on learning performance and retention". It uses the Holland's theory of six personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional that found differences in male and female students. The outcome of this study offers directions to low GPA students through psychological and physical assessments.

- **Omar of *University Mohamed Boudiaf, M'sila, Algeria* and Oudat of *The Hashemite University, Jordan,*** identified the effect of some physical education teaching styles (command, practice, reciprocal), on developing the mental perception dimensions (visual perception, auditory perception, motor sensation, and emotional state) in track and field to Intermediate education stage, in "The impact of some physical education teaching styles on the mental perception to intermediate education stage". It found that differences in all the dimensions of the scale between the practice style and the reciprocal style, in favour of the reciprocal style.

- **Mofreh of *Universiti Sains Malaysia,* Ghafar and Omar of *Universiti Tecknologi Malaysia***, tested the validity and reliability of a developed instrument to measure Lecturers' Teaching Practices in "Developing Lecturers' Teaching Practices Instrument". Using the Raasch Model analysis, the study showed that the developed instrument is valid and reliable to measure the Lecturers' Teaching Practices.

Associate Prof. Teay Shawyun

TABLE OF CONTENTS

PAPERS

A GLIMPSE OF THE WELLNESS AND ENGAGEMENT OF ADMINISTRATORS FROM LA SALLE SCHOOLS IN THE PHILIPPINES

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Abstract

Wellness in the workplace has been given importance nowadays by many organizations globally because of the benefit it brings to both the human resources and the institution in general in terms of organizational performance and productivity. Being an administrator entails great responsibility in planning, organizing, leading and managing people to achieve organizational goals. In the process, it is inevitable that administrators may encounter various challenges which could affect their wellness, engagement and eventually their overall work performance. It is in this context that a study focused on wellness and engagement of administrators from La Salle Schools in the Philippines was conducted, with an end goal of crafting recommendations for an empirically-based wellness and engagement program. Likewise, literature shows that no research has been carried out regarding wellness of Lasallian administrators. Results revealed a significant relationship between wellness and engagement of the participants.

Key Words: Wellness, Engagement, Productivity, Administrators, Employees, La Salle Schools

Introduction

The significance of the wellness condition of employees relative to their engagement has been given more attention by experts in the field to facilitate efficiency, productivity and quality service. Several studies proved the benefit of having good wellness condition not only by the individual employee but by the whole organization in achieving its goals. For instance, Ngeno and Muathe (2014) claimed that good health, enhanced moral, and reduced stress and burnout increase productivity. Moreover, the research findings of Igwebuike (2013) showed that health and wellness of the school principal has a positive influence in his educational service delivery. These findings reflect the significance of having good health or wellness to employee productivity and engagement. Engagement as introduced by Khan is an employee's demonstration of physical, cognitive and emotional aspects of their job (Diamante et al., 2016). This may imply discretionary effort by employees in their job and/or to the organization predisposed by various factors including but not limited to their overall wellness condition.

Recognizing the importance of wellness in the workplace, it is significant to mention the government's effort to promote health and safety of employees. Provisions regarding occupational safety and health are stated in the Labor Code of the Philippines (Foz, 2004). There are also department orders and labor standards issued by the Department of Labor and Employment which companies should comply to protect the employees' health and wellbeing. Thus, this research investigated the relationship of wellness and engagement of employees particularly the school administrators.

Phenomenology of Wellness and Employee Productivity

The concept of wellness was initially introduced in the context of health by the World Health Organization as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (Larson in Foster et al., 2011). It then appeared as part of a parallel transformation in the definition of health toward a more holistic perspective that is inter-relational, positive in nature, and focuses on the examination of healthy human functioning (Westgate, 1996). Previous definitions held the view that health was concerned with illness and the body was considered in terms of isolated physiological systems (McSherry & Draper, 1998). The wellness movement began after the end of World War II largely because society's health needs change (Foster et al., 2011). The same authors cited Seaward (2002) stating that advances in medicines and technology during that time meant vaccines and antibiotics to reduce the threat of infectious diseases which had been the leading cause of death. Nowadays, chronic and lifestyle illnesses such as heart disease, diabetes and cancer associated with numerous stressors in life and the workplace became the primary health concern, they furthered. This introduced an expanded concept of health as encompassing all aspects of the person – mind, body, spirit (Donatelle et al., 1999). As part of the development, many researchers have explored the

meaning of wellness and provided analogous concepts such as well-being, quality of life, life satisfaction and happiness (Foster et al., 2011). According to Miller and Foster (2010), literature does not definitively separate "health", "well-being" and "wellness" but rather applies them collectively to various aspects of human development, practice and experience both from an internal and an external perspective.

Lately, workforce productivity has become a critical factor in the strength and sustainability of a company's overall business performance (Koopman et al., 2002). Productivity is the ratio between a measure of output and a measure of input (Sauermann, 2016). In a recent health and productivity literature review, it was noted that although productivity in some occupations can be assessed by total items produced in a workday, productivity in occupation that center on cognitive tasks is more challenging to assess (McCunney, 2001), this includes educational institutions. Harter et al. (2002) argued that the quality and quantity of workers' performance, or productivity in this context, are hindered by too much and/or little challenge; and, that the presence of positive states and positive appraisals of the worker and his/her relationships within the workplace accentuates worker performance and quality of life. Relatively, Maslach et al. (2001) in their study focused why employees develop job burnout and associated it as the antithesis of work engagement.

Cognizant to the notion that employees with good wellness condition are more productive at work factors affecting their wellness should be prevented. Thus, to achieve the best performance of employees, wellness concerns such as stress, burnout and other physical and psychological health issues should be addressed. Gubler et al. (2017) suggested that a company-sponsored wellness program increases average employee productivity more than those employees whose health improves after the program or those employees without identifiable health problems. This was supported by Thayer et al. (1994) who claimed that even for already healthy workers, a wellness program will help employees make positive lifestyle changes in areas like diet, exercise, and sleep linked to employee productivity in terms of stamina, energy and mood. As the concept of wellness and productivity evolve through the years, many organizations have taken efforts to promote these ideas for efficiency and productivity with the success of people and organization as the end-goal.

Employee Engagement and Its Antecedents

Employee engagement became a popular construct in organizations in the past two decades to stay competitive and to improve performance, yet there was shortage of academic studies regarding it (Maha, 2015; Madhura & Deepika, 2014). It was only in the early 2000 that it begun to attract wider academic attention (Welch, 2011). MacLeod and Clarke (2009) described engagement as a workplace approach designed to ensure that employees are committed to their organization's goals and values, motivated to contribute to organizational success, and at the

same time are able to enhance their own sense of well-being. Recognizing that employees are critical factor for organizations to gain competitive advantage, Ahlowalia et al. (2014) stated that employee engagement ensures high levels of passion, enthusiasm, commitment and involvement by employees for the organizations' benefit. Similarly, Markos and Sridevi (2010) recognized that employee engagement is a strong predictor of positive organizational performance because engaged employees are emotionally attached to the organization and highly involved in their job with a greater enthusiasm for the employer's success. Specifically, the same authors cited three definitions of employee engagement by well-known research organizations in human resources area as follows: (1) Perrin's Global Workforce Study (2003) expressed employee engagement as employees' willingness and ability to help their company succeed, largely by providing discretionary effort on a sustainable basis which is affected by many factors involving both emotional and rational factors relating to work and the overall work experience; (2) Gallup organization described employee engagement as the involvement with and enthusiasm for work; and (3) Robinsons et al. (2004) expressed employee engagement as a positive attitude of employees towards the organization and its values. Likewise, Harter et al. (2002) outlined engagement as positive emotion facilitated by actions within organizations that support clear outcome expectancy, give basic material support, encourage individual contribution and fulfillment, a sense of belonging, and a chance to progress and learn continuously. Also, Robbins and Judge (2007) defined engagement as the individual's involvement with, satisfaction with, and enthusiasm for the work they do. They suggested that engagement may be a concept which is shared by job satisfaction, organizational commitment, job involvement and intrinsic motivation to do one's job well.

As regards drivers of engagement, Diamante et al. (2016) identified career development, relationship management and work environment as antecedents of employee engagement among teaching and non-teaching staff. Saks (2006) revealed that perceived organizational support predicts both job and organizational engagement while job characteristics predicts job engagement and procedural justice predicts organizational engagement. Other authors identified job design and characteristics, supervisor and co-worker relationships, workplace environment and Human Resource Department practices as major antecedents of employee engagement (Rana et al., 2014). Likewise, compensation and recognition were identified as motivating factors for engagement of Filipino workers (Ilagan et al., 2014). These studies denote the challenge to organizations on how to keep employees committed, engaged and productive in order to succeed.

Academic institutions as organizations are also challenged to sustain highly engaged and productive employees. Generally, Lasallian institutions appoint administrators to academic and non-academic positions to effectively lead their respective units in achieving the institution's goals for the fulfillment of its vision and mission. They also need to maintain high level of performance and competencies, uphold the Lasallian virtues and address global challenges and developments in order for the school to remain competitive and sustain the standard it has

established. Thus, being a Lasallian administrator entails high sense of responsibility, greater scope of work, more critical tasks, more workload and high expectations from the community which could put pressure on them and eventually affect their wellness condition. In this regard, ways to assist administrators cope with these challenges to maintain good mental health should be provided. Notably, literature does not show any study conducted focused on the wellness of Lasallian administrators whose results could be a perfect guide in creating a research-based wellness program. Thus, the researchers proposed the following objectives: (1) to know the level of wellness and level of engagement of the administrators from the different La Salle Schools in the Philippines; (2) to know the relationship between wellness and engagement of the administrators from the different La Salle Schools in the Philippines; (3) to identify the specific dimensions of wellness that can influence the level of engagement of the participants; and (4) to provide recommendations on how to promote wellness and engagement among Lasallian Administrators. Nonetheless, it was not the intention of this study to find out the relationship of the participants' demographic profile with their wellness and engagement.

Conceptual Framework

Figure 1 displays the framework of this study wherein the level of wellness and level of engagement of administrators from La Salle Schools in the Philippines, and the relationship of these variables were sought to provide recommendations as bases in crafting programs to enhance wellness and engagement.

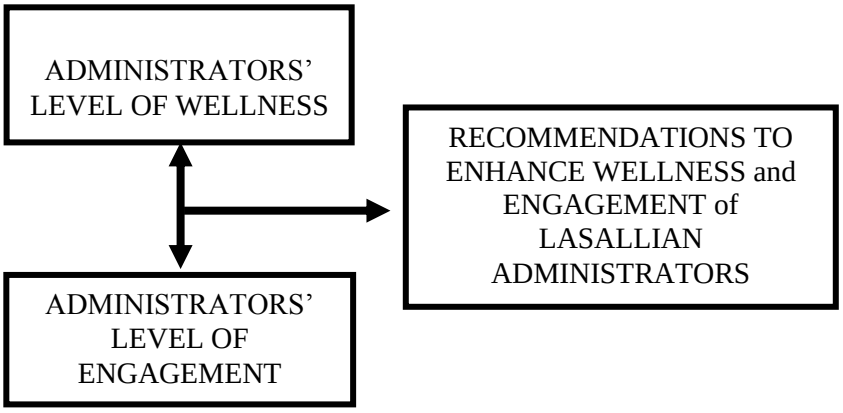

Figure 1. The paradigm of the study.

There were eight wellness dimensions assessed which are operationally defined for better understanding and to satisfy the objectives of this investigation, these are: (1) Social Wellness (SOC) refers to the participants' ability to build and nourish healthy relationship, to interact well, to empathize and care for others, and to allow others to care for them; (2) Physical Wellness (PHY) signifies the administrators' regular involvement to activities that produce endurance, flexibility and strength, healthy eating habits and general self-care in order to maintain a healthy body; (3) Emotional Wellness (EMO) indicates the participants' ability to recognize, accept,

manage and take responsibility for their feelings and related behaviors; (4) Environmental Wellness (ENV) involves living in harmony with the environment by taking actions to protect it, and practice habits that promote a healthy environment as manifestations of respect of nature; (5) Spiritual Wellness (SPI) denotes faith in God with a mighty and great power, and in seeking the purpose and meaning of one's existence. It also involves the development and/or acquisition of personal values and principles; (6) Mental Wellness (MEN) entails one's ability to respond to life's challenges through sound judgment which involves learning from previous experiences, thinking and considering alternatives before making decisions; (7) Intellectual Wellness (INT) is embracing creativity, acquisition of new knowledge and engagement to mentally stimulating activities like intellectual discussions, conducting research, reading, continuing education and the like to improve skills and competencies; and (8) Financial Wellness (FIN) implies the ability to manage own finances by having an understanding of one's financial situation and taking care of it to be prepared for financial changes or challenges.

Moreover, the four antecedents of engagement being measured are operationally defined in this research as follows: (1) Career Development refers to one's contentment of the career advancement opportunities and professional development/trainings provided by the institution. It also refers to one's fulfillment for having the opportunity to be involved in achieving organizational goals, to help others and to make decisions at work that positively impact others' lives; (2) Work Environment denotes a feeling of security in one's job, appreciation of being in a safe workplace and satisfaction of the organization's culture; (3) Compensation and Benefits encompasses a feeling of being remunerated and rewarded fairly demonstrated by the administrators' satisfaction of the overall salaries and benefits package they enjoy as well as a perceived sound office budget provided by the institution; and (4) Relationship Management involves a pleasant and harmonious working relationship of the administrators with their superiors and subordinates manifested through observance of good communication, trust, respect, recognition and appreciation of one's performance.

Methodology

This study employed a descriptive correlational research design with purposive sampling technique to obtain the objectives presented. There were 300 administrators from 12 La Salle Schools who agreed to participate in this study. The 12 schools are hereby presented alphabetically with their corresponding number of participants as follows: De La Salle Araneta University (48); De La Salle – College of St. Benilde (13); De La Salle – Health Sciences Institute (37); De La Salle John Bosco College (17); De La Salle Lipa (20); De La Salle – Santiago Zobel School (29); De La Salle University – Dasmarinas (38); Jaime Hilario Integrated School – La Salle (6); La Salle College Antipolo (18); La Salle Green Hills (36); La Salle University Ozamiz (33); and St. Joseph School – La Salle (5). However, the schools are rearranged and number coded to maintain confidentiality of the schools' identity. Contact

persons from La Salle Schools assisted the researchers in the administration and retrieval of instruments.

Moreover, this research utilized two instruments, namely: (1) Wellness Self-assessment, patterned from the work of Tom Sponheim of the University of Redlands, California to assess the level of wellness of the participants; and (2) Employee Engagement Survey Form, patterned from the work of Diamante, Tizon and Opao to measure the participants' level of engagement. Several revisions of the items were done to fit them to the purpose of the study. Consent from the authors of the survey questionnaires was sought before its revision and administration. In the analysis of data, mean of scores was used to describe the level of wellness and engagement of the participants. Meanwhile, Pearson correlation and regression analysis were used to predict and estimate relationships of variables.

Results and Discussion

The level of wellness of the administrators from La Salle Schools in the Philippines.

Table 1 shows the level of wellness of the participants in the eight wellness dimensions measured. The mean scores obtained by the schools in each of these dimensions were statistically interpreted and analyzed using the following numerical score ranges and verbal interpretations: 1.00 – 1.49 [Very Low Wellness (VW)]; 1.50 – 2.49 [Low Wellness (LW)]; 2.50 – 3.49 [Moderate Wellness (MW)]; and 3.50 – 4.00 [High Wellness (HW)].

Table 1. The level of wellness of the participants.

SCHOOL CODE	SOC	PHY	EMO	ENV	SPI	MEN	INT	FIN	AMS
1	3.41	2.66	3.34	3.48	3.68	3.36	3.34	3.18	**3.31^{MW}**
2	3.36	2.66	3.29	3.15	3.51	3.25	3.25	2.94	**3.18^{MW}**
3	3.12	2.78	3.16	3.27	3.44	3.14	3.12	2.95	**3.12^{MW}**
4	3.18	2.50	3.12	3.05	3.33	3.12	2.89	2.84	**3.00^{MW}**
5	3.47	2.80	3.42	3.34	3.61	3.46	3.37	3.19	**3.33^{MW}**
6	3.32	2.85	3.28	3.27	3.61	3.40	3.21	3.11	**3.26^{MW}**
7	3.30	2.83	3.24	3.16	3.50	3.40	3.20	3.06	**3.21^{MW}**
8	3.54	3.06	3.51	3.53	3.69	3.55	3.53	3.30	**3.46^{MW}**
9	3.45	2.60	3.40	3.14	3.66	3.31	3.07	3.12	**3.22^{MW}**
10	3.45	2.75	3.14	2.92	3.14	3.22	3.31	2.88	**3.10^{MW}**
11	3.39	2.68	3.34	3.08	3.53	3.27	3.20	3.04	**3.19^{MW}**
12	3.02	2.40	3.08	3.07	3.30	3.07	2.90	2.61	**2.93^{MW}**
AMS	**3.33^{MW}**	**2.71^{MW}**	**3.28^{MW}**	**3.21^{MW}**	**3.50^{HW}**	**3.30^{MW}**	**3.20^{MW}**	**3.02^{MW}**	**3.19^{MW}**

The overall level of wellness of the participants is moderate with an Average Mean Score (AMS) of 3.19, ranging from 3.46 to 2.93. As regards the AMS of each of the eight wellness dimensions, SPI has the highest (3.50) with a verbal interpretation of HW while PHY has the lowest (2.71) followed by FIN with an AMS of 3.02, although both are considered MW. This means that no wellness dimension has scored below the moderate scale. Across schools, the highest mean that appeared is 3.69 under SPI while the lowest is 2.40 under PHY obtained by Schools 8 and 12 respectively. Additionally, the wellness dimensions with HW level are SOC, EMO, ENV, MEN and INT obtained by School 8. It is noteworthy that SPI has HW level in majority of the schools such as 1, 2, 5, 6, 7, 8, 9 and 11. This result reveals that majority of the administrators from the participating schools have High Spiritual Wellness.

Generally, La Salle schools provide various spiritual programs that facilitate the enhancement of spirituality and embrace of Lasallian virtues. There are spiritual activities and Lasallian Formation Modules where employees, that include administrators, could participate. These could be one contributing factor why the participants obtained high wellness level in Spiritual dimension without discounting their personal beliefs and values. On the other hand, programs focused on Physical wellness may not be sufficiently provided in the different participating schools. It can also be a fact that the volume and scope of work of administrators hinder them to spend time joining activities that promote physical wellness and/or could have lead them to take it as least priority. As agreed by employers and employees in a survey, the biggest obstacle to increase participation in wellness programs is lack of time (Stahl, 2016). If not properly managed, the administrators' load of work could become a source of stress and eventually affect their health. As proven by various research findings, repeated and prolonged exposure to stress could pose danger to individual's physical and mental health, thus could be a source of various illnesses such as cardiovascular diseases and anxiety/depression (Thoits, 2010; Dimsdale, 2008; Cohen et al., 2007). Likewise, physical and psychological stress can trigger the development of autoimmune diseases (Stojanovich & Marisavljevich, 2008). In the Philippines, cardiovascular diseases appeared as the top among the leading causes of mortality as reported by the Department of Health (www.doh.gov.ph) which can be caused by several factors like congenital defects, life style including stress. Specifically, job stress and other identified chronic stressors contribute to diverse pathophysiological changes including cardiovascular functioning (Dimsdale, 2008). Thus, to prevent absenteeism, reduced productivity and impaired decision-making caused by stress related illnesses (Hart, 1990), adaptive behaviors and good coping responses to stress are necessary (Schneiderman et al., 2005).

The level of engagement of the administrators from La Salle Schools in the Philippines.

The overall level of engagement of the participants in each of the four antecedents of employee engagement were interpreted and analyzed through the mean score ranges and verbal interpretations as follows: 1.00 – 1.49 [Very Low Engagement (VE)]; 1.50 – 2.49 [Low

Engagement (LE)]; 2.50 – 3.49 [Moderate Engagement (ME)]; and 3.50 – 4.00 [High Engagement (HE)]. Table 2 presents the mean scores of the participating schools in the different antecedents as well as the average mean scores and the corresponding verbal interpretations obtained.

Table 2. The level of engagement of the participants.

SCHOOL CODE	ANTECEDENTS OF ENGAGEMENT				AMS
	CAREER DEVELOPMENT	WORK ENVIROMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT	
1	3.27	3.53	3.18	3.50	**3.37^{ME}**
2	3.32	3.35	2.91	3.41	**3.25^{ME}**
3	3.52	3.44	3.12	3.48	**3.39^{ME}**
4	3.04	3.11	2.74	3.29	**3.04^{ME}**
5	3.50	3.56	3.39	3.60	**3.51^{HE}**
6	3.28	3.44	2.97	3.43	**3.28^{ME}**
7	3.53	3.50	3.31	3.53	**3.47^{ME}**
8	3.80	3.73	3.48	3.74	**3.69^{HE}**
9	3.39	3.43	2.98	3.46	**3.32^{ME}**
10	3.14	3.13	3.12	3.28	**3.17^{ME}**
11	3.69	3.43	3.09	3.63	**3.46^{ME}**
12	3.29	3.48	2.81	3.29	**3.22^{ME}**
AMS	**3.40^{ME}**	**3.43^{ME}**	**3.09^{ME}**	**3.47^{ME}**	**3.35^{ME}**

The overall level of engagement of the participants is moderate (3.35) with an AMS range of 3.69 (HE) to 3.04 (ME). This shows that no participating school obtained an AMS below ME. When it comes to the AMS of the four antecedents, Relationship Management has the highest score (3.47) while Compensation and Benefits has the lowest (3.09). Nevertheless, both scores fall under ME. This data also reflects that the AMS of the other antecedents of engagements are under the range of ME. Furthermore, data across schools show that the highest mean obtained is 3.80 (HE) under Career Development while the lowest is 2.74 (ME) under Compensation and Benefits by Schools 8 and 4 respectively. A HE level in Work Environment and Relationship Management was acquired by School 1; School 3 obtained HE in Career Development; Schools 5, 7 and 8 have HE in Career Development, Work Environment and Relationship Management; and School 11 has HE in Career Development and Relationship Management. Moreover, ME level was acquired by Schools 2, 4, 6, 9, 10 and 12 in all of the antecedents. Interestingly, data reveals that all schools consistently scored ME in Compensation and Benefits compared to the other antecedents of engagement with both HE and ME levels.

The results in Relationship Management notably expressed a positively established relationship between the administrators' superiors and subordinates. As Lasallian administrators, there are virtues and attributes expected of them and/or encouraged to live out. Attributes such as but not limited to service, team player, courtesy, trust, humility and compassion could facilitate harmonious working relationship between the subordinates and the administrators. A culture that reflects care and concern attached to service may have also played a role. Generally in a Philippine context of service, relationship is valued as manifested by the innate Filipino

characteristics of connectedness and the Psycho-sociological concept of *"Kapwa" or pakikipagkapwa-tao* (Alcoba et.al, 2015; Mostajo, 2014). Additionally, an effective leadership behavior where respectful treatment of employees (reflective of a harmonious relationship), and support to their adaptability and creativity were recognized important by several authors to support employee engagement (Anita, 2014; Bass et al., 2003). Similarly, personal relationship between immediate head and co-workers with a caring manager (care about personal lives, to take an interest in people, care about how they feel and support their well-being/health, who can build a strong relationship and strong team interaction) is one key element of employee engagement (Carnegie, 2012).

Furthermore, the result in Compensation and Benefits as having the lowest mean score sends a signal to the participating schools to assess what could have affected the rating. In the study of Ilagan et al. (2014), compensation from job and recognition from employer were revealed as the top two motivating factors of Filipino workers. Likewise, Anita (2014) recognized compensation program, workplace well-being, team and co-worker relationship, leadership, working environment, policies and procedures, training and career development as predictors of employee engagement. Nevertheless, a Total Rewards Program such as but not limited to Psychological rewards, relevant privileges and incentives for administrators may also be contemplated. Accordingly, total rewards structure, programs and policies influence employee engagement, thus organizations that foster incentive programs effectively promote employee engagement and motivation than those organizations who do not (Scott & McMullen, 2010).

The relationship between wellness and engagement of the administrators from La Salle Schools in the Philippines.

The succeeding tables display the results of the analysed data. Correlation relative to the wellness and engagement of the participants are presented in Tables 3 to 14, interpreted and analyzed accordingly.

Table 3. The relationship between wellness and engagement of the participants in School #1.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	0.136^{NS}	0.442^{NS}	0.726^{NS}	-0.056^{NS}
Physical	0.871^{NS}	$.974^{**}$	0.749^{NS}	0.56^{NS}
Emotional	0.77^{NS}	$.986^{**}$	0.638^{NS}	0.672^{NS}
Environmental	0.853^{NS}	0.834^{NS}	0.361^{NS}	0.83^{NS}
Spiritual	0.371^{NS}	0.73^{NS}	0.232^{NS}	0.829^{NS}
Mental	0.49^{NS}	$.886^{*}$	0.612^{NS}	0.602^{NS}
Intellectual	0.505^{NS}	0.878^{NS}	0.671^{NS}	0.563^{NS}

Financial	0.274^{NS}	0.741^{NS}	0.478^{NS}	0.515^{NS}

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

As presented in Table 3, the dimensions of wellness with significant relationship to engagement specifically on Work Environment are PHY ($p<.01$), EMO ($p<.01$) and MEN ($p<.05$). This result discloses a strong probability that the level of wellness in PHY, EMO and MEN influences the level of engagement relative to Work Environment. The rest of the dimensions have no significant relationship with engagement particularly for antecedents such as Career Development, Compensation and Benefits, and Relationship Management. Having said this, an administrator in School 1 who has high level of wellness in Physical, Emotional and Mental dimensions could be highly engaged especially in a safe, secured and supportive work environment.

Table 4. The relationship between wellness and engagement of the participants in School #2.

WELLNESS DIMENSIONS	**ANTECEDENTS OF ENGAGEMENT**			
	CAREER DEVELOPMENT	**WORK ENVIRONMENT**	**COMPENSATION & BENEFITS**	**RELATIONSHIP MANAGEMENT**
Social	0.185^{NS}	0.241^{NS}	0.271^{NS}	-0.022^{NS}
Physical	0.039^{NS}	0.232^{NS}	0.317^{NS}	-0.099^{NS}
Emotional	-0.001^{NS}	0.221^{NS}	0.147^{NS}	-0.014^{NS}
Environmental	.477**	0.214^{NS}	0.509**	0.15^{NS}
Spiritual	0.308^{NS}	0.241^{NS}	0.395*	0.211^{NS}
Mental	0.268^{NS}	0.289^{NS}	0.368*	0.051^{NS}
Intellectual	0.380*	0.03^{NS}	0.376*	0.096^{NS}
Financial	-0.071^{NS}	0.065^{NS}	0.064^{NS}	-0.029^{NS}

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

Table 4 shows the presence of wellness dimensions with significant relationship to engagement of administrators in School 2 namely: (1) ENV (($p<.01$) and INT (($p<.05$) with Career Development; and ENV ($p<.01$), SPI ($p<.05$), MEN ($p<.05$) and INT ($p<.05$) with Compensation and Benefits. The significant relationship of these variables suggests that the level of wellness of administrators in School 2 in ENV and INT can influence their level of engagement with respect to Career Development. Likewise, SPI and MEN together with ENV and INT can also influence engagement with Compensation and Benefits as antecedent. Thus, the level of engagement of the participants can be influenced by the level of their wellness in Environment, Spiritual, Mental and Intellectual dimensions notably when the school is supportive and responsive to their career development and when they are satisfied with the compensation and benefits provided.

Table 5. The relationship between wellness and engagement of the participants in School #3.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	0.139^{NS}	0.344^{NS}	0.188^{NS}	0.244^{NS}
Physical	0.043^{NS}	0.392^{NS}	0.414^{NS}	0.32^{NS}
Emotional	0.228^{NS}	0.304^{NS}	0.056^{NS}	0.011^{NS}
Environmental	0.192^{NS}	0.286^{NS}	-0.011^{NS}	0.186^{NS}
Spiritual	0.268^{NS}	0.307^{NS}	0.374^{NS}	0.186^{NS}
Mental	0.134^{NS}	0.279^{NS}	0.274^{NS}	0.177^{NS}
Intellectual	0.003^{NS}	0.331^{NS}	0.261^{NS}	0.077^{NS}
Financial	0.462^{NS}	0.486^{*}	0.311^{NS}	$.491^{*}$

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

The dimension of wellness with significant relationship to engagement is FIN ($p<.05$) for both Work Environment and Relationship Management as appeared in Table 5. These findings revealed that only the financial wellness of administrators in School 3 has an influence to their engagement relative to antecedents such as Work Environment and Relationship Management. This proposes that an administrator who has high level of financial wellness – meaning has the ability to manage and plan his/her finances well can be more engaging especially in an atmosphere of a nurturing work environment that provides job security and/or allows its members to feel secured, and fosters harmonious relationship.

Table 6. The relationship between wellness and engagement of the participants in School #4.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	0.038^{NS}	$.431^{**}$	0.15^{NS}	0.122^{NS}
Physical	0.126^{NS}	0.228^{NS}	0.158^{NS}	0.158^{NS}
Emotional	0.033^{NS}	$.416^{*}$	0.092^{NS}	0.07^{NS}
Environmental	0.192^{NS}	0.23^{NS}	0.103^{NS}	0.161^{NS}
Spiritual	-0.122^{NS}	$.466^{**}$	0.331^{*}	0.19^{NS}
Mental	0.13^{NS}	$.435^{**}$	0.266^{NS}	0.05^{NS}
Intellectual	0.042^{NS}	$.408^{*}$	0.321^{NS}	0.176^{NS}
Financial	$0.\ 128^{NS}$	$.420^{*}$	0.277^{NS}	0.269^{NS}

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

With regard to the findings presented in Table 6, significant relationship is visible for wellness dimensions such as SOC (($p<.01$), EMO ($p<.05$), SPI ($p<.01$), MEN ($p<.01$), INT ($p<.05$) and FIN ($p<.05$) with Work Environment. Likewise, SPI ($p<.05$) is significantly correlated to Compensation and Benefits. The result discloses that the level of engagement of administrators

in School 4 can be influenced by their level of wellness in SOC, EMO, SPI, MEN, INT and FIN. Having a safe and secured work environment is also an added factor that drives their engagement especially if it is coupled with a reasonable compensation and benefits package.

Table 7. The relationship between wellness and engagement of the participants in School #5.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	.445**	.487**	.535**	0.502**
Physical	0.274NS	0.202NS	0.153NS	0.224NS
Emotional	0.329NS	0.274NS	0.282NS	0.315NS
Environmental	.482**	.506**	.410**	0.339NS
Spiritual	0.217NS	0.264NS	0.195NS	0.168NS
Mental	.531**	.624**	.484**	.498**
Intellectual	0.227NS	0.297NS	-0.055NS	0.103NS
Financial	0.05NS	.357*	0.289NS	0.064NS

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

The data in Table 7 is remarkable in a sense that the relationship of both SOC and MEN are statistically highly significant *(p<.01)* to all the antecedents of engagement in the same manner as ENV with the different antecedents excluding Relationship Management. Furthermore, FIN has a significant relationship only with Work Environment at 0.05 level. These findings reveal that administrators in School 5 can be highly engaging if their social, environmental and mental wellness levels are also high especially in an institution that reinforces their career development; provides reasonable compensation and benefits package; and maintains a safe, caring and pleasing physical and social environment. Additionally, financial wellness or the ability to manage their finances well can also influence the engagement of the participants notably in a work environment where they feel safe physically and secured with their job.

Table 8. The relationship between wellness and engagement of the participants in School #6.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	.344*	.540**	.296*	.431**
Physical	.312*	.351**	0.284NS	0.263NS
Emotional	.438**	.439**	.425**	.299*
Environmental	0.174NS	.482**	0.239NS	.321*
Spiritual	.374**	.471**	.448**	.506**
Mental	.405**	.493**	0.254NS	.363*
Intellectual	.370*	.478**	0.263NS	.358*

Financial	.443*	.505*	.524*	0.282NS

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

The statistical data in Table 8 reflects highly remarkable findings as regards the relationship of wellness and engagement of administrators in School 6 because all the wellness dimensions on certain and/or specific antecedents of engagement are significantly correlated either at 0.01 or 0.05 levels of significance. Despite the presence of few data displaying not significant relationship, results disclose that all wellness dimensions can influence engagement of administrators in School 6. It can also be observed from the data that the relationship between wellness and engagement is highly significant in Work Environment. Conversely, only the following dimensions are not significantly correlated to the four antecedents: ENV with Career Development; PHY, ENV, MEN and INT with Compensation and Benefits; and PHY and FIN with Relationship Management. This data suggests that the participants can be more engaging if their level of wellness in all the dimensions is high. Likewise, their engagement can be maximized in a workplace that provides opportunities for career growth and development, security, reasonable compensation and benefits package, and where a harmonious relationship among its members is observed.

Table 9. The relationship between wellness and engagement of the participants in School #7.

WELLNESS DIMENSIONS	**ANTECEDENTS OF ENGAGEMENT**			
	CAREER DEVELOPMENT	**WORK ENVIRONMENT**	**COMPENSATION & BENEFITS**	**RELATIONSHIP MANAGEMENT**
Social	.502**	.604**	.417*	0.359NS
Physical	-0.025NS	0.267NS	-0.139NS	-0.127NS
Emotional	0.237NS	0.355NS	0.324NS	0.044NS
Environmental	0.353NS	.496**	0.198NS	0.004NS
Spiritual	0.365NS	.459*	0.351NS	0.129NS
Mental	.381*	.581**	0.313NS	0.179NS
Intellectual	0.345NS	.393*	0.318NS	0.206NS
Financial	.402*	.480**	.426*	0.181NS

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

As shown in Table 9, the relationship of several wellness dimensions and antecedents of engagement are statistically significant, namely: SOC ($p<.01$), MEN ($p<.05$) and FIN ($p<.05$) with Career Development; SOC ($p<.01$), ENV ($p<.01$), SPI ($p<.05$), MEN ($p<.01$), INT ($p<.05$) and FIN ($p<.01$) with Work Environment; and SOC ($p<.05$) and FIN ($p<.05$) with Compensation and Benefits. This shows that the level of engagement of administrators in School 7 is positively influenced by the level of their social, mental and financial wellness which further reinforces in an institution that espouses career development and provides a good compensation and benefits package. Moreover, their engagement is also positively influenced by

their social, environmental, spiritual, mental, intellectual and financial wellness level especially in a safe working environment.

Table 10. The relationship between wellness and engagement of the participants in School #8.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	.521*	.576*	0.121NS	0.346NS
Physical	0.296NS	0.42NS	0.125NS	0.282NS
Emotional	0.461NS	.704**	0.111NS	0.378NS
Environmental	0.163NS	0.389NS	-0.151NS	0.158NS
Spiritual	0.414NS	.636**	-0.021NS	0.317NS
Mental	0.307NS	.593**	-0.002NS	0.271NS
Intellectual	.571*	.705**	0.079NS	.477*
Financial	0.408NS	0.371NS	0.448NS	0.374NS

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

The statistical data in Table 10 reflects significant relationships on the following: SOC ($p<.05$) and INT ($p<.05$) with Career Development; SOC ($p<.05$), EMO ($p<.01$), SPI ($p<.01$), MEN ($p<.01$), and INT ($p<.01$) with Work Environment; and INT ($p<.05$) with Relationship Management. The result discloses that being socially and intellectually well can enhance engagement in addition to the presence of a program that supports career development. It also reveals that having a high level of wellness in social, emotional, spiritual, mental and intellectual can lead to high engagement especially in a safe and secured environment; and intellectual wellness can affect engagement in a place where a pleasant relationship with co-workers is observable.

Table 11. The relationship between wellness and engagement of the participants in School #9.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	.443**	.431**	.417*	.521**
Physical	0.072NS	0.244NS	0.117NS	0.269NS
Emotional	.478**	.541**	0.234NS	.469*
Environmental	0.303NS	0.311NS	-0.047NS	0.264NS
Spiritual	0.313NS	.363*	0.206NS	0.208NS
Mental	.418*	.599**	0.143NS	.369*
Intellectual	0.328NS	.416*	0.065NS	0.189NS
Financial	0.283NS	.383*	0.144NS	.335*

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

A significant relationship is observed between wellness and engagement specifically on the following: SOC (*p<.01*), EMO (*p<.01*), and MEN (*p<.05*) with Career Development; SOC (*p<.01*), EMO (*p<.01*), SPI (*p<.05*), MEN (*p<.01*), INT (*p<.05*), and FIN (*p<.05*) with Work Environment; SOC (*p<.05*) with Compensation and Benefits; and SOC (*p<.01),* EMO (*p<.05*), MEN (*p<.05*) and FIN (*p<.05*) with Relationship Management. These findings reveal that the level of engagement of administrators in School 9 can be influenced by the level of their social, emotional and mental wellness in an institution that supports career development. In addition to these dimensions, the spiritual, intellectual and financial wellness can also influence their engagement predominantly in a work environment they feel safe and secured in their job.

Table 12. The relationship between wellness and engagement of the participants in School #10.

WELLNESS DIMENSIONS	**ANTECEDENTS OF ENGAGEMENT**			
	CAREER DEVELOPMENT	**WORK ENVIRONMENT**	**COMPENSATION & BENEFITS**	**RELATIONSHIP MANAGEMENT**
Social	0.147^{NS}	0.313^{NS}	-0.159^{NS}	-0.166^{NS}
Physical	-0.138^{NS}	0.023^{NS}	-.550*	0.005^{NS}
Emotional	-0.178^{NS}	-0.294^{NS}	-0.394^{NS}	-0.008^{NS}
Environmental	-0.159^{NS}	0.237^{NS}	0.212^{NS}	-0.008^{NS}
Spiritual	0.281^{NS}	0.359^{NS}	-0.177^{NS}	-0.154^{NS}
Mental	-0.184^{NS}	0.018^{NS}	-0.429^{NS}	.448*
Intellectual	0.039^{NS}	-0.152^{NS}	-.633**	0.168^{NS}
Financial	0.11^{NS}	0.261^{NS}	.494*	0.258^{NS}

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

Table 12 shows the presence of wellness dimensions that can influence engagement of administrators in School 10. A positive significant relationship can be noticed in FIN (*p<.05*), but PHY (*p<.05*) and INT (*p<.01*) are negatively correlated with Compensation and Benefits. The inversely proportional significant relationship could mean that as the physical and intellectual wellness of administrators increases their engagement level decreases especially when the compensation and benefits package offered does not meet their expectation. Furthermore, mental wellness can positively influence the engagement level in Relationship Management which means that administrators with high level of mental wellness are likely to be more engaging especially when there is a smooth interpersonal relationship in the school community.

Table 13. The relationship between wellness and engagement of the participants in School #11.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	0.377^{NS}	.624*	0.382^{NS}	0.509^{NS}
Physical	0.411^{NS}	0.475^{NS}	0.359^{NS}	0.079^{NS}
Emotional	0.32^{NS}	.714**	0.182^{NS}	0.555^{NS}
Environmental	0.029^{NS}	0.453^{NS}	0.201^{NS}	0.141^{NS}
Spiritual	0.44^{NS}	.875**	0.473^{NS}	.660*
Mental	0.2^{NS}	.732**	0.203^{NS}	0.408^{NS}
Intellectual	0.096^{NS}	0.08^{NS}	-0.284^{NS}	0.037^{NS}
Financial	0.274^{NS}	.617*	0.217^{NS}	0.227^{NS}

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

With regard to the findings presented in Table 13, significant relationship is visible for SOC ((*p<.05),* EMO (*p<.01),* SPI (*p<.01),* MEN *p<.01* and FIN (*p<.05)* wellness dimensions with Work Environment. Likewise, only SPI (*p<.05)* is significantly correlated to Relationship Management. This suggests that an administrator who has high level of wellness in the areas of social, emotional, spiritual, mental and financial are likely to be more engaging in a work environment they perceive safe and secured. In addition, spiritual wellness can also influence engagement of the administrators in School 11 with Relationship Management as antecedent. This reflects that those administrators with high level of spiritual wellness can also be more engaging in a workplace where a congenial relationship is observable.

Table 14. The relationship between wellness and engagement of the participants in School #12.

WELLNESS DIMENSIONS	ANTECEDENTS OF ENGAGEMENT			
	CAREER DEVELOPMENT	WORK ENVIRONMENT	COMPENSATION & BENEFITS	RELATIONSHIP MANAGEMENT
Social	.862*	0.153^{NS}	0.459^{NS}	0.464^{NS}
Physical	0.319^{NS}	-0.158^{NS}	0.114^{NS}	-0.053^{NS}
Emotional	-0.034^{NS}	0.21^{NS}	-0.658^{NS}	-0.169^{NS}
Environmental	-0.676^{NS}	-0.652^{NS}	-0.624^{NS}	-.885*
Spiritual	-0.125^{NS}	-0.362^{NS}	-0.607^{NS}	-0.534^{NS}
Mental	-0.083^{NS}	-0.571^{NS}	-0.649^{NS}	-0.63^{NS}
Intellectual	-0.034^{NS}	-0.419^{NS}	-0.702^{NS}	-0.599^{NS}
Financial	0.423^{NS}	-0.092^{NS}	-0.211^{NS}	-0.014^{NS}

*NS – Not Significant; *Correlation is significant at 0.05 level (2-tailed); **Correlation is significant at 0.01 level (2-tailed)*

The data in Table 14 shows a strong significant relationship only in SOC (*p<.05)* with Career Development and ENV (*p<.05)* with Relationship Management. This result suggests that the administrators in School 12 with high level of Social Wellness can be highly engaged when their

career development is being uplifted. However, it is remarkable that ENV and Relationship Management reflect a strong negative correlation which indicates that as the level of ENV increases, the level of engagement decreases with relationship management as antecedent. In this case, a balance in giving importance to increasing the wellness on environment of the participants and maintaining positive relationship in the workplace should be considered so that their engagement is not negatively affected. A deeper understanding and analysis of this relationship is also encouraged by considering those factors such as but not limited to the characteristics and culture of people, the school's physical environment, geographical location and practices for environmental sustainability that might have influenced the results. Putting in mind that environmental wellness is living in harmony with the environment by taking actions to protect and practice habits that promote healthy environment. And, Relationship Management is being able to maintain good working relationship with the people whom they directly or closely work together with trust and appreciation of their job performance.

In summary, the statistical data presented in Tables 3–14 above discloses that significant relationship generally exists between the wellness and engagement of the participants, although the relationship varies from school to school. On the other hand, results also revealed that Physical and Intellectual dimensions are negatively correlated with Compensation and Benefits, as well as Environmental dimension with Relationship Management specifically for Schools 10 and 12 respectively. Nevertheless, the negative correlation of these dimensions with engagement is not conclusive because it has only one occurrence in the schools concerned and was not consistent in all the antecedents in all schools compared to the statistically positive significant relationships found as majority.

In order to have an overall picture of the relationship between wellness and engagement, data from the schools were all taken together and statistically analysed. The result revealed that wellness is significantly correlated with engagement with a p value of 0.0024 *($p<.05$)* but it is technically weak ($r = 0.1746$) due to the disparity of results relative to the variables' relationship in the different schools. Analogously, a study confirmed the existence of a significant relationship between happiness (wellness) and work engagement (Field and Buitendach, 2011); and that people with high well-being are more likely to see their workplace as positive, productive, and engaging (Robinson, 2013).

The specific wellness dimensions that influence engagement of administrators from La Salle Schools in the Philippines.

Regression analysis was done to obtain a deeper understanding and analysis of data in order to statistically establish a predictive relationship between the two variables. There are two models that can be derived from the results to illustrate the predictive relationship of wellness and engagement as reflected in Tables 15 and 16: (1) ENGAGEMENT = 1.536 + 0.323 ENVIRONMENTAL + 0.422 MENTAL; and (2) ENGAGEMENT = 1.593 - 0.413 PHYSICAL. These results which appeared in Schools 5 and 7 respectively revealed that among the different wellness dimensions, only Environmental, Mental and Physical can statistically predict Engagement of the participants.

Table 15. Regression analysis between Wellness and Engagement of School 5.

ANOVA[bc]

Model	Sum of Squares	df	Mean squares	F	Sig.
Regression	1.725	8	0.216	5.881	.000[a]
Residual	.843	23	0.037		
Total	2.569	31			

Engagement = 1.536 + 0.323 Environment + 0.422 Mental

Table 16. Regression analysis between Wellness and Engagement of School 7.

ANOVA[bc]

Model	Sum of Squares	df	Mean squares	F	Sig.
Regression	1.844	8	0.320	2.953	.027[a]
Residual	1.405	18	0.078		
Total	3.249	26			

Engagement = 1.593 - 0.413 Physical

The first model indicates that Environmental and Mental Wellness can predict engagement of the participants. The statistically positive correlation denotes that an increase in the level of Environmental and Mental Wellness would indicate increase in the level of engagement by 0.323 and 0.422 respectively. Furthermore, it discloses the high importance of living in harmony with the environment through observance of habits and practices to protect and promote a healthy environment, and to have the ability to make reasonable decisions or judgments relative to the level of work engagement of administrators.

On the other hand, the second model illustrates that Physical Wellness is inversely proportional with engagement in terms of predictive relationship. The negative correlation shows that an increase in Physical Wellness would indicate a decrease in engagement of administrators by 0.413. This result is highly remarkable because it signifies the idea that the administrators' engagement will decrease if their Physical Wellness increases by observing habits and practices such as but not limited to regular exercise, enough sleep at night, good eating habits, maintain a

desirable weight, and take food supplements. The delineation of the concept of productivity and engagement relative to physical wellness in this context should be cleared because based on studies illness can cause absenteeism and other factors that may hinder the employees to perform their duties and responsibilities in the workplace which eventually could affect productivity (Ngeno & Muathe, 2014; Hart, 1990). Non-observance of health and wellness practices could lead to bad health of the administrators but it does not necessarily follow that they are less engaged, as the results revealed. Besides, employees believed that joining physical wellness activities is a hindrance in performing their duties. However, considering that unfavorable practices in relation to physical wellness could lead to illness/disease which eventually could be a reason for them to disengage from their administrative positions, it is desirable that they practice certain habits and physical activities to maintain good health even at least in a moderate level.

Conclusions

Based on the findings of the current study, the following has been concluded:

1) Both the level of wellness and engagement of the administrators are moderate. Specifically, the administrators' Spiritual Wellness got the highest mean score among the dimensions while Physical Wellness got the lowest; and Relationship Management got the highest mean score among the antecedents of engagement while Compensation and Benefits got the lowest.

2) Wellness and engagement generally have positive significant relationship. Individually, different relationship appeared in each school. The observed distinction of results relative to the relationship of the variables from the different schools could have been affected by the uniqueness of the individual schools in terms of the social and physical environment, culture, relationships, personal characteristics, geographical location, policies, compensation and rewards system, structure among others.

3) Environmental, Mental and Physical Wellness Dimensions can predict engagement. Specifically, Environmental and Mental dimensions are positively correlated with engagement which means that the ability of the administrators to practice habits that promote environmental preservation and protection, and their ability to make sound judgement and/or decisions can positively influence or increase their level of engagement. Conversely, Physical Wellness is negatively correlated with engagement which signifies that the administrators' engagement level decreases when their Physical Wellness level increases or vice versa.

Recommendations

1) Provision of a holistic program to enhance the wellness and engagement of the administrators. Emphasized in this recommendation are:
    a. Sustain the existing spiritual and Lasallian Formation programs to nurture the administrators' sense of spirituality and virtues;

    b. Physical Wellness program to prevent stress-related illnesses should be provided with the perspective that although physical wellness inversely influence engagement, being physically healthy can make them more productive at work;

    c. Programs to uphold healthy working and/or interpersonal relationship are highly recommended considering that Relationship Management appeared to be the antecedent that predominantly facilitated engagement. Likewise, programs for Career Development and Work Environment to further enhance engagement are also encouraged.

    d. Provision of a total rewards program for administrators which may include but not limited to psychological rewards, and relevant privileges and incentives.

2) Individual schools should create a unique wellness and engagement program for the administrators based on the kind of relationship the variables from each school had as appeared in this study.

3) Schools are encouraged to build a culture of wellness and engagement wherein wellness in its entirety and engagement shall become a way of life in the workplace by all its members. Thus, schools should integrate in their program an information and awareness campaign regarding wellness and engagement for better understanding of these constructs and to obtain commitment and support from the academic community.

4) Future research direction may consider exploring deeper the relationship of the variables of this study and to discover the factors that affect the relationship especially the noteworthy finding of this research with regard to the negative correlation between physical wellness and engagement of administrators. Likewise, this research may also be replicated with other sets of participants.

More than these recommendations is the aim to develop and sustain a harmonized wellness for administrators looking at "wellness" in a holistic manner wherein all the dimensions are integral part of the whole person. Essentially, creating a program that fosters wellness and engagement of the administrators who are leaders of their respective units and partners of the Lasallian

Brothers in the realization of the school's vision and mission is another means of sending a positive message that their welfare and wellbeing are being taken care of by the institution.

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WORKPLACE CORE VALUES AND ORGANIZATIONAL COMMITMENT OF BASIC EDUCATION TEACHERS IN A PHILIPPINE CATHOLIC UNIVERSITY

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ABSTRACT

This paper primarily described and correlated the extent of practice of the workplace core values and the degree of organizational commitment of teachers of a Catholic University in the Philippines. Likewise, it explored whether a significant difference existed in the respondents' practice of the workplace core values and organizational commitment. Using a descriptive-comparative and correlational research design, the data were collected using survey questionnaires. The major findings of the study revealed that the respondents demonstrated a very high extent of practice of the workplace core values and indicated a dominant affective organizational commitment. No significant difference was found in both their practice of the workplace core values and their degree of organizational commitment. However, the results posited a relationship between workplace core values and organizational commitment. In fact, the results affirmed that the practice of the workplace core values significantly affected the organizational commitment of the teachers.

Keywords: Basic education teachers, Catholic university, Descriptive-correlational, Organizational commitment, Workplace core values

Introduction

Values are one fundamental characteristic that both employees and organizations share (Dose, 1997; Finegan, 2000). As such they are considered vital elements of an organization's culture and its ethics (Hofstede, 1984; Schein, 1992; Brown, 1995; Dickson, Smith, Grojean & Ehrhart, 2001). They serve as a reference to which acceptable behavior of relevance to the company as it interacts with its external environment and the norms of behavior for individuals within the organization. As non-visual elements of corporate identity (Holtzhausen & Fouries, 2009), values are inherent in the mission and goals of the institution and its strategies and structure, allocation of resources, codes of practice, policies and procedures, and actions (Schein, 1992; Lawrence & Lawrence, 2010).

More specifically, workplace core values are essential to the organizational performance (Santoriello, 2015) because they constitute beliefs vital to and reflective of the fabric of an organization (Buchko, 2007). They help and guide the actions and decisions of the organizations' culture (Lencioni, 2002; Rich, 2009). Likewise, they regulate or influence individual and collective moral awareness, judgment, character, and conduct. Personal and organizational values do not necessarily have to be similar, but they have to be in a balance to support and complete each other (Mattila, 2008). People who share the workplace core values of an organization may identify strongly or commit with the organization (Etzioni, 1975)—aptly termed organizational commitment which is defined as the attachment, emotionally and functionally, to one's place of work (Elizur & Koslowsky, 2001). It is characterized by a strong desire to maintain membership in the organization; a willingness to exert considerable effort on behalf of the organization; and a firm belief and acceptance of the goals and values translated into three components: affective, normative and continuance (Yousef, 2003).

To test the foregoing interplay between workplace core values and organizational commitment, the case of the University of Negros Occidental-Recoletos (UNO-R) was examined. As a Catholic institution imbued with Augustinian Recollect style of education, it espouses values that foster and encourage harmonious relationship in the workplace, firm commitment to the institution, and quality job performance among its employees (UNO-R Faculty Manual, 2006). Accordingly, the University offers the structure and climate for the integral formation of employees in the institutional workplace core values to help them understand and imbibe the Recoleto corporate identity, conduct themselves appropriately, and demonstrate commitment and service to the institution (REAP, 2007).

Though several studies consistently claim that values are linked with commitment, the case of a Catholic university imbued with Recoleto workplace core values, like UNO-R,

has yet to validate it. Thus, the study primarily described and correlated the extent of the practice of workplace core values and the degree of organizational commitment of basic education teachers of UNO-R. Demographic variables such as age, sex, and years of teaching were further considered in comparing the significant differences in the practice of workplace core values and extent of organizational commitment of the respondents. It also investigated, as a whole, if a significant relationship existed between workplace core values and organizational commitment. The findings can serve as baseline data for designing an enhancement human resource program to manage and process the workplace core values and strengthen the organizational commitment of teachers.

Theoretical Considerations

Person-organization fit. The study was primarily anchored on the person-organization fit theory. Person-organization fit has been defined as a form of congruence between the values of the organization and the person. When there is a perception of lack of fit, there is incongruence resulting to psychological, physiological, and behavioral consequences. Positive responses occur when there is fit (Chatman, 1989; O'Reilly, Chatman & Cadwell, 1991; Nwadei, 2003). Congruity between people's values and their environment promotes well-being regardless of the particular values to which people ascribe importance. People are likely to experience a positive sense of well-being when they emphasize the same values that prevail in their environment and when they live in an environment that allows them to attain the goals to which their values are directed (Sagiv & Schwartz, 2000; Bouckenooghe, Buelens, Fontaine & Vanderheyden, 2005).

Notably, several studies affirmed the impact of value congruence on well-being. Based on the findings of these studies, value congruence leads to better work adjustment, higher job satisfaction, and career success and satisfaction. Likewise, it also leads to commitment, turnover reduction, stress reduction, greater emotional well-being, and fewer psychosomatic symptoms (Meglino, Ravlin & Adkins, 1989; O'Reilly, Chatman & Cadwell, 1991; Finegan, 2000; Sagiv & Schwartz, 2000; Burke, 2001; Lauver & Kristof-Brown, 2001; Taris & Feij, 2001; Bouckenooghe, Buelens, Fontaine & Vanderheyden, 2005; Ostroff, Shin & Kinicki, 2005).

Contrastingly, value conflict may have an adverse effect on the well-being of people which can lead to job stress. Job stress in person-organization fit model either results from a misfit between individual values and environmental opportunities to fulfill those values or from environmental demands that exceed the individual's capacity (Bouckenooghe, Buelens, Fontaine & Vanderheyden, 2005). The lack of value congruence may operate as a liability which can affect corporate culture and employee commitment to the organization (Iyha & Adejumo, 2008).

For this reason, value management and processing in organizations are significantly needed to base and improve well-organized performance (Mattila, 2008). An organization works better by continually keeping in mind what is essential since values are the connecting thoughts that determine the direction of the actions of an organization regarding understanding its identity and accomplishing its goals supported by shared values. Given the context, the role of top-level management leaders plays a significant role in shaping a value-based organizational culture because they set the ethical tone in the organization. They are models to their employees who have to act in line with values before demanding this from others and give support to employees (support value-based behavior). Transformational or "emotionally effective" leadership could be the crucial aspect of successful value processing. However, managers need more information to have a clear and sincere vision about how values can strengthen and support the organizational culture that can eventually bring about positive results (Mattila, 2008).

Model of organizational commitment. The study was linked further to the three-component model of organizational commitment - *affective, normative,* and *continuance* by Allen and Meyer (1990, 1996) and Meyer, Allen and Allen (1997). As a multi-dimensional construct, organizational commitment is characterized by different mindsets: desire, obligation, and cost. Employees with affective commitment (AC) stay in the organization because of affection and desire. There are shared values and affection between the individual's values and the organization's goals and values. Meanwhile, those employees with normative commitment (NC) remain loyal to the organization because of a sense of loyalty or obligation that the individual feels toward the organization. On the other hand, employees with continuance commitment (CC) remain in the organization because of the perceived high cost of leaving due to either lack of viable alternative employment or the sacrifice they have to make (Meyer, Allen & Smith, 1993; Meyer, Allen & Allen, 1997).

Research showed that employees with a strong affective commitment (high AC scores) stay because they want to; those with strong normative commitment (high NC scores) stay because they feel they ought to, and those with strong continuance commitment (high CC scores) stay because they have to do so. Moreover, studies consistently indicated that employees who want to stay (high AC) tend to perform at a higher level than those who do not (low AC). Employees who remain out of obligation (high NC) also tend to out-perform those who feel no such obligation (low NC), but the effect on performance is not as strong as that observed for desire. Finally, employees who have to stay primarily to avoid losing something of value (e.g., benefits, seniority) often have little incentive to do anything more than is required to retain their positions. So, not all commitments are alike (For summaries of the empirical evidence, see Allen & Meyer, 1996, 2000; Meyer, Stanley, Herscovitch & Topolnytsky, 2002).

Values congruence and organizational commitment. Several studies also showed the close relationship between work values and organizational commitment as well as the crucial role of values-based management in organizations. The study of Nwadei (2004) on 420 technical professional employees of a multinational organization explored the relationship between perceived values congruence (PVC) and organizational commitment (OC). The key findings of the study were PVC related to OC; the relationship was different for each component of OC and socio-cultural group, and the regression models that described these relationships showed that each socio-cultural group was most strongly associated with a different dimension of values.

Moreover, Lawrence and Lawrence (2009) conducted a study on business students' values and their perception of their university's values and the relationship between these values and affective organizational commitment. Findings indicated that organizational vision values and individual conservatism values predicted affective commitment. Findings also indicated statistically significant differences between the students' values and their perception of their university's values, suggesting a degree of lack of person-organization (P—O) fit between the students' values and their university's values.

Furthermore, Abbott, White and Charles (2005) conducted two studies to confirm and clarify the relationships between values and components of organizational commitment (OC) in two organizations. Study 1 extended the work of Finegan (2000) by investigating antecedents of OC regarding personal and perceived organizational values while controlling for the effects of tenure. Study 2 involved a field experiment in examining the consequents of OC regarding turnover intention, how such intention varies as a function of the values of the alternative employer, and how it is related to the different components of OC. The results of Study I provided support for the argument that perceived organizational values are drivers of values-based OC, but that unlike the related components of affective and normative OC, continuance OC may not be values-based. Results of Study 2 indicated that turnover intention was higher in a company supporting vision values, and that affective OC acted as a buffer against interest in alternative employment. Together these findings imply that companies adopting pro-social values, such as vision, self-direction, and humanity may enhance affective and normative OC, and, thus, performance.

Also, other authors considered values, in general, and workplace core values, specifically, as essential variables in explaining organizational commitment (Kidron, 1978; Putti, Aryee & Liang, 1989; Elizur, 1996). Studies done by Elizur (1996), Elizur and Koslowsky (2001), and Kidron (1978 cited in Sikorska-Simmons, 2005) reported that a moderate relationship existed between work values and organizational commitment. Likewise, Putti, Aryee and Liang (1989) analyzed the relationships between work values and organizational commitment based on a sample of workers in Singapore. Their

findings indicated that intrinsic work values relate more closely to organizational commitment than extrinsic work values.

Demographic correlates of workplace core values and commitment.

To better understand the relationship between work values and commitment, their interactions with demographic indicators were likewise examined (Elizur & Koslowsky, 2001). Cherrington, Condie and England (1979) found that age, education, and seniority were correlated with several work values including the moral importance of work, pride in one's craftsmanship, and importance of money. Meanwhile, a consistent finding in the studies of Furnham (1984) and Elizur and Sagie (1999) was that men had the tendency to be more concerned about money and other instrumental and cognitive outcomes such as independence, mastery, dominance, competitiveness, and long-term career goals, while women had higher affiliate needs, sought more social approval, and were preoccupied with short-term career goals. Moreover, Mellor, Mathieu, and Swim (1994) found out that gender acted as a moderator in the relationship between structural features of local unions and commitment and that the effect of values congruence to organizational commitment was more manifested in employees who were tenured or had served the organization for years (Meglino, Ravlin & Adkins, 1989).

Research Methods

The study used descriptive-comparative and correlational research design. As a quantitative research method, the design involved the collection of data to systematically and accurately describe, analyze, and interpret the extent of the practice of the workplace core values and the degree of organizational commitment of basic education teachers. Likewise, it also sought to find out the relationship between the practice of the workplace core values and organizational commitment (Leedy & Ormrod, 2005). All 73 basic education teachers for school year 2017-2018 of the University of Negros Occidental – Recoletos, Bacolod City, Philippines were the respondents of the study. They were grouped according to sex, generational age, and years of teaching. Table 1 shows the profile of the respondents.

Table1: Profile of the Participants

Variable	n	%
Generation Age		
Millennial	42	57.5
Generation X	21	28.8
Baby Boomers	10	13.7
Sex		
Male	17	23.3
Female	56	76.7
Years of Teaching		
1- 3years	23	31.5
4-10 years	22	30.1
11-15 years	7	9.6
16-20 years	3	4.1
21-25 years	4	5.5
26-up	14	19.2
Total	73	100.0

The researcher-made questionnaire was used to gather the data on UNO-R workplace core values. Drawing insights from Augustinian pedagogical principles and spirituality as well as the Recollect character and identity and vision-mission of the university, each of the eight workplace core values was provided with five behavioral indicators. These indicators formed part the workplace core values scale which were used to measure the extent of practice of the basic education teachers of the workplace core values. To establish the validity of the instrument, five experts in the field were invited to assess the items in the questionnaire using Lawshe's Content Validity Ratio and Good and Scates validity criteria. Meanwhile, the reliability testing of the instrument was done using pilot-testing and yielded a reliability index of 0.982 using Cronbach alpha. Using a five-point Likert scale, the respondents rated their extent of the practice of the workplace core values: 5 – Very High Extent, 4 – High Extent, 3 – Moderate Extent, 2 – Low Extent, and 1 – Very Low Extent.

On the other hand, the standardized Three-Component Model (TCM) of commitment (Meyer, Allen & Allen, 1997) was used to assess the degree of organizational commitment of basic education teachers. Permission was granted to use the instrument. The *TCM Employee Commitment Survey* measures three forms of employee commitment to an organization: desire-based (affective commitment), cost-based (continuance commitment), and obligation-based (normative commitment). The survey includes three well-validated scales, the Affective Commitment Scale (ACS), Continuance Commitment Scale (CCS), and Normative Commitment Scale (NCS). Each is scored separately and can be used to identify the "commitment profile" of employees within an organization.

The study used the academic version of the original TCM Employee Commitment Survey consisting of 24 items. The respondents were asked to indicate the extent of the degree of their agreement or disagreement with each statement using the 5 Likert-type rating scale: 5 – Strongly Agree, 4 – Agree, 3 – Undecided, 2 – Disagree, and 1 – Strongly Disagree.

Permission from the school administrator and informed consent of the respondents were obtained before the conduct of the study. The orientation of the purpose of the research and the importance of the respondents' participation was also done to ensure the retrieval of authentic data to achieve the research objectives. The respondents were then assured of full confidentiality. No information that disclosed the respondents' identity would be released or published without their specific consent to the disclosure and only if necessary. The materials that contained the raw information derived from them would be destroyed after data processing within a given period.

Descriptive and inferential statistics were employed to analyze the data. Mean was used to determine the extent of the practice of the workplace core values and the degree of organizational commitment. After conducting the normality test for the data using Kolmogorov-Smirnov and Shapiro-Wilk Tests of Normality, the data were found to be not normally distributed. Hence, the use of Mann Whitney U-Test and Kruskall Wallis H-Test was justified to determine the significant difference in the practice of the workplace core values and organizational commitment of the respondents when grouped according to sex, age, and years of teaching. Meanwhile, to establish the correlation and effects of the significant variables, Pearson r and linear regression were employed, respectively.

Research Findings

Institutional workplace core values. The workplace core values which are the concerned of this paper are anchored on the Augustinian Recollect style of education (REAP, 2007) and the vision and mission of the University (UNO-R Vision-Mission, 2016). As an Augustinian center of learning and teaching, the University faithfully espouses workplace core values that reflect Augustinian pedagogical principles and spirituality such as charity, interiority, community, friendship, freedom, truth, justice and solidarity which are central to its identity and mission (REAP, 2007; Morahan, 2001).

In relation to its being a Recollect academic institution, the University is cognizant of and responsive to the contemplative, apostolic, and communitarian charism of the Order of Augustinian Recollects (Province of St. Ezekiel Moreno Order of Augustinian Recollects Life and Mission Project, 2015-2018) in all its academic and non-academic programs and activities. Consequently, the University gives witness to its Catholic identity and mission through its faithful adherence to its Augustinian Recollect character (UNO-R

Administrative Manual, 2012). Relative to this, the Catholic university promotes the following workplace core values: *interiority* (constant search for the truth, silence, reflection, and introspection); *love* (mercy and compassion); *Marian* (love, devotion to and imitation of Mary, Mother of God); *moral integrity* (goodness, truthfulness, uprightness, and transparency); *service* (succor, preferential option for the needy and the poor, and solidarity); *passion for excellence* (zeal, competence, and scholarship); c*ommunity life* (unity, friendship, and inclusivity); and *justice and peace* (fairness, honesty, dialogue, non-violence, and ecological integrity). These workplace core values facilitate the integration and practice of the Augustinian Recollect character in all aspects of the university life (UNO-R Administrative Manual, 2012).

The extent of practice of the workplace core values. Tables 2A and 2B present the extent of the practice of workplace core values of basic education teachers when they were taken as a whole and grouped according to age, sex, and years of teaching. The extent of the practice of the workplace core values as a whole was "very high" (M=4.41, SD=0.71). Among the eight workplace core values, community life (M=4.55, SD=0.81) and service (M=4.16, SD=0.78) got the highest and lowest means, respectively.

Table 2A: The Extent of the Practice of the Workplace Core Values of the Basic Education Teachers

Variable	Practice of Core Values			Interiority			Love			Marian			Moral Integrity		
	M	**SD**	**Int**	**M**	**SD**	**Int**	**M**	**SD**	**Int**	**M**	**SD**	**Int**	**M**	**SD**	**Int**
Sex															
Male (n=17)	4.52	0.56	VH	4.45	0.67	VH	4.60	0.55	VH	4.45	0.86	VH	4.47	0.59	VH
Female (n=56)	4.38	0.75	VH	4.34	0.79	VH	4.31	0.82	VH	4.50	0.74	VH	4.44	0.85	VH
Generation Age															
Millennial (n=42)	4.44	0.70	VH	4.37	0.71	VH	4.49	0.75	VH	4.44	0.86	VH	4.45	0.80	VH
Generation X (n=21)	4.44	0.37	VH	4.43	0.49	VH	4.31	0.50	VH	4.53	0.51	VH	4.52	0.42	VH
Baby Boomers (n=10)	4.24	1.18	VH	4.24	1.33	VH	4.06	1.23	H	4.58	0.80	VH	4.26	1.30	VH
Years of Teaching															
1- 3years (n=23)	4.57	0.77	VH	4.45	0.75	VH	4.70	0.84	VH	4.45	0.91	VH	4.53	0.87	VH
4-10 years (n=22)	4.40	0.60	VH	4.35	0.67	VH	4.37	0.56	VH	4.45	0.82	VH	4.45	0.68	VH
11-15 years (n=7)	4.31	0.23	VH	4.26	0.40	VH	4.06	0.10	H	4.46	0.49	VH	4.37	0.37	VH
16-20 years (n=3)	4.12	0.70	H	4.07	0.95	H	4.20	0.92	H	4.20	0.60	H	4.27	0.76	VH
21-25 years (n=4)	4.16	1.01	H	4.05	1.14	H	4.00	0.88	H	4.25	1.24	VH	4.25	0.90	VH
26-up (n=14)	4.37	0.87	VH	4.47	0.96	VH	4.16	0.99	H	4.74	0.27	VH	4.43	1.03	VH
As a Whole (n=73)	***4.41***	***0.71***	***VH***	***4.37***	***0.76***	***VH***	***4.38***	***0.78***	***VH***	***4.48***	***0.76***	***VH***	***4.44***	***0.79***	***VH***

Note: VH=Very High, H=High, M=Moderate, L=Low, VL=Very Low

Table 2B: The Extent of the Practice of the Workplace Core Values of the Basic Education Teachers

Variable	Service			Passion for Excellence			Community Life			Justice and Peace		
	M	**SD**	**Int**	**M**	**SD**	**Int**	**M**	**SD**	**Int**	**M**	**SD**	**Int**
Sex												
Male (n=17)	4.39	0.50	VH	4.59	0.66	VH	4.71	0.64	VH	4.52	0.92	VH
Female (n=56)	4.09	0.83	H	4.44	0.81	VH	4.50	0.85	VH	4.43	0.88	VH
Generation Age												
Millennial (n=42)	4.14	0.77	H	4.54	0.72	VH	4.58	0.79	VH	4.52	0.80	VH
Generation X (n=21)	4.15	0.60	H	4.47	0.48	VH	4.64	0.37	VH	4.48	0.51	VH
Baby Boomers (n=10)	4.24	1.17	VH	4.20	1.34	H	4.22	1.39	VH	4.08	1.60	H
Years of Teaching												
1- 3years (n=23)	4.23	0.76	VH	4.72	0.84	VH	4.74	0.83	VH	4.69	0.85	VH
4-10 years (n=22)	4.11	0.80	H	4.50	0.48	VH	4.55	0.70	VH	4.45	0.72	VH
11-15 years (n=7)	4.20	0.23	H	4.34	0.43	VH	4.43	0.42	VH	4.40	0.38	VH
16-20 years (n=3)	3.80	1.06	H	3.87	0.42	H	4.53	0.42	VH	4.00	0.69	H
21-25 years (n=4)	4.40	0.23	VH	4.20	1.08	H	4.20	1.23	H	3.90	1.81	H
26-up (n=14)	4.09	1.02	H	4.30	1.05	VH	4.40	1.04	VH	4.34	1.06	VH
As a Whole (n=73)	***4.16***	***0.78***	***H***	***4.47***	***0.77***	***VH***	***4.55***	***0.81***	***VH***	***4.45***	***0.88***	***VH***

Note: VH=Very High, H=High, M=Moderate, L=Low, VL=Very Low

Regarding sex, both male and female demonstrated a “very high extent" of the practice of the workplace core values, except in service where males obtained a “very high extent” (M=4.39, SD=0.50) compared to females who rated their extent of practice as “high” (M=4.41, SD=0.71). As regards to age, respondents showed a "very high extent" of the practice of the workplace core values of *interiority, Marian, moral integrity,* and *community life.* Meanwhile, millennials (M=4.14, SD=0.77) and generation X (M=4.15, SD=0.60) displayed a “high extent” of practice of *service*; baby boomers obtained a “high extent” of practice of *love* (M=4.06, SD=1.23), *passion for excellence* (M=4.20, SD=1.34), and *justice and peace* (M=4.08, SD=1.60). Concerning years of teaching, respondents showed divergence in their extent of the practice of the workplace core values, except those teachers with 1-3 years of teaching experience who showed a

consistent "very high" extent of the practice of the workplace core values. Likewise, the workplace core value of *moral integrity* was rated “very high extent” by all respondents.

The degree of organizational commitment. Table 3 shows the degree of organizational commitment of teachers when they were taken as a whole and grouped according to age, sex, and years of teaching. As a whole, the general organizational commitment profile of teachers revealed a dominantly affective commitment (M=4.28, SD=0.67). Comparing the respondents regarding sex, age, and years of teaching, teachers also showed a "strong agreement" in their affective commitment. Male (M=4.11, SD=0.95), baby boomers (M=4.06 SD=1.31), and those teachers with 21-25 years of teaching (M=3.53, SD=1.73) only exhibited "agreement." For continuance and normative organizational commitment, respondents displayed agreement regardless of sex, age, and years of teaching, except for those teachers with 4-10 years and 21-25 years of teaching experience who were undecided in the continuance commitment.

Table 3: The Degree of Organizational Commitment of Basic Education Teachers

Variable	Affective Commitment			Continuance Commitment			Normative Commitment		
	M	**SD**	**Int**	**M**	**SD**	**Int**	**M**	**SD**	**Int**
Sex									
Male (n=17)	4.11	0.95	A	3.49	0.69	A	3.68	0.66	A
Female (n=56)	4.33	0.56	SA	3.54	0.59	A	3.75	0.60	A
Generation Age									
Millennial (n=42)	4.33	0.55	SA	3.53	0.60	A	3.72	0.57	A
Generation X (n=21)	4.27	0.43	SA	3.51	0.53	A	3.78	0.50	A
Baby Boomers (n=10)	4.06	1.31	A	3.60	0.81	A	3.70	0.97	A
Years of Teaching									
1- 3years (n=23)	4.37	0.47	SA	3.59	0.58	A	3.86	0.46	A
4-10 years (n=22)	4.21	0.63	SA	3.36	0.64	U	3.56	0.60	A
11-15 years (n=7)	4.29	0.51	SA	3.52	0.61	A	3.75	0.51	A
16-20 years (n=3)	4.42	0.29	SA	3.54	0.31	A	3.79	0.64	A
21-25 years (n=4)	3.53	1.73	A	3.19	1.06	U	3.63	1.19	A
26-up (n=14)	4.40	0.65	SA	3.81	0.43	A	3.82	0.71	A
As a Whole (n=73)	***4.28***	***0.67***	***SA***	***3.53***	***0.61***	***A***	***3.74***	***0.61***	***A***

Note: SA=Strongly Agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly Disagree

The difference in the practice of the workplace core values and organizational commitment. Mann Whitney U-Test and Kruskall Wallis H-Test were used to determining the significant difference in the extent of the practice of the workplace core values and organizational commitment of teachers when they were grouped according to sex and age and years of teaching, respectively. The findings in Table 4 showed no significant difference in the extent of the practice of the workplace core values of teachers in relation to sex and age. However, a significant difference was found in the years of teaching, particularly in the extent of the practice of the workplace core values of love [H=22.778, p=0.000] and passion for excellence [H=18.979, p=0.002]. The result of the post hoc test using Dunn’s Test further revealed that regarding love and passion for

excellence, the extent of the practice of teachers with 1-3 years of experience was significantly higher than those with 11-15 years and 26 years and up of teaching experience. On the other hand, the results in Table 5 revealed that there was no significant difference in the degree of organizational commitment of teachers when compared according to sex, age, and years of teaching.

Table 4: The Difference in the Extent of Practice of Workplace Core Values of Basic Education Teachers

	Sex		Age		Years of Teaching	
	U	**p**	**H**	**p**	**H**	**p**
The practice of core values	403.5	0.344	2.255	0.324	10.011	0.075
Interiority	429.5	0.539	2.001	0.368	6.301	0.278
Love	351.5	0.099	4.426	0.109	22.778*	0.000
Marian	424.5	0.490	1.208	0.547	3.987	0.551
Moral integrity	451.0	0.739	0.656	0.720	4.284	0.509
Service	394.5	0.283	2.542	0.281	1.262	0.939
Passion for excellence	380.5	0.200	2.111	0.348	18.979*	0.002
Community life	385.5	0.207	0.633	0.729	7.759	0.170
Justice and peace	427.0	0.504	1.897	0.387	10.385	0.065

*Note: *The difference in the means is significant when $p \leq 0.05$*

Table 5: The Difference in the Extent of Organizational Commitment of Basic Education Teachers

	Sex		Age		Years of Teaching	
	U	**p**	**H**	**p**	**H**	**p**
Affective commitment	421.5	0.475	1.209	0.546	2.374	0.795
Continuance commitment	443.0	0.666	1.387	0.500	5.286	0.382
Normative commitment	417.5	0.443	0.921	0.631	3.447	0.631

*Note: *The difference in the means is significant when $p \leq 0.05$*

The relationship between the practice of workplace core values and organizational commitment. Table 6 presents the significant relationship between workplace core values and organizational commitment of teachers. Using Pearson product-moment correlation coefficient (PPM), the findings revealed that there was a significant relationship between teaching workplace core values and organizational commitment. All eight workplace core values showed correlation with affective, continuance, and normative types of organizational commitment. Meanwhile, linear regression was used to determine the significant effect of the workplace core values on the organizational commitment of the teachers. Table 7 indicates the effect of interiority on organizational commitment as follows: *Affective* = 6.441**Interiority* + 5.286; *Continuance* = 3.612**Interiority* + 5.570; and *Normative* = 5.317**Interiority* + 5.231. The result showed that interiority was the only predictor of organizational commitment among the eight workplace core values.

Table 6: Relationship between Workplace Core Values and Organizational Commitment

Core Values	Affective Commitment		Continuance Commitment		Normative Commitment	
	r	p	R	p	r	p
Interiority	.607**	.000	.394**	.001	.534**	.000
Love	.462**	.000	.188	.111	.413**	.000
Marian	.448**	.000	.347**	.003	.405**	.000
Moral integrity	.515**	.000	.243*	.038	.432**	.000
Service	.373**	.001	.261*	.026	.413**	.000
Passion for excellence	.420**	.000	.214	.069	.411**	.000
Community life	.556**	.000	.270*	.021	.482**	.000
Justice and peace	.574**	.000	.333**	.004	.486**	.000

Note: The correlation is significant when $p \leq 0.05$

Table 7: Effect of the Workplace Core Values and Organizational Commitment

	Model	r	r^2	df	F	p	Coefficient	t	p
Affective	Constant	0.607	0.369	1, 71	41.487	0.000	1.943	5.286	0.000
	Interiority						0.534	6.441*	0.000
Continuance	Constant	0.394	0.155	1, 71	13.045	0.001	2.154	5.570	0.000
	Interiority						0.315	3.612*	0.001
Normative	Constant	0.534	0.285	1, 71	28.269	0.000	1.867	5.231	0.000
	Interiority						0.428	5.317*	0.000

Discussion

The practice of the workplace core values. Overall, the findings of the study showed that the respondents acknowledged to have consistently practiced the workplace core values of the University. Meaning to say, they constantly demonstrated the acceptable behavior relevant to and reflective of their being teachers of a Catholic educational institution imbued with Augustinian Recollect charism (REAP, 2007; Holtzhausen & Fouries, 2009). Accordingly, it offered strong empirical evidence of effective integration and formation of the Recoleto workplace core values among teachers in the basic education department of the University (REAP, 2007). Likewise, it also confirmed the person-organization fit theory which emphasizes the congruence between the workplace values of people and the organization, that is, the values of the teachers and the Catholic University (Chatman, 1989; O'Reilly, Chatman & Cadwell, 1991; Nwadei, 2004).

Equally important, the findings also affirmed the vital witness of the University to "the Augustinian Recollect charism as a way of living the Christian faith" (UNO-R Administrative Manual, 2012). Hence, the practice of the workplace core values by teachers manifested the permeation, faithful adherence to, and living out of the Augustinian Recollect spirit and ideals among the members of the academic community (UNO-R Faculty Manual, 2012). For this reason, the University needs to continually

induct these shared values to teachers, especially to the newly hired, to provide and maintain an effective motivation system which can improve their productivity as teachers (Bouckenooghe, Buelens, Fontaine & Vanderheyden, 2005).

On the other hand, the result showed no significant difference in the extent of the practice of the workplace core values when teachers were grouped according to generational age and sex. However, a significant difference in the extent of practice existed in the years of teaching in the workplace core values of love and passion for excellence. Those teachers with 1-3 years of experience demonstrated higher practice in love and passion for excellence than those teachers with 11-15 and 26-up years of experience. The result implied that the practice of workplace core values was not dependent on the respondents' age and sex. On the other hand, the difference in the practice of the workplace core values between the new teachers and those teachers with longer experience in teaching may be attributed to the desire of young teachers to establish a good moral character for a favorable evaluation to get a permanent status in their teaching job.

The degree of organizational commitment. As regards the organizational commitment of teachers, the findings showed that their dominant organizational commitment was an affective commitment (AC). It implied that teachers displayed a strong desire to remain in the organization because 'there are shared values and affection between their values and the organization's goals and values' (Meyer, Allen & Smith, 1993; Meyer, Allen & Allen, 1997). Likewise, teachers with AC stayed because they wanted to, not just for the sake of obligation (normative) or lack of other alternative employment and fear of the loss of benefits they enjoyed for leaving the organization (continuance). Similarly, previous studies showed that employees with strong AC had the tendency to perform better and stronger compared to those with low AC or those with normative and continuance commitment (Allen & Meyer, 1996, 2000; Meyer, Stanley, Herscovitch & Topolnytsky, 2002).

Moreover, no significant difference was found in all types of organizational commitment when teachers were grouped according to sex, age, and years of teaching. Meaning to say, the demographic status of teachers had nothing to do with their decision whether to stay committed to the University or not. The findings validated the studies conducted by Suman and Srivastava (2012), Jaron, Sandoval & Garcia (2015) and Konya, Matić and Pavlović (2016) that demographics as mentioned earlier were not significant factors about organizational commitment.

Furthermore, the findings refuted several studies which considered gender (Furnham, 1984; Mellor, Mathieu & Swim, 1994; Elizur, 1996; Elizur & Koslowsky, 2001; Curtis, Upchurch & Severt, 2009), age (Cherrington, Condie & England, 1979; Yucel & Bektas, 2012; Jaron, Sandoval & Garcia, 2015), tenure and length of service, experience, or

employment (Iqbal, 2010; Suman & Srivastava, 2012; Kelarijani, Heidarian, Jamshidi & Khorshidi, 2014; Jaron, Sandoval & Garcia, 2015; Valaei & Rezaei, 2016) as significant variables to organizational commitment.

The relationship between workplace core values and organizational commitment. The results affirmed the close relationship between workplace core values and organizational commitment. All eight workplace core values were positively related to affective, continuance, and normative types of organizational commitment. The findings corroborated with some studies which found a correlation between values and organizational commitment (Kidron, 1978; Putti, Aryee & Liang, 1989; Elizur, 1996; Elizur & Koslowsky, 2001; Nwadei, 2004; Abbott, White & Charles, 2005; Lawrence & Lawrence, 2009). Using regression analysis, the results further revealed that the practice of the workplace core values significantly affected the respondent's organizational commitment (Finegan, 2000; Froese & Xiao, 2012; Mitić, Vukonjanski, Terek, Gligorović & Zorić, 2016). However, among the eight workplace core values, only interiority could be considered a predictor of organizational commitment. The findings implied that the more teachers embrace and practice the values of the workplace, the more loyal or committed they become to the educational institution. It further showed a far-ranging implication to the human resource regarding values orientation and management in the organization to improve commitment, job satisfaction, and productivity of teachers (Mattila, 2008). In this context, the top-level school executives must assume greater responsibility in ensuring that workplace core values are appropriately disseminated to all members of the academic community and integrated into its programs and activities to enhance and strengthen the organizational culture (Stevens, 1999).

Conclusions

Based on the findings of the study, the respondents of the Catholic university consistently practiced the institutional workplace core values and showed a dominant affective organizational commitment. The relationship between the practice of the workplace core values and organizational commitment was also established showing that workplace core values affected organizational commitment. In short, the teachers embraced and imbibed the non-visual elements of the organization, hence, they became more loyal and committed to the organization.

In this context, it is recommended that the findings of the study will be utilized as baseline data for the top-level school executives in designing the proper and adequate mechanism for the formation in UNO-R workplace core values and strengthening the organizational commitment of teachers for the continuous enhancement of the organizational culture of this Catholic University as a way of giving witness to its

Augustinian Recollect spirit and ideals. More specifically, the orientation program for newly employed teachers in the University must give utmost importance to the introduction of these workplace core values to the teachers beyond the basic information about cash and non-monetary incentives being offered to foment loyalty and commitment and to prevent massive turnover of teachers. This mechanism, however, can also be applicable and beneficial to any institution. Follow up studies including relevant variables such as job performance and job satisfaction are in order.

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USING LINE AS AN ALTERNATIVE CHANNEL FOR IMPROVING ENGLISH WRITING ABILITY OF THAI EFL STUDENTS

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Abstract

Being recognized as one of the top best mobile applications, LINE has been widely used around the world. In education, many LINE functions have been extensively used to assist language learning. As commonly seen in school, many students of all levels spend lots of time discussing their problems in learning English with teachers, sending their assignments, and doing many activities on this application. With regard to the coming of LINE to language learning, the present study explored the effects of using LINE as a channel for improving English writing ability of Thai EFL students in a public university in Nakhon Pathom Province, Thailand. The findings report a greater improvement of the students' writing ability after the month of English paragraph writing practice on LINE. When compared with the control group, English writing ability of the students in the experimental group who practiced writing on LINE was significantly greater ($t = 3.96$, $p \leq 0.05$.) Those who practiced writing on LINE claimed that they felt more enjoyable and had less learning anxiety. They believed that LINE was an effective language learning tool.

Keywords: LINE applications, language teaching**,** channel for improving English writing**,** Thai EFL

Introduction

English, a West Germanic language that originated in early medieval England, serves as a tool for various purposes of communication. It is commonly used for business contact, scientific terms, travel, politics, computer, aviation and diplomacy (Crystal, 2003.) Therefore, mastering the English language can bring about academic and professional success (Pandey & Pandey, 2014.) In other words, many big companies and educational institutions establish a minimum requirement of English proficiency that a candidate needs. When students want to study in higher education, their English proficiency test scores from either TOEFL or IELTS must meet the minimum requirement of the institution they have applied to. Before employees are hired, they need a good TOEIC score that meets the company's requirement. For these reasons, being proficient in English can make a good living, and having such proficiency needs good language skills (Reddy, 2009.) Writing, in particular, is considered as one of the toughest skills for non-native English speakers to master; however, it plays a significant role in communication (Al-Gharabally, 2015.) This is because good writing is a key to success at school, workplace and common activities in daily lives (Sharmila, 2016.) At school, students write essays and papers. At work, employees write proposals, emails, memo, letters and reports. As concerns Thai students, Noom-ura (2013) claims that writing difficulties are a result of insufficient writing practice. Thai students do not commonly use English and they have exposure to English writing at a later stage during high school or perhaps university. Therefore, they need more practice and writing practice on LINE can be a good choice as this application provides a chance for students to share knowledge freely (Brick, 2012.) They can use LINE for both social interaction and academic purposes (Bogart & Wichadee, 2015.) They can receive answers promptly on LINE (Wee, 2013.) Additionally, LINE is one of the popular social applications with the large number of users in Thailand because of its useful and up-to-date functions (IT24HRS, 2016.) In the current research, we realize the influential role of LINE in promoting language learning so it was used as a channel for English writing practice.

Literature review

The importance of English writing ability and causes of writing difficulties

English writing skills are considered the most difficult, yet they are very important for the academic and professional success of students (Chuenchaichon, 2014; Cumming, 1995; Hyland, 2003; Kroll, 2003; Manchón, 2009; Matsuda, 2003; Silva & Matsuda, 2001.) In other words, students who are highly proficient in written English can study well in higher education and get a well-paid job after graduation (Chuenchaichon, 2014.) For instance, students who want to study abroad need to pass either TOEFL iBT or IELTS Exams which contain writing sections as parts of the exams. Regarding such a necessity, many scholars have been figuring out the key factors to English writing achievement. Rinnert and Kobayashi (2009) claim that both the students' first language and educational context can make some impacts on their writing ability. Crowe's study (1992) reports that Asian students had difficulty developing transition, unity, and cohesion. Another problem is that except bilingual and international schools, most of Thai EFL students are truly exposed to English writing when they are in secondary school and academic writing

when studying in university (Chuenchaichon, 2014.) Most recent studies have shown that Thai EFL students did not have adequate English grammar and vocabulary knowledge (Boonyarattanasoontorn, 2017; Rodsawang, 2017.) For instance, they could not combine words to make a complete English sentence because of their insufficient knowledge of English parts of speech (Rodsawang, 2017.) Moreover, when they wrote, they relied on Thai grammar rules; therefore, they usually made lots of English grammatical errors (Promsupa, Varasarin, Brudhiprabha, 2017.)

Second language acquisition theories concerned with writing ability

To help students acquire English writing skills, many EFL writing teaching methods have been developed constantly over the past decades. The Cognitive School is concerned with the thinking process of EFL learners when they learn to write. The activities in this school involve writing until the idea comes up, summarizing the main idea, self-questioning, reading silently from their pieces of writing (Wenden, 1991.) The Expressivist School aims at promoting freedom to write and self-discovery (Berlin, 1988.) Students are assigned to write down whatever comes up in their mind with little or no concern about linguistic mistakes. Yet the Expressivist's teaching style will probably not be appropriate for EFL students because the ability to write freely requires some language knowledge from the receptive skills such as reading and listening. However, most EFL students still have insufficient vocabulary knowledge and proper writing education. The drawbacks of the Expressivist School are that this school emphasizes writing act but abandon the nature of writers and their language background (Dueraman, 2015.) The Social Constructivist School of thought sheds light on knowledge construction through interaction with other members of the society (Vygotsky, 1978.) This approach focuses on the environment in forming the students' writing skills (Chaisiri, 2010; Spencer, 2012; Yuknis, 2010.) This school is appropriate for students who have some background knowledge about the target language. Indeed, the Social Constructivist's approach brings students from their actual stage of development (their language background) to their potential stage of development (the level that students can reach.)

Regarding the theories mentioned above, the present study follows the Social Constructivist's approach as it is apparently linked with the concept of using the Internet for language learning purposes (Kok, 2008.) The Internet is a cyber-community where people around the world keep in touch with each other. With reference to learning theories, Social Constructivists' approach emphasizes that learning and development are the outcomes of social interactions as the Internet technology like LINE application provides lots of functions that promote interaction (Bogart, 2014.) LINE allows students to participate with other users through functions such as LINE chat rooms. During this process, a community of practice, a group of people who share a concern about a particular thing, occurs naturally (Vygotsky, 1978.) For instance, a group of students who want to improve their English writing ability can share their learning problems and receive comments and suggestions with either each other or more knowledgeable people like teachers. That is to say, in the world of Social Constructivism, anyone who takes part in the learning development can play a role as a teacher or student (Pan and Bonk, 2007.) Additionally, with sufficient social interactions, students' cognitive skills or the ability to

perform mental activities such as problem solving and critical thinking can be developed. These activities can be carried out on social applications. In other words, lots of functions available on social applications can bring students from their actual stage of development (the stage they can do problem-solving tasks independently) to their potential stage (the stage they do more difficult problem-solving tasks with some guidance from more knowledgeable people like teachers or peers.) This is defined as the Zone of Proximal Development (Vygotsky, 1978.)

EFL writing research

In order to find out what approaches best help improve the students' written English, numerous research studies are needed. In Thailand the fields of EFL writing research are classified into nine categories such as approaches to teaching writing, learning strategies, written discourse analysis, coherence in writing (how text is systematically and logically tied to make sense,) genre-based writing instruction (particular types of written discourse i.e. notices, diaries, etc.,) writing errors, writing feedback, writing assessment, and online writing and new technology (Chuenchaichon, 2014.)

Yang (2010) investigated EFL writing teaching methods aimed at building thinking skills of high school students. It was found that among various methods, brainstorming, writing in groups and pairs, and drill and practice (writing to a model or substituting some parts of the sentence) were generally used in teaching writing. Suwantarathip and Wichadee (2010) discovered that cooperative learning activities such as Think-Pair-Share, Numbered Heads Together, and Peer Review could reduce students' anxiety, build positive attitudes, and improve writing ability of Thai EFL sophomore students. Wichadee (2010) found that online learning could improve English summary writing ability, critical thinking, and social interaction of university students. Srichanyachon (2011) explored the improvement of the students' writing ability after receiving teacher and peer feedback. The findings have revealed that Thai EFL university students preferred their teacher's comments on linguistic forms to peer comments. Yet the comments from the latter highly motivated their English writing learning. Pawapatcharaudom (2007) found that English writing proficiency was the biggest problem for Thai EFL undergraduate students. Their writing problems were categorized into four main areas: (1) unable to finish an essay within the time allotted; (2) unable to write an English academic paper; (3) unable to write grammatically correct sentences; and (4) unable to develop a well-organized content. Most recently, Boonyarattanasoontorn (2017) conducted a study with 157 second-year Thai undergraduate students in Bangkok. The results have indicated that the students had most difficulty writing English and grammatical elements were their biggest problem. The causes of the problems were their anxiety when writing because of their insufficient grammatical and vocabulary knowledge.

The role of the Internet and LINE in language learning

Mentioned earlier, EFL writing research has been conducted in innumerable ways and one of the most remarkable methods is online technology. Online technology has come

into mankind and taken part in almost activities in daily life. The technology has been being developed continuously and nowadays all smartphones have 3G or 4G cellular connectivity as well as Wi-Fi. They also have a touch screen, a virtual or a full physical mini-keyboard, a camera for both image and video capture, a large memory storage, a GPS chip, a Bluetooth and USB connection and many other impressive features. In education, Internet accessibility has provided students more opportunities to learn languages authentically and meaningfully. Students can be connected to the Internet which allows them to check email, log into social media and download applications (European Commission, 2015.) They can experience virtual social networks which allow them to chat with other users worldwide. While they are chatting, they can practice English by using the language to communicate with other students or native speakers. They can download language learning applications on the Internet and use them while they are waiting for the bus or train to school (Richards, 2015.)

As part of the Internet world, social networking applications, in particular, have a strong influence on students. In other words, these applications are not only used for social interaction, but they can also be used as an alternative communication channel for academic purposes (Bogart & Wichadee, 2015.) Especially LINE, it has been one of the most successful social networking applications. In Thailand, the number of LINE users was 41 million in 2016 (IT24HRS, 2016.) Out of 234 minutes a day spent on smartphones, Thai citizens devoted 70 minutes a day on LINE accounting for one-third of the total time. On the subject of language learning, LINE has functions that promote a positive learning environment. In LINE chat rooms, for example, students can use stickers and emoticons to represent their feelings and thoughts when they communicate with their teachers and friends. These stickers and other animations can break down the generation gap between the teacher and students and reduce learning anxiety because of their funny looks. Stapa and Shaari (2012) believe that using emoticons with messages can help students feel like they were in a real face-to-face interaction. During the interaction, the teacher can give advice and comments, together with LINE stickers. For all these reasons, it is worth a shot using LINE for teaching English writing.

Reinforcing the popularity of LINE, Bogart (2014) surveyed 128 Thai students in Bangkok University and found that the students had positive attitudes toward the possibility of using LINE in doing classroom assignments but it had to be carried out under the teacher's control. Bogart and Wichadee (2015) explored using LINE for academic purposes of 144 Thai undergraduate students. The study focused on using LINE in the English for Communication Arts Professionals course for discussions on the topic and giving responses to detailed questions about an unethical advertisement. The findings have reported that the students used LINE (95.8%) more than other social networking applications. They believed that LINE was an effective tool for communication with their teachers (76.4%) and a channel for communication in English (72.2%.) Most recently, Shih, Lee, and Cheng (2015) incorporated LINE into the English spelling class of 29 EFL Taiwanese students and found that the students' spelling ability significantly improved.

In respect of the influence of LINE on learning, the present study emphasizes the necessity of English writing for academic purposes and used LINE as an assisted

language learning application to help improve English writing ability of Thai EFL students.

Research questions

1. To what extent did Thai EFL students make progress in their writing ability after a practice period on LINE?
2. What were the students' attitudes towards the contribution of LINE to improving English writing ability?

Methods

Participants

The population of this study was 335 students who had English writing score less than 50% (25 out of 50 marks; See Appendix for grading criteria.) The scoring results were derived from the first semester of the 2017 academic year. The researchers used the sample size calculation formula of Yamane (1973) to determine the size of the current sample group as shown below.

n = the sample size
N = the population size
e = the error of sampling method which is 0.05

$$n = \frac{N}{1+Ne^2}$$

$$n = \frac{335}{1+335(0.05)^2}$$

$$n = 182.31 \approx 182$$

According to the calculated result, the proper sample size is 182; however, there were only 160 volunteering participants in this study. Out of the total number of participants, 80 students were willing to participate in the one-month writing practice on LINE so they were put in the experimental group. Meanwhile, the other 80 students in the control group were randomly selected from the rest of them. The students of both groups were freshmen from the faculties of engineering, science, nursing, and pharmacy of Mahidol University in Nakhon Pathom Province, Thailand. Their ages were between 18 and 20 years. While this study was being conducted, they were taking the English Level 2 course in the 2017 academic year. It was a compulsory course for students who had the O-NET score (Ordinary National Education Test – The National Test of Thailand that Mattayom 6 students need to take before studying at tertiary level) in English proficiency less than 70 out of 100 marks. This course aimed at improving and developing English listening, speaking, reading and writing skills in the context of daily lives. As concerns English writing skills, students learned about simple, compound and complex sentences, transition signals (i.e. first of all, before, after, finally, consequently, etc.,) and fundamental English grammatical features (i.e. verb tenses, parts of speech, etc.) At the

end of the course, the students were expected to be able to write well-organized English paragraphs. However, it was not easy for this group of students to accomplish such a goal as they did not usually use English. They had difficulty composing well-organized paragraphs. They could not write English sentences accurately and appropriately. They had a wide range of problems such as insufficient vocabulary knowledge, making fragments, comma splice and run on sentences, a lack of paragraph unity, incorrect English verb tenses, incorrect subject and verb agreement, and many more. These problems could not be neglected since English writing ability was necessary for their language study and many other courses at tertiary level. Consequently, they urgently needed to improve their English writing ability.

Research procedure

1. Experimental and control groups

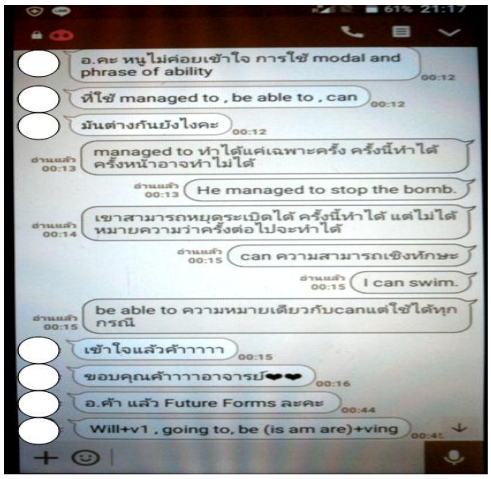
The participants were divided into two groups with 80 students each. Eighty volunteering students participated in the English writing practice on LINE App for one month while those in the control group did not. However, all of the two groups still studied in the English class as usual.

2. Pre-test

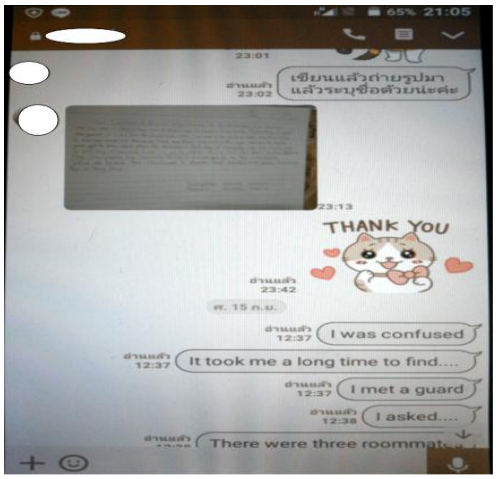
The process began with the pre-test administration. The test aimed at finding the students' English writing background proficiency. The students of both experimental and control groups had one hour to compose a 200-word paragraph. The criteria for grading their writing proficiency were grammar and mechanics, vocabulary knowledge, content, and paragraph unity (See Appendix: Writing scoring rubrics). The pre-test topic was 'My favorite sport.'

3. English writing practice on LINE

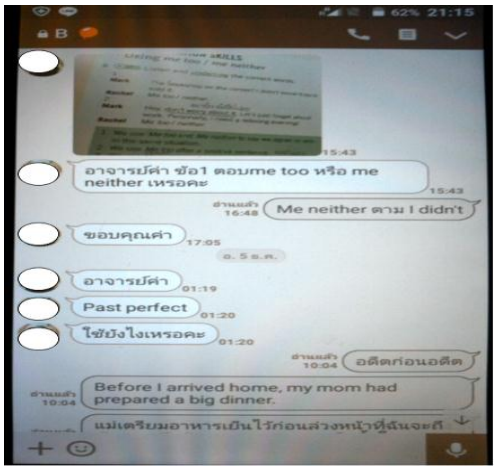
Only the students in the experimental group were assigned to participate in this writing practice. They were given one month to practice English writing on LINE. During the practice period, they were assigned to write four English paragraphs—one for each week. They sent their writing assignments in the teacher's LINE Chat Room. They were allowed to ask and discuss with the teacher at that time about some grammatical features, word choice, paragraph organization and many other issues in the chat room. They could text messages, post their written pieces, and use a phone call and a VDO call. They could revise each written piece as many times as they want upon their preference. As is seen below, Figure 1 illustrates the interaction between the students and the teacher in the LINE chat room. Figure 2 shows the improvement of a student's writing ability during the practice period.



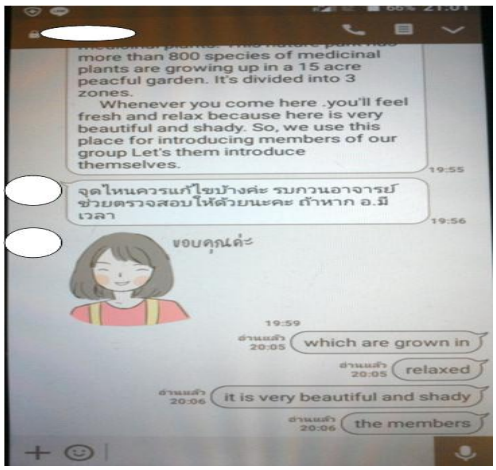
A. A student did not understand some English grammatical points so she asked the teacher in LINE Chat Room.



B. A student took a picture of her written piece and sent it to her teacher; then the teacher gave her feedback.



C. A student did not understand some lessons in the book so she posted it in LINE Chat Room.



D. A student typed her written piece and sent it to her teacher.

Figure 1: The interaction between the teacher and students in the LINE chat room

Week 1: Who do you want to be like?

I thinking [fragment] about who I want to be like. And now I think I want to be like my dad. Why [auxiliary verb] I want to be like my dad? May be because he is my parent and is consultants [noun] for me. When I have a problem [fragment]. My dad will stay next to me always [word order], so I can tell him always [word order] and tell all the problem with [preposition] him. My dad will have good the [article] answer [noun] always [word order]. He have [subject-verb agreement] good idea and good the [word order] attitude, but My [capitalization] dad won't give the answer with [preposition] you. He will ask the questions back to you. Because he want [subject-verb agreement] to know about your opinion and want [subject-verb agreement] to know about your attitude. Next he will tell you what you should do with your problem. My dad work [subject-verb agreement] hard always [word order]. He work [subject-verb agreement] for my mom, my brother and me. So My [capitalization] dad look [subject-verb agreement] like my hero and I want to be like him.

Week 2: The things foreigners should know before coming to Thailand.
Before foreigners coming [fragment] to Thailand, I believe they feel very exciting [participle]. But they don't know about place, food or manners of Thailand so they should know those all before coming to Thailand. When we thinking [fragment] about Thailand, the first we think is food because Thai food have [verb] spicy and hot, it don't [subject-verb agreement] have [word choice] in foreign countries. Thai food famous [word order] have [word choice] Tom Yum Gung. It make [verb] from lemongrass, shrimp and etc. Its taste very spicy [fragment]. The second we think is travel in Thailand. Thailand have [subject-verb agreement] many place [noun] for travel, for example Phra Kaew Temple or midnight market. It very beautiful and very exciting [fragment]. The foreigner should learn about it before coming to Thailand. And the last we think is manners. It very important [fragment] because the manners of foreigners are difference [adjective] from Thailand. In Thailand focus about adult and young [fragment]. The young should respect to [preposition] adult or people mustn't kiss in public. On the other hand, I am Thailand [word choice] and people in Thai [word choice] should present manners is correct [word order] to foreigners for they can learning [verb] about Thailand. Finally if we going to countryside [fragment], we should learning [verb] this country about manners or place.

Week 3 : A famous restaurant in my community
There are many types of food. You can choose dessert [noun] or meat in each meal. The restaurant that I choose to talk about is my favorite restaurant. My favorite restaurant is Srichan Restaurant. Srichan has lots of menus. This restaurant is a number one of top ten famous restaurants in Salaya Community. I like to eat with the gang because the food is not expensive. My favorite dessert is honey toast with ice cream. Honey toast is a good choice to eat because it is sweet and fresh. Moreover, people who like desserts must like this restaurant because it serves lots of dessert menus such as bread and jam, chocolate cake, crape cake, smootie and many more that I can't say all. Besides my favorite restaurant, I have listed the top five famous restaurants. They are Maitok Maitok, Buri Yummy, Flamingo and NaMor Shabu. If you come to my community, you can choose the restaurant you like. It depend [subject-verb agreement] on your style.

Week 4: Benefits of watching movies
Everybody likes to watch movies! I said that because watching movies is the best choice to relaxing [verb] and every generation can watch it. There are many types of movies for every generation and they give the [article] different benefits for each age. Children like to watch animation movies because it [pronoun] is so cute and bring imagination to them. Adults like many types of movies such as romantic movies, horror movies, action movies, sci-fi movies, comedy movies, etc. Each type of movies has different benefits. Comedy movies make you laughing [verb] and relax. Romantic movies make you happy and sometimes you are not only happy with [article] story but also you are happy listening to music in the movies. So it can relax you too. In my opinion, I think every type of movies has different benefit and I think watching movies is not only beneficial for consumers but it also supports movie makers and the country too. For movie makers, they earn money so if they make good movies, people will follow and support them. For country [article], movies can make money for the country so it is good for economics. If movies famous to other countries [fragment], it can make better tourism, economics and the movies and show the tradition in that country. For example, King Naraesuan the movie is a good movie in many ways. It is about Thai history so it makes people have knowledge in Thai history and Thai tradition such as clothes, daily life, language and architecture. Let's see a movie after class!

Figure 2: English writing practice on LINE

4. Post-test

The post-test was administered for both groups of the students in the classroom. The aim of the test was to evaluate and compare the English writing proficiency of the students who practiced their written English on LINE with those who studied only in the classroom. The time allotment for their 200-word English paragraphs was one hour. The post-test topic was 'Are you a good English language learner?'

5. Conducting an interview

Ten volunteering students in the experimental group participated in the interview the week after the post-test. The interview questions include their attitudes toward using LINE as a means to practice English writing, their writing improvement after the practice and LINE functions that helped improve their English writing. It took five minutes for interviewing each student and they answered questions separately in order to avoid copying answers from the other interviewees.

Data analysis

1. The scoring results of the pre-test and post-test were analyzed by the SPSS Program, Paired Samples T Test. The students' writing errors were counted to compare their English writing proficiency before and after practicing English writing on LINE.
2. The pre-test and post-test scoring results of the experimental group were compared with those of the control group by the SPSS Program, Independent Samples T Test.
3. The students' answers from the interview were analyzed by content analysis in order to investigate their attitudes toward using LINE to practice English writing and their improvement after the practice.

Results

This section is divided into two parts: (i) English writing ability of the students after practicing English writing on LINE application and (ii) their attitudes towards the contribution of LINE to improving English writing ability.

English writing ability of the students

Table 1: English writing ability of the students comparing the pre-test and post-test scores

Writing ability	**Full marks**	**Tests**	**Min.**	**Max.**	**Mean**	**SD.**	**t**	**Sig. (2-tailed)**
1. Grammar	15	Pre-Test	1	14	7.09	3.64	-9.83	.000
		Post-Test	2	15	9.46	2.91		
2. Content	15	Pre-Test	2	15	7.33	3.56	-7.01	.000
		Post-Test	4	15	9.53	3.60		
3. Vocabulary	10	Pre-Test	1	10	5.05	2.23	-10.31	.000
		Post-Test	3	10	6.85	2.02		
4. Paragraph unity	10	Pre-Test	2	9	5.50	2.16	-11.34	.000
		Post-Test	2	10	7.35	1.94		
Total	**50**	**Pre-Test**	**7**	**45**	**24.96**	**11.06**	**-11.55**	**.000**
		Post-Test	**16**	**49**	**33.19**	**9.35**		

The results in Table 1 reveal that the students in the experimental group made progress in their English writing ability. In total, they had a mean score of 33.19 in the post-test which is significantly higher than a mean score of 24.96 in the pre-test ($t = -11.55$, $p \leq 0.05$.) Referring to the subcategories of English writing ability, the students had significantly higher mean scores in all of them. The students made fewer errors in English grammar and mechanics. They also used appropriate vocabulary words to write meaningful and well-organized paragraphs. Apparently, when compared with the control group, English writing ability of the experimental group was far greater than that of the control group as shown in Table 2 and Table 3.

Table 2: The pre-test results comparing the students' English writing ability of the experimental and control groups

Writing ability	**Full marks**	**Experimental group**				**Control group**				**t**	**Sig. (2-tailed)**
		Min.	**Max.**	**Mean**	**SD.**	**Min.**	**Max.**	**Mean**	**SD.**		
1. Grammar	15	1	14	7.09	3.64	2	13	6.78	3.06	0.59	0.56
2. Content	15	2	15	7.33	3.56	1	12	6.79	2.91	1.05	0.30
3. Vocabulary	10	1	10	5.05	2.23	1	9	5.01	2.15	0.11	0.91
4. Paragraph unity	10	2	9	5.50	2.16	1	9	5.33	2.21	0.51	0.61
Total	**50**	**7**	**45**	**24.96**	**11.06**	**9**	**42**	**23.90**	**9.34**	**0.66**	**0.51**

Table 2 shows the pre-test results of the experimental and control groups. Overall, the English writing score of the experimental group was not much better than that of the control group as shown by a mean score of 24.96 of the experimental group and a mean score of 23.90 of the control group ($t = 0.66$, $p \geq 0.05$.) With respect to grammar, content, vocabulary knowledge, and paragraph unity, there was no statistically significant difference between the two groups as well.

Table 3: The post-test results comparing the students' English writing ability of the experimental and control groups

Writing ability	**Full marks**	**Experimental group**				**Control group**				**t**	**Sig. (2-tailed)**
		Min.	**Max.**	**Mean**	**SD.**	**Min.**	**Max.**	**Mean**	**SD.**		
1. Grammar	15	2	15	9.46	2.91	2	15	7.70	2.68	3.98	.000
2. Content	15	4	15	9.53	3.60	2	15	7.54	2.68	3.96	.000
3. Vocabulary	10	3	10	6.85	2.02	1	10	5.49	2.16	4.12	.000
4. Paragraph unity	10	2	10	7.35	1.94	2	10	7.13	1.88	0.75	0.46
Total	**50**	**16**	**49**	**33.19**	**9.35**	**10**	**49**	**27.85**	**7.62**	**3.96**	**.000**

However, after practicing English writing on LINE App, a mean score of 33.19 of the experimental group in the post-test was significantly greater than a mean score of 27.85 of the control group ($t = 3.96$, $p \leq 0.05$) as shown in Table 3. With respect to the subcategories of English writing ability except paragraph unity, the students in the

experimental group made significantly better progress in all of them than those in the control group. Aside from their higher score in the post-test, the students in the experimental group made fewer English writing errors as illustrated in the following tables.

Table 4: English writing errors detected in the pre-test topic 'My favorite sport'

Types of errors	**Number of errors**	**%**	**Example of errors found in the study**
1. Incorrect use of auxiliary verbs	142	6.8	Error: My friends and I am footballers. Correction: My friends and I are footballers.
2. Incorrect subject and verb agreement	201	9.6	Error: My friend play basketball. Correction: My friend plays basketball
3. Participles	56	2.7	Error: I am exciting to play that sport. Correction: I am excited to play that sport.
4. Incorrect word choice	98	4.7	Error: I like to swim when I was childhood. Correction: I like to swim when I was a child.
5. Incorrect use of tenses			
5.1 Past simple	112	5.4	Error: I leaved home and went swimming Correction: I left home and went swimming
5.2 Past progressive	50	2.4	Error: While I played tennis, a ball hit my head. Correction: While I was playing tennis, a ball hit my head.
5.3 Present perfect	12	0.6	Error: I had played tennis since five years. Correction: I have played tennis for five years.
6. Double negative	23	1.1	Error: I never don't want to go to the gym. Correction: I don't want to go to the gym.
7. Gerunds	18	0.9	Error: Play football is popular among Thai male teenagers. Correction: Playing football is popular among Thai male teenagers.
8. Infinitives	24	1.1	Error: I wanted to get taller so my brother suggested me play sports. Correction: I wanted to get taller so my brother suggested me to play sports.
9. Articles a, an, the	210	10.0	Error: I am a tallest student in my classroom. Correction: I am the tallest student in my classroom.
10. Determiners this, that, these, those	44	2.1	Error: These stadium is new. Correction: This stadium is new.
11. Pronouns	149	7.1	Error: Playing sports give I a chance to meet my close friend. Correction: Playing sports has given me a chance to meet my close friend.
12. Fragments	101	4.8	Error: They swimming with their friends. Correction: They were swimming with their friends.
13. Irrelevant sentences	32	1.5	Error: I walk my dog and I usually go jogging with her. Dogs are my favorite pets. Jogging with my dog has inspired me to be an athlete. Correction: I walk my dog and I usually go jogging with her. ~~Dogs are my favorite pets.~~ Jogging with my

			dog has inspired me to be an athlete
14. Run-on sentences	28	1.3	Error: I do aerobics with my friends and I play volleyball with my sister because she is as tall as me so we can be volleyball players and volleyball is my favorite sport. Correction: I do aerobics with my friends but I play volleyball with my sister. Because she is as tall as me, we can be volleyball players. Volleyball is my favorite sport.
15. Comma splice	13	0.6	Error: I am short, I can play basketball well. Correction: I am short but I can play basketball well.
16. Incorrect punctuations	17	0.8	Error: Do you like golf. Correction: Do you like golf?
17. Capitalization	66	3.2	Error: i play volleyball after class. Correction: I play volleyball after class.
18. Prepositions	170	8.1	Error: The importance at playing sports is for good health. Correction: The importance of playing sports is for good health.
19. Spelling	191	9.1	Error: It is beautifull and wonderfull moments. Correction: It is a beautiful and wonderful moment.
20. Word order	104	5.0	Error: I have play sport always. Correction: I always play sports.
21. Nouns	97	4.6	Error: I want to teach childrens to swim. Correction: I want to teach children to swim.
22. Adjectives	78	3.7	Error: Playing sports is benefit. Correction: Playing sports is beneficial.
23. Adverbs	57	2.7	Error: I can run fastly. Correction: I can run fast.
Total	**2093**	**100**	

Table 5: English writing errors detected in the post-test topic 'Are you a good English language learner?'

Types of errors	**Number of errors**	**%**	**Example of errors found in the study**
1. Incorrect use of auxiliary verbs	80	9.2	Error: If I am a native English speaker, I would speak English fluently. Correction: If I were a native English speaker, I would speak English fluently.
2. Incorrect subject and verb agreement	47	5.4	Error: Neither my friends nor I speaks English well. Correction: Neither my friends nor I speak English well.
3. Incorrect word choice	39	4.5	Error: I like making grammar exercises. Correction: I like doing grammar exercises.
4. Incorrect use of tenses			
4.1 Past simple	88	10.1	Error: I have studied English since I have studied in nursery school. Correction: I have studied English since I studied in nursery school.
4.2 Present perfect	15	1.7	Error: I have never gone to foreign countries.

			Correction: I have never been to foreign countries.
4.3 Future simple	6	0.7	Error: I hope I go to an English speaking country soon. Correction: I hope I will go to an English speaking country soon.
5. Gerunds	17	1.9	Error: I do not stop improve myself. Correction: I won't stop improving myself.
6. Articles a, an, the	54	6.2	Error: I want to be bilingualist. Correction: I want to be a bilingualist.
7. Pronouns	28	3.2	Error: My friend's English is much better than my. Correction: My friend's English is much better than mine.
8. Fragments	55	6.3	Error: Learning English difficulty for me. Correction: Learning English is difficult for me.
9. Irrelevant sentences	9	1.0	Error: I have studied English for ten years since I was in primary school, but I can speak well. I want to go an English speaking country like the U.S.A. There are many theme parks in that country. Correction: I have studied English for ten years since I was in primary school, but I can speak well. I want to go an English speaking country like the U.S.A. ~~There are many theme parks in that country.~~
10. Run-on sentences	19	2.2	Error: I want to speak English like native speakers do but this language is too difficult and I practice my English every day. Correction: I want to speak English like native speakers do, but this language is too difficult. I practice my English every day.
11. Incorrect punctuations	22	2.5	Error: Even though, I don't have a chance to speak English much, I try to speak it with my friends. Correction: Even though I don't have a chance to speak English much, I try to speak it with my friends.
12. Capitalization	21	2.4	Error: I like english. Correction: I like English.
13. Prepositions	69	7.9	Error: I am not good for learning English. Correction: I am not good at learning English.
14. Spelling	140	16	Error: I will keep learning English untill I speak better. Correction: I will keep learning English until I speak better.
15. Nouns	77	8.8	Error: Everybody should learn English since they are young childs. Correction: Everybody should learn English since they are young children.
16. Adjectives	52	6.0	Error: Mastering a foreign language is advantage. Correction: Mastering a foreign language is advantageous
17. Adverbs	34	3.9	Error: Learning English is hardly for me. Correction: Learning English is hard for me.
Total	**872**	**100**	

Taking notice of English writing errors as shown above, the number of errors the students made in the pre-test was quite high when compared to the post-test. In Table 4, the students made 2093 errors in total. The number of errors detected most was articles (10%) followed by incorrect subject and verb agreement (9.6%,) spelling (9.1%,) and prepositions (8.1%.) Notwithstanding, the total number of errors in the post-test was just 872 as shown in Table 5. The errors detected in the pre-test dramatically declined and

some of them such as participles, past progressive, double negative, infinitives, determiners, comma splice, and word order had already gone.

To give a clear picture of the students' English writing improvement, the following excerpts show a great improvement of a student. In the pre-test writing topic 'My Favorite Sport,' this student wrote irrelevant sentences and made lots of errors such as misspelling, incorrect punctuations, incorrect word choice, fragments and lots of incorrect grammatical features. However, she made progress in the post-test topic 'Are You a Good English Language Learner?' with fewer errors.

Pre-test: My favorite sport

Swimming is good for health and adventage [spelling]. When you swim[punctuation] all of your muscles have [word choice] exercises [spelling]. In my free time [punctuation] I swim in the pool of [article] university. I like to use my free time with my friends to swim together. Swimming are [subject-verb agreement] favorite sports [noun] of many people. When I will go to swim [fragment]. I can see many people in [article] pool. They love to swim. They happy [fragment] when they swim. They funny [fragment] when they swimming [fragment] with their friends. And I feel like they [pronoun]. I like to swim when I was childhood [word choice]. I grown up [verb tense: past simple] in the country. Is here haven't [fragment] the mall and new generation of technologe [spelling]. My mom and my father whisked my sister and me off to the stream. And teach me and my sister to swim every weekend [fragment]. When I swim under water [fragment]. I think is new world [fragment]. The world I have [auxiliary verb] free, I feel comfortable, I see sunlight pass [word choice] water surface [run-on]. It is so beautfull [spelling] and wonderfull [spelling] moments [noun]. Swimming make [subject-verb agreement] I [pronoun]found the new experience in my life. So, I love [verb tense: present perfect] to swim since I was young. When I am [article] adult I want to have a pool in my house and teach the [article] children. If they want to start learning swimming [fragment].

Post-test: Are you a good English language learner?

I think I am a quite good English language learner, but I am not fluent like [article] native speaker for my mother language is Thai. Actually, I want to be [article] bilingualist, but I have always studied in Thai program. Therefore, I have practiced my English skills by myself at home. Moreover, I have studied extra class on Sunday. Even though, [punctuation] I don't have a chance to talk with English or American native speaker [noun] much, I often speak with my friends in English. I thin [spelling] when we speak in English, we are a little bit shy but it is not bad. For me, the reason why I do not dare enough to speak because I don't know much vocabulary and grammar. So I try to make my English better and I do not stop improve [gerund] myself. Anyway, I always have one sentence in my mind and that is 'Mistakes make progress.' This sentence inspires me so much. Finally, I believe that I will be a great bilingualist in the future if I manage to do my best for English.

Figure 3: The pre-test and post-test writing samples of a student

In brief, the students' English writing ability significantly improved after the 4-week practice period on LINE. They created well-organized English paragraphs with fewer linguistic errors in the post-test. Besides such great progress, the students claimed that lots of LINE features and services contributed to improving their English writing ability as described in the following section.

Contribution of LINE application to improving English writing ability

According to the interview results conducted from ten students, it was found that the students liked practicing English writing through LINE because of the following reasons. All of the interviewees claimed that they used LINE on their smartphones because they are portable. They could afford smartphones because they were cheap and smartphones were available in convenience stores and online shopping.

> *"Almost all students have smartphones and know how to use LINE to communicate. We use LINE App on smartphones because they are portable. As we all know smartphones are not expensive in our country. When I need a smartphone, I call buy it in a convenience store or shop online. It seems that we can buy a smartphone almost everywhere."*

For most of the interviewees, it is commonly asserted that they preferred to practice English writing on LINE as they felt that they had more freedom to ask questions directly. They were not afraid of making mistakes as they were in the real classroom. On LINE, they could text messages instead of showing their face. In the real classroom, they thought that they had to keep in silence because speaking out loud too often was considered impolite in Thai cultures, but LINE was an alternative tool to break this cultural barrier.

> *"I think I prefer having writing practice on LINE to a real classroom because I do not like face-to-face interaction. I feel free to ask the teacher some questions in LINE Chat Room because I can hide my face. I can text messages. In the classroom, I do not want to ask the teacher anything because I am afraid of making mistakes. I always feel embarrassed when I cannot answer the teacher's questions. Yet I feel happier to practice my English writing on LINE. It is more enjoyable and free from anxiety."*

> *"I always hesitate to ask the teacher in the classroom because I am afraid of making mistakes. When I do not understand some lessons, it is hard to raise my hand and ask the teacher. I cannot do that! LINE is an alternative learning. It is a good option for improving my English writing. I can ask the teacher many times on LINE without anxiety. You know in Thai cultures, we are considered polite when we do not talk out loud and we are born in this context so we are accustomed to saying nothing much."*

All of the interviewees claimed that they felt more enjoyable when practicing English writing on LINE because they were happy and excited to get LINE stickers that possibly reflect their writing progress. They stated that LINE promoted learning motivation because LINE stickers and emoticons made everything less boring. They wanted to write English more through LINE application.

> *"LINE can reduce my stressful moment. When I study in the classroom, it seems that there are not many things to entertain me. Yet when I practice writing on LINE, I think I am free from that stressful moment. I love writing*

English more than before. When I send my writing task to the teacher, I am excited to get a response from her because the teacher also sends LINE emotional stickers reflecting my writing progress."

"In my opinion, LINE can promote learning motivation. We can use lots of LINE stickers and emoticons to show our feelings when we do not understand some grammatical points the teacher explained us. Our learning is not boring because these stickers and emotions are up-to-date. What's more, they have built my learning motivation to learn English writing. I think I want to improve my English writing through LINE."

All of them preferred to receive feedback on LINE. It was faster to get feedback on LINE because they did not have to wait for the day they studied in the classroom.

"It is quicker to get feedback on LINE. I do not have to wait for the following day when I study in the classroom, but I can get feedback from the teacher promptly. I can revise them many times until I think my written piece is perfect."

Some of them thought that they could save lots of money when they contacted other people on LINE because this application offered both free phone calls and video calls. Moreover, they could use LINE video calls to be connected to their friends who could explain some difficult English grammatical features.

"There are many applications available for use to download and LINE is the most popular application in Thailand. We can communicate with other friends or people who live far away on LINE and it saves a lot of money because LINE provides free call and video calls"

"I can send my written piece to my peer who has higher English writing proficiency. I can learn to write English from both my peer and teacher. My friend explains some grammatical points to me through LINE VDO CALL. LINE offers lots of useful functions for learning English writing."

They claimed that the feedback received on LINE was better than paper-based feedback because they could save it in LINE KEEP. They were not worried about losing the feedback since they could print it out as many times as they wanted.

"It is easy to save the feedback received on LINE because we can use LINE KEEP to save almost all types of files such as PDF, Word, EXCEL, and many others. I do not have to worry that the feedback given will disappear because I can print it out as many times as I want. I could type my written pieces in the message box or take their photos. When compared with paper-based feedback, feedback on LINE is much better."

All of the interviewees thought that LINE gave them convenience to learn English writing and other language skills. They also learned English vocabulary words and grammatical features from the linked the teacher posted in the LINE chat room.

> *"It is convenient to learn to write English on LINE. I can learn lots of useful vocabulary words and grammatical elements from the links posted in LINE Chat Room. LINE is a good means for not only English writing skills but for all language skills."*

With respect to the functions that helped improve their English writing ability, all of the students asserted that LINE Chat Room, TH-EN Translator, and VDO Calls and Phone Calls were the most efficient functions. This is because many useful features were available in the chat room. It was a free space where students could send their written pieces in many ways such as attaching MS word files, directly typing their written pieces in the message box, and many more. Apart from this, most of the students affirmed that TH-EN-Translator really helped them improve their English writing ability. They believed that even though they could not rely on every sentence translated from this official account, it was far better than having nothing to write. They could at least learn new vocabulary words from this account. As concerns LINE Free VDO Calls and Phone Calls, most of them claimed that these free calls allowed them to discuss about English grammar and vocabulary with their friends and teachers in real time. These functions enhanced time-spatial flexibility. That is to say, students did not have to study only in the classroom but they could study at their convenience. When they had problems with their written English, they could get the answers promptly. These functions made them feel like they were discussing with the teacher in the real classroom.

> *"Many useful functions are available in LINE Chat Room. I can directly type my written pieces in the message box. I can send the attached file. I can receive the teacher's comments and many many more in LINE Chat Room."*

> *"Although I can't rely on every sentence translated from the official account TH-EN-Translator, I think I have learned many new words and phrases from this account. It is much better than having nothing to write. When I can't think of words; it's like it's on the tip of my tongue, TH-EN Translator can help me. "*

> *"LINE VDO Calls and Free Calls are free. I don't have to pay extra money. I can use these functions to call my teacher and friends. When I don't understand some English grammar and vocabulary, I use LINE VDO Calls to ask the teacher. When I am on the call, I can present my written piece to the teacher and ask her about my writing errors and mistakes in real time. I don't have to stay confused for a long time. It's just like learning in the classroom without time and space constraints. Calling and having a discussion with the teacher through VDO calls are much better than studying in the real classroom since I have less anxiety and I dare to ask the teacher as much as I want."*

Mentioned above, the students had positive attitudes towards using LINE to practice English writing skills as this application contributed to their learning development. They were motivated to practice writing with new released stickers. They could save lots of money for each contact through free phone calls and video calls. They could learn new vocabulary words and phrases from TH-EN Translator. On top of everything, they could learn at their convenience and get feedback promptly.

Discussion

Given the preceding data collected from 160 participants in this study, LINE used as an assisted language learning application has given a lot of advantages to the students. After the students in the experimental group had practiced their written English on this application for one month, their writing scores were significantly better than those in the control group as shown by the pre-test and post-test results. Likewise, they used appropriate words and correct English grammatical sentence structure and mechanics to create well-organized paragraphs. In respect of their attitudes obtained from the volunteering interviewees, the students were enjoyable and had enthusiasm about practicing English writing on LINE as this application provided many choices for them to improve their written English. When they got confused about some lessons, they could discuss with more knowledgeable people like friends and teachers in the LINE chat room without feeling worried about losing their face as they were in the classroom. Aside from this, the students in this study claimed that LINE stickers could promote a good learning atmosphere. With lots of funny stickers, the students felt less stressed. They could also use free phone calls and video calls to ask their friends and teachers when they needed some explanations in grammar and vocabulary usage in real time. Additionally, when they got confused about some words and phrases, they could consult TH-EN-Translator.

Considering the aforementioned, the results of this study correspond to those found in previous studies and the Social Constructivist's approach as described here. A number of previous studies have mentioned some positive effects of LINE on English language learning. Stapa and Shaari (2012) have reported a good impact of combining emoticons with text messages obtained from 120 young Malaysian social networking users as these features make students feel like they were in a real situation. Bogart (2014) has reported that after surveying 128 Thai students, it was found that they had positive attitude towards using LINE in doing classroom assignments. Bogart and Wichadee (2015) surveyed 144 students and found that LINE was an effective channel for communication in English. Shih, Lee, and Cheng (2015) explored the effects of using LINE on English vocabulary spelling ability of 29 college students in Taiwan. They incorporated LINE into the English spelling class which emphasized the teaching of English consonants, vowels, alphabet order by sounds, syllables and stress as these features were essential for students to acquire English spelling ability. The findings have reported a greater improvement of the students in learning vowels, phonemes, and syllables. After the experiment, the students were satisfied with integrating LINE into the English spelling class as it has increased their learning motivation and confidence to acquire more difficult English words (Shih, Lee, and Cheng, 2015.) By the same token, LINE has currently been one of the powerful social networking applications where mass of hundreds of thousands learners are met. This condition gives students a great opportunity to share

knowledge through peer-reviewed activities (Brick, 2012.) That is, they can send their written piece to their friends or anyone who can check and give suggestions. Brick (2012) claims that social networking can promote learner autonomy, own responsibility for language learning since they can study anytime and anywhere. Furthermore, as mentioned in the present and previous studies, LINE has brought enjoyment to students when learning the target language. This is very important because enjoyment is connected with effective learning (Alber, 2013.) In other words, without being threatened, students will have a desire to learn new things. They will have curiosity, interest, and passion to do difficult tasks. As a result, they will have higher language proficiency (Alber, 2013.)

In terms of second language acquisition theories, English writing practice on LINE application is closely related to the three themes of Social Constructivism that include social interaction, more knowledgeable others (MKO) and the Zone of Proximal Development (ZPD) (Vygotsky, 1978.) As is found in this study, the students were engaged in social interaction on LINE App that allowed them to share their written English and discuss about their English writing problems such as sentence structure, fundamental grammar and vocabulary with their friends and teachers who were considered as more knowledgeable others—those who had a higher level of English writing ability. In LINE chat rooms, for example, the students in this study could meet these more knowledgeable people who could help them improve their written English. They learned some new knowledge after their discussions on LINE and had more understanding of the English language. With reference to the Social Constructivist's approach, it means that they could move from their actual stage of development (their background language proficiency) to the potential stage of development (the reachable level of language proficiency). This is called the Zone of Proximal Development (ZPD.) In other words, English writing practice on LINE as carried out in the current study can help students improve their written English to reach their highest potential.

With the success of LINE for communication and its useful functions as shown in the current and preceding studies, it is not a waste of time using LINE as an alternative channel for improving the students' written English.

Research implications

Pedagogical implications

Language learning should not be restricted to the classroom as there are so many things for students to learn in the world. In response to this, social networking applications have been developed as a gateway to the outside world. These applications have created various opportunities for communication. LINE, for instance, provides users a wide range of communication channels such as Chat Room, VDO Call, Phone Call, Voice Recorder, TH-EN Translator, etc. Many functions are up-to-date and they can promote language learning. As shown in this study, the students were more motivated and happier to learn English when sending LINE stickers to the teacher. LINE Chat Room can be used as an open space for students to text messages and post and attach their written pieces while the teacher can give feedback in this room. When they get confused about English word

choices and grammatical features, students can directly consult their teachers or friends through a video call or a phone call. When they do not know some English vocabulary words, they can use TH-EN Translator. Besides English writing skills, the teacher can use LINE as a teaching tool for reading, speaking and listening skills. Students can practice speaking English as there are free video calls, phone calls and Voice Recorder on LINE, all of which have been designed for speaking. For listening and reading, the teacher can post listening and reading tasks or links to other English teaching websites. Most importantly, the teacher needs to remember that the activities should be appropriate for the students' levels of English proficiency and needs.

Future research

This research study indicates that LINE was a good choice for practicing English writing. Researchers who are interested in using social networking applications for language learning can use LINE as an alternative learning channel and explore its effects on learning other language skills such as listening, reading and speaking. They can also try it with students of other age groups, mother tongues, and levels of language proficiency.

Limitations of the research

The limitations of this study are as follows:

1. The data were collected only from Thai EFL students who hardly used English in their daily lives as it was not Thailand's official language.
2. This study explored the effects of using LINE App only on English writing ability without referring to the other three language skills such as speaking, reading and listening.
3. The number of participants who practiced writing on LINE was only 80 students.
4. The participants agreed to take part in the experiment for only one month.

Therefore, the findings of this study cannot be generalized with students of other regions, sizes of population and levels of proficiency. However, with the improvement of the students' writing ability and their positive language learning attitudes, it was a good case study that further research can follow and try out with other contexts.

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Appendix

Scoring rubric: Writing ability

Criteria	Maximum score
Content	
-The paragraph fits the assignment and is relevant to the topic.	5
-The paragraph is interesting to read.	5
-The paragraph shows coherence.	5
Total	**15**
Grammar and mechanics	
-Correct sentence structure with no fragments	5
-Various types of sentences (Simple, compound and complex sentences)	5
-Commas, periods and other punctuation marks	3
-Capitalization	2
Total	**15**
Vocabulary knowledge	
-Use words and phrases that are easily understood	5
-Use various words and phrases	3
-Spelling	2
Total	**10**
Paragraph unity	
The paragraph contains a topic sentence, supporting sentences and a concluding sentence.	5
The paragraph flows smoothly from beginning to end.	3
There are no off-the-topic sentences.	2
Total	**10**
GRAND TOTAL	**50**

GROUP-WORK AND LEARNING STRATEGIES BY EFL STUDENTS WITH DIFFERENT COGNITIVE STYLES: CLOSING GAPS FOR IMPLEMENTING COOPERATIVE LEARNING IN LANGUAGE CLASSROOM

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Abstract

In the context of second language acquisition, several variables, such as language task, learning strategies and style preferences, influence the effectiveness of learning. When the tasks are done in group because it is regarded as one of the tools to encourage students to collaboratively construct their knowledge and to develop the skills needed for working in a team, individual differences factors such as cognitive styles and strategies would affect how the members of the group work together. Therefore, the study investigated learning strategies used by EFL undergraduate engineering students with different cognitive styles undertaking a group-work task. A self-reflection form and stimulated recall interviews were used to collect the data for the study. The data were analysed by identifying keywords relating to students' cognitive styles and learning strategies. The findings revealed that there are interactions among three variables: group-work task, learning strategies, and cognitive styles. Besides, the effect of students' assuming different roles on the use of learning strategies was revealed. The implications from the findings focus on how to offer effective cooperative learning through using the group-work task to close gaps when cooperative learning in language classroom is implemented.

Keywords: learning strategies; cognitive styles; group-work task; cooperative learning

Introduction

In the context of second language acquisition, several variables influence the effectiveness of learning, among which, language task, learning strategies and style preferences have been investigated and relationships found among them (Cohen, 2012).

The role of task in language learning

Tasks have been used to help teachers develop students' language skills over time. In the area of task-based learning and teaching (TBLT), the core component is the task which has been defined as an activity used primarily to help learners develop their language skills (Bachman & Palmer, 1996; Bygate, Skehan & Swain, 2001; Nunan, 1989; Willis, 1996; William & Burden, 1997). Tasks were also defined by Ellis (2003) as work plans which enable learners to pay primary attention to meaning while using language. Ellis also differentiated tasks from exercises, with tasks being activities which focus more on meaning while using language, whereas exercises are focussed more on form.

Task types can be categorized into real-world and pedagogical tasks; the former aim at encouraging students to use language in the world beyond the classroom (Nunan, 2004), whereas pedagogical tasks are used only in the classroom. Real-world tasks involve complicated aspects of language, such as difficult semantic, pragmatic, lexical and syntactic features while using the target language (Izadpanah, 2010). Pedagogical tasks focus on the learners' processing and understanding of the language (Richards, Platt & Webber 1986).

Cooperative learning in group-work

Since TBLT focuses on learners (Richards & Rodgers 2001; Ellis, 2003; Nunan, 2005) and encourages learners to use language in their real life (Beglar & Hunt, 2002; Carless, 2002; Littlewood, 2004), group-work is used to encourage interactions and meaningful communication among students while doing tasks. According to Tuckman and Jensen (1977) and Johnson and Johnson (1987), group-work can be divided into two continuous stages, forming a group and working cooperatively among group members. Forming a group is the primary stage before working with others. Having diverse members (e.g. different learning styles) in a group brings a number of benefits, e.g. the group members understanding of a variety of approaches and how these can help them to reach their shared goal. When the group members have to discuss their different ideas, they can learn from a wider perspective. The final group decisions then encourage them to engage willingly in the working process of their group. The second stage of group-work is working cooperatively which involves strategies which the students use while working together. In order to continue the group-work until it is finished, the group members have to interact with one another through their different roles, such as initiator, elaborator, monitor, encourager and implementer, which are adopted by the group members based on the needs of different situations, such as brainstorming, writing and presenting.

It has been found that cooperative learning influences higher academic achievement in any educational context (Slavin, 1996; Johnson, Johnson & Smith, 1998, 2000, 2007; Springer, Donovan & Stanne, 1999; Roseth, Johnson & Johnson, 2008). When the learners are engaged in the learning process, they need to think and can learn more, thereby expanding their knowledge. Tran (2014) investigated the effects of cooperative learning on the achievement and knowledge retention of 110 undergraduate students in Vietnam. The students were divided into two groups who were alternatively taught using cooperative learning methodology or lecture-based teaching. The data obtained from both a post-test and a retention test showed that the cooperative learning group had significantly higher scores for both achievement and knowledge retention than the lecture-based group. In Thailand, benefits in terms of student achievement have also been found from using cooperative learning with tertiary students, in language skills such as reading, grammar, writing and speaking (Wichadee, 2005; Pattanpichet, 2011; Thitivesa & Boonphadung, 2012; Kwon, 2014). The results from those studies show that cooperative learning enhances the students to acquire knowledge through the interactions with peers. Based on the students' perspectives, this approach can prepare them to have appropriate interactions with one another for real life and future employment situations. Those studies also mentioned that while implementing group work task in the classroom, the teachers need to consider students' different proficiency levels and their individual differences, such as cognitive styles.

In language learning context, cooperative learning has been used through group work which also develops interaction and language acquisition (Ellis, 2003; Mackey & Gass, 2012). While doing a group work task, group members work towards the shared goal even though they have different learning styles. Having diverse members (e.g. different learning styles) in a group brings a number of benefits, e.g. the group members understanding of a variety of approaches and how these can help them to reach their shared goal. When the group members have to discuss their different ideas, they can learn from a wider perspective. While doing the group work task, the students would use strategies which help them to successfully complete the task. In order to continue the group-work until it is finished, the group members have to interact with one another through their different roles, such as initiator, elaborator, monitor, encourager and implementer, which are adopted by the group members based on the needs of different tasks. When implementing group-work tasks in the classroom, teachers need to consider students' different individual differences, such as cognitive styles.

Cognitive styles

Cognitive styles are an individual's preferred and habitual modes while perceiving, organizing, processing, and representing information (Ellis, 1990; Dornyei, 2005). Various ways of approaching cognitive styles have been proposed by different theorists such as field dependence and field independence (Witkin, Oltman, Raskin, and Karp, 1971), holistic and analytic (Riding 1991), and experiential learning theory (Kolb, 1984).

Witkin, Oltman, Raskin, and Karp (1971) classified cognitive styles into field dependence (FD) and field independence (FI). Chapelle (1995) defined FD/FI as relating to the internal or external referents which people rely on while perceiving and memorizing information. Violand-Sanchez (1995) suggested that FD learners are people who are interested in the big picture, whereas FI learners focus on the small picture. Riding (1991) suggested dividing cognitive styles into holistic and analytic dimensions and Riding, Glass, and Douglas (1993) defined holistics as individuals who prefer seeing the whole picture, whereas analytics are those who prefer analyzing information into its parts and are good at observing details. According to Kolb (1984, p.38), 'Learning is the process whereby knowledge is created through the transformation of experience with learning involving the acquisition of abstract concepts that can be applied flexibly in a range of situations'. According to Kolb's experiential learning theory, the impetus for the development of new concepts is provided by new experiences and involves two learning modes, a four stage cycle of learning, and four separate learning styles. Much of Kolb's theory is concerned with the learner's internal cognitive processes and proposes four cognitive styles based on combinations of two learning modes, perception consisting of Concrete Experience (CE) and Abstract Conceptualization (AC) and processing consisting of Reflective Observation (RO) and Active Experimentation (AE). Kolb believed that a person learns through a cycle of these four stages, AE (see Figure 1).
The characteristics of the four cognitive styles (Kolb, 1984; Kolb, Boyatzis and Mainemelis, 2000) can be summarized, as follows:

- *Convergers* use deductive reasoning to arrive at a single best solution to a question or problem. They are good at solving problems and making decisions.
- *Accommodators* can adapt to changing circumstances and are skilled in doing things. They are more likely to learn and work with others, and feel comfortable learning through practical experience.
- Divergers rely on imaginative ability. They can also generate many alternative ideas and enjoy brainstorming. They are interested in people and are feeling-oriented. While learning, they prefer working in groups, listening with an open mind and receiving personalized feedback.

- *Assimilators* are good at inductive reasoning, creating models and theories, including systematic planning and goal setting. They prefer learning, through lectures reading, exploring analytical models, and having time to think things through.

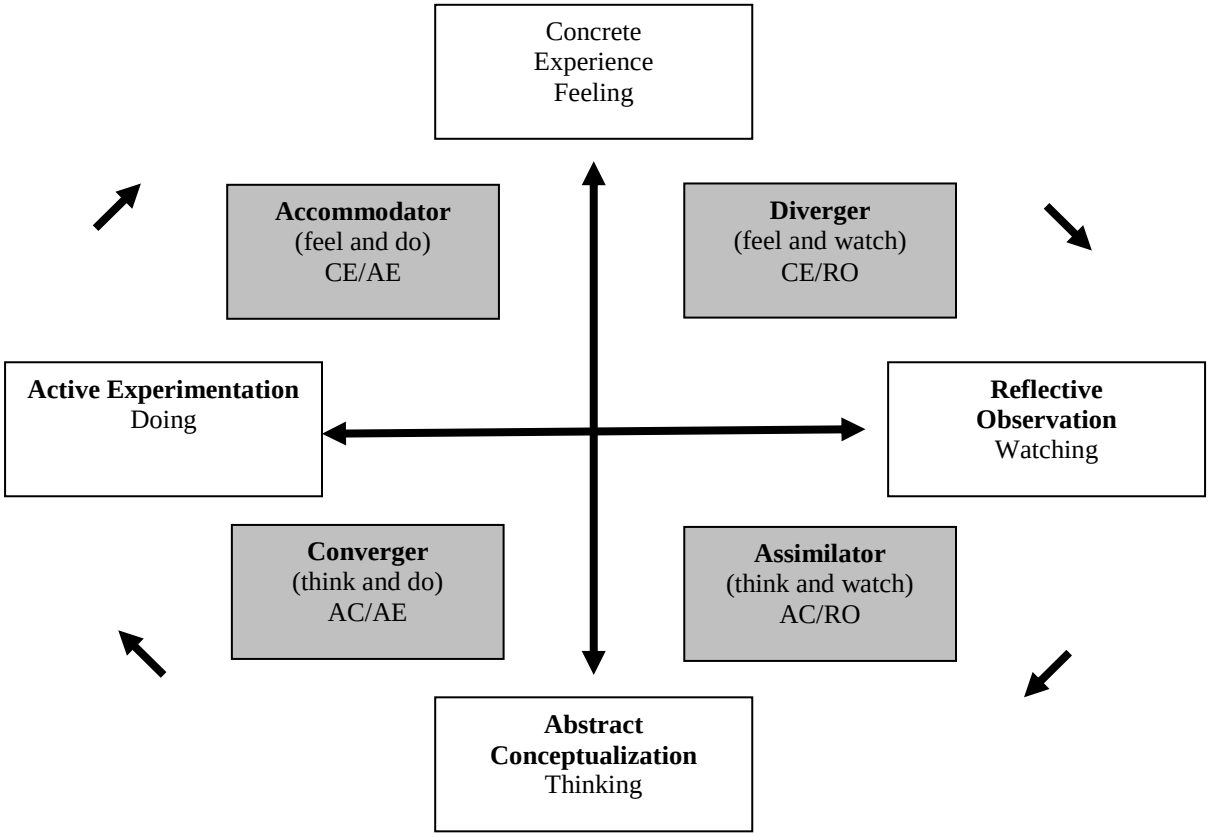

Figure 1 The four-stage learning cycle of Kolb's (1984) experiential learning theory

The researchers in the present study adopted Kolb's cognitive learning styles as their conceptual framework because if students want to achieve the goal of a language learning task, they have to cognitively engage in that task. As Skehan (1998) noted, to accomplish a goal requires cognitive complexity, i.e., cognitive familiarity and cognitive processing. Cognitive familiarity involves familiarity with the topic and its predictability, discourse genre, and tasks, while cognitive processing relates to the processing load during task performance in which students learn to organize, transform or manipulate information. From this perspective it is interesting to examine how learners with dominant cognitive styles deal with the tasks assigned by teachers.

Learning strategies

Learning strategies are mental steps which learners consciously use while learning to achieve their goal (; Cohen, 1990; Wenden, 1991; Scarcella and Oxford, 1992; Chamot,

2004). Several classifications of learning strategies have been proposed with various foci. For example:

According to the research conducted by O'Malley, Chamot and their colleagues (O'Malley et al., 1985; Chamot & O'Malley, 1987) to find out the use of learning strategies by ESL learners in the US, language learning strategies are divided into three categories which are cognitive, metacognitive and social/affective strategies. *Cognitive strategies* refer to direct operation or mental process which learners directly go through to deal with a specific goal. They include rehearsal, organization, inferencing, summarizing etc. *Metacognitive strategies* involve the ways learners control the mental process while learning. They cover selective attention, planning, monitoring, and evaluation. *Social/ affective strategies* concern how learners interact with others or materials to enhance their learning. Seemingly, the three categories are related to support language learning through using language tasks.

Oxford (1990) mentions that task requirements are the factors affecting the choice of strategies. She classified learning strategies into direct and indirect strategies. *Direct strategies* are used to deal with the new language. They consist of memory strategies for storing and retrieving new information, cognitive strategies for understanding and producing new language, and compensation strategies for using the language although some gaps in knowledge occur. *Indirect strategies* are about general management of learning process to support language learning. They consist of metacognitive strategies for coordinating the process in learning, affective strategies for regulating emotions, motivations, and attitudes, and social strategies for learning through interacting with others.

Learning strategies can be classified on the basis of their function learners use for learning. *Wenden (1991)* classifies them into cognitive and self-management strategies. *Cognitive strategies* concern mental steps used to process either linguistic or sociolinguistic content. They involve selecting input, comprehending input, storing input, and retrieving input. *Self-management strategies* are strategies employed by learners to control and manage their learning. They involve planning, monitoring, and evaluating.

From those classifications, strategies are mainly divided into strategies which represent mental process when dealing with the task, those which are used to manage the mental process and those used to support learning by asking help from others or regulating emotions. Besides, Macaro (2006) suggested that the use of a strategy has to be goal-directed and depends on the learning situation. He noted that when investigating learning strategies, it is difficult to place a boundary around a strategic behaviour, and that conventional reporting of strategies is problematic in that the extent of a strategy is difficult to identify. Therefore, he proposed that the unit of analysis should be as small as

practically achievable, with these small strategy units being built into a larger but more flexible 'clusters of strategies' employed to achieve a particular learning goal in a specific task or learning situation. This cluster of strategies does not seek to conceptualise strategic behaviour nor act simply as a taxonomy of the total number of possible strategies that are used in a certain task; nor is it something that can be universally applied to any similar task without modification (Macaro, 2009).

Previous studies

In educational contexts, several interrelated variables have been explored, for example, learning styles, learning strategies, and language tasks. However, previous studies have tended to focus on the relationship between two variables and used variety of learning styles and learning strategies as can be seen in the following studies:

Tabanlioglu (2003) explored the relationship between learning style and strategy preferences among 60 undergraduate students. Two questionnaires were used to identify the students' perceptual learning style preferences and their learning strategies. Think-aloud protocols were also used to determine the cognitive and metacognitive strategies which the students used while completing a reading task. The findings revealed that visual styles bore a significant relationship to affective strategies, whereas for auditory styles there were significant relationships with memory, cognitive, affective, and social strategies.

Karimi and Alibakhshi (2014) investigated the relationship between two different reading tasks, single-text comprehension and multiple-text integration, and reading strategies, with 2 EFL learners. While the learners were reading the texts, they were required to report their thought processes. The results revealed that when completing the more complex multiple-text-integration task, the students used a higher number of metacognitive reading strategies than they did when doing the less complex single-text comprehension task.

Other studies have focused on learning styles, and in particular, the cognitive styles defined by Kolb (1984), which rely on the learners engaging in the learning process. It was also found that the research employing Kolb's learning styles have never investigated on mixing two types of learners doing the same tasks. What they have revealed is how the learners from different cognitive styles perform differently. For example:

Andreou, Andreou, and Vlachos (2008) investigated the cognitive styles of 452 male and female arts and science undergraduate students by studying the relationships between the students' styles and their scores in L2 semantic, syntactic, and phonological tasks. The data showed that for both the arts and science students, the scores of divergers were

highest on the phonology test, while the accommodators scored more highly on the syntax test. For arts students, the assimilators' scores were higher on the syntax test, and for the science students the scores of the convergers were higher on the syntax and semantics tests.

A more recent study by Magdalena (2015) examined the relationships among students' cognitive styles based on Kolb's theory, learning behaviour categorized into surface, deep and metacognitive learning strategies, and the academic achievement of 55 students in a program of study entitled Pedagogy Education and Preschool. Of the sample, 12 students had professional pedagogical experience while the remaining 43 had no such experience. It was found that the divergers who had teaching experience had a preference for metacognitive learning strategies.

Florio-Hansen (2009) also found that style preferences and different tasks had an impact on the use of specific strategies, and Uhrig (2015), in a qualitative study, investigated interactions among learning styles for two international students studying in two professional graduate programs, Master of Business Administration and Master of Law based on their strategy use in reading tasks from respectively a marketing course, and a criminal law class. The findings revealed that the strategies used by the students reflected their learning styles as well as the task requirements.

As can be seen, therefore, in order to increase the effectiveness of language learning, several variables including individual differences among learners and tasks must be considered. Each student has different preferred ways of learning which can affect their learning process. It has to be accepted that when studying, students gain not only knowledge, but also the skills for interacting, negotiating, and sharing ideas which are beneficial for their real life and a future job. Group-work is therefore an appropriate tool to encourage students to jointly construct their language learning and to develop the skills needed for working in a team.

Cooperative learning, which occurs when the students work together, could be reflected through their strategies. Therefore, the study is a new research which attempted to give insights into learning strategies used by EFL undergraduate engineering students with different cognitive styles, focusing on only two groups of "*divergers and assimilators*", while undertaking a group-work task. The group-work task and the students' different cognitive styles were adopted as independent variables to investigate their impacts on the use of learning strategies. In order to elaborate the interactions among the three variables, other variables which may affect the choice of learning strategies were also taken into account.

Context of the study

This qualitative study was conducted at King Mongkut's University of Technology Thonburi (KMUTT). After distributing Kolb's questionnaire to 778 KMUTT engineering students to elicit their cognitive styles, it was found that diverger and assimilator were the dominant styles among the students (Parnrod, Darasawang and Singhasiri, 2013). Then, three divergers and three assimilators were selected based on the criteria set for the study, receiving a grade between A and C on their last English course, as the researchers wished to ensure they had sufficient proficiency to complete the task created for the study.

Regarding the study which was not conducted in the classroom setting, the students were asked to do the created group-work task. Then they were required to freely form a group of three in which to complete the task together, but each group had to consist of a mixture of divergers and assimilators in order to enhance the use of various strategies by the students with different cognitive styles while working collaboratively with others. In this paper, the main focus is on the group-work task, *Writing a Story*, which all the students had to work together to create a story in English.

The study

Among the four groups, two groups consisted of one diverger and two assimilators, and two consisted of two divergers and one assimilator. This paper reports on the performance of one group from each category. The six participants for the study were second-year undergraduate engineering students aged between 19 and 20. They will be referred to by pseudonyms. Group 1 consisted of one diverger, Fay, and two assimilators, John and Max. Group 2 consisted of two divergers, Bell and Jane, and one assimilator, Gap. The students in each group knew each other because they were studying in the same program, Production Engineering.

Two instruments were used to conduct the study, a self-reflection form and stimulated recall interviews. The self-reflection form aimed to establish how the students completed the task. Each student was asked to complete the form in Thai immediately after completing each sub-task. The students were required to report what they did, what problems were encountered and the solutions adopted. The information obtained was then used in the stimulated recall interviews conducted between one and two weeks later, to encourage the students to talk in-depth about what they had done while completing the task. The students were individually interviewed in Thai and each interview lasted around one hour. During the interviews, the students were encouraged to talk about the strategies they used while completing the task. A video recording of their behavior during the group-work was also shown to them to help them to identify the strategies they used.

The data obtained from the interviews were transcribed and analysed by identifying keywords, relating to cognitive styles based on the characteristics proposed by Kolb (1984) and their learning strategies based on O'Malley and Chamot (1990)'s framework which divides learning strategies into three main types: metacognitive, cognitive, and social (see example in Appendix A and B). The strategies are reported below in a cluster based on the task in which the participants were engaged.

Example of identifying keywords:

> "…I wanted to [*Planning strategy*] make the story more fun…"

> "…I wanted to make the story more fun…like reading a fun novel [*Diverger: tend to use imagination*]…"

> "…My group started from discussing in Thai, followed by explaining the details to make all members understand into the same way, and writing in English…[*Assimilator: have systematic planning*]"

The group work task

Writing a story was the sub-task in which each group wrote a story of around 200 – 250 words in English based on the characters on which each member had made notes. In each group, the students were allowed to create the theme they preferred, such as a humorous theme, an adventurous theme or a horror theme, and to write a story covering both a description of and dialogue between the characters in the story for doing the role play. The data obtained from this task were presented into a cluster.

Findings

The stories created by Groups 1 and 2

In group 1, the story was on a humorous theme featuring three characters, Kaew Na Mah (a female character from a Thai fairy tale who is ugly with a face like a horse), Mr. Bean, famous for his funny actions, and Batman. The story is about the superhero, Batman, who goes to help Kaew Na Mah who is screaming for help. On the way, Batman meets Mr. Bean by chance and the group planned to make the story amusing based on Mr. Bean's actions, with little dialogue. When Batman finally reaches Kaew Na Mah, he finds that she screamed for help because of a cockroach.

In group 2, the students also decided to write a story on a humorous theme. The story had three characters, Winnie the Pooh, Nang Phisua Samut (a female ogre from a Thai fairy tale), and Batman. The story is about an ogre who kidnaps Winnie the Pooh to eat him and Batman who goes to help Winnie the Pooh. After the ogre who has turned herself

into a sexy lady using magic spells meets Batman, she falls in love with him and makes a deal with Batman instead of fighting him, and Batman marries the ogre who he asks to transform herself into the sexy lady he first met.

Cluster of group-work task strategies

As shown in Table 1, the cluster of strategies used by the two groups of students while completing the group-work task was presented into a cluster. The data obtained revealed the use of metacognitive strategies (i.e. planning, monitoring and evaluating), cognitive strategies (i.e. transferring, translating and elaborating), and social strategies (i.e. working with others) by the students. Similarities and differences in the use of strategies were also found between the two groups of students.

Table 1 Cluster of group-work task strategies used by the students with different cognitive styles

Strategy	**Cognitive style**					
	Diverger			**Assimilator**		
	Fay (G.1)	**Bell (G.2)**	**Jane (G.2)**	**John (G.1)**	**Max (G.1)**	**Gap (G.2)**
- Working with others	✓	✓	✓	✓	✓	✓
- Planning	✓	✓	✓	✓	✓	✓
- Outlining the story	✓	✓	✓	✓	✓	✓
- Analysing						✓
- Elaborating		✓	✓	✓	✓	✓
- Translating		✓	✓	✓	✓	✓
- Monitoring		✓	✓	✓	✓	✓
- Resourcing		✓	✓	✓	✓	✓
- Editing				✓	✓	✓
- Evaluating				✓	✓	✓

Learning strategies used by EFL undergraduate engineering students with different cognitive styles undertaking a group-work task

As shown in Table 1, in order to achieve a group-work task, learning strategies used by the students with different cognitive styles are similar. Based on the data obtained, the nature of the task affected the students' choice of learning strategies. Whenever the students with different styles were engaged in a group work, it was common to see all of them using the *Working with others* strategy.

While brainstorming, since the task required the students to create a story based on the characters they chose, the students needed to work with other group members by discussing their ideas and *outlining* their story. For example:

> "…It's good to change some ideas while outlining [Outlining the story] because different ideas occurred while sharing…" (#Fay: Diverger, G.1)

> "…I outlined the story [Outlining the story] by focusing on the place, followed by what happened there, and the dialogue for the characters …" (#Gap: Assimilator, G.2)

Although Fay and Gap who are from different styles and groups used the same strategy, some characters of their styles were reveal through the expression. Fay, diverger who prefers to listen with an open mind, showed positive word, "good", when some ideas were changed while discussing. Besides, she did not express any frustration when disagreements occurred. Gap, assimilator who excels at systematic planning, presented the clear steps for outlining consisting of place, event and dialogue for each character.

In order to complete this task, all the students had to finish their written work under the limited time. That resulted in using *Planning* strategy to delegate responsibility to complete the work in time. While writing the story in English, all students, excluding Fay who was not actively involved in this stage, also needed to use more choices of strategies which are *Translating* by using Thai as the basis for writing the story in English, *Elaborating* by adding descriptions for each scene and dialogue for each character, *Monitoring* by checking the progress of group work and the time, *Resourcing* by searching for more information from different sources (i.e. the Internet and friends) when encountered problems while writing

After further analyzed the data for the study, it was also found that the characteristics of the students' styles were reflected through their given explanations while using some same strategies. As seen from using *Working with others* strategy while brainstorming, although all students used it, their different foci which showed the characters of their different styles, divergers who prefer to work in groups and assimilators who stress the importance of ideas, were revealed, for example:

> "…Earlier, we create the story in Thai together. *So enjoyable*. [Diverger: prefer to work in group] We work together. [Working with others] …" (#Jane: G.2)

> "…Since it is a created story and we have to work in group [Working with others], *I need to explain and check whether my friends understand the shared ideas*. [Assimilator: stress the importance of ideas]…" (#Gap: G.2)

A further example is from a diverger and an assimilator from group 2, Jane and Gap, while creating the story, Jane used *Planning* strategy to make the story funny by paying attention to imagination, whereas Gap values having systematic planning:

> "…While sharing the ideas to create the story, I *enjoyed* doing that. [Diverger: pay attention to imagination] Sometimes *I* wanted to make the story more fun. [Planning]…like reading a fun novel. …" (#Jane: G.2)

> "…I outlined the story by focusing on the place, *followed by* what happened there, *and* the dialogue for the characters…My group worked out a plot in Thai, *then* discussed *and* explained in more detail. [Planning] [Assimilator: have systematic planning]…" (#Gap: G.2)

Monitoring strategy is the other which either divergers or assimilators employed with different foci, as seen from the following extracts:

> '…At first, I *think* about the three different characters. I don't know how to create a story for doing the role play based on them. Will it be fun? [Monitoring] [Assimilator: think carefully]…' (#John: G.1)

> '…At that time, I *think* about the characters in my group. It is the most difficult because the three character are very different. [Monitoring] [Assimilator: think carefully]…' (#Max: G.1)

> '…While sharing *ideas*, I would like to write them on the paper but it takes time for my friends to follow them. So it is quite slow for this step. [Monitoring] [Assimilator: be concerned with ideas]…' (#Gap: G.2)

It can be seen that the three assimilators showed their tending to think carefully and to being concerned with ideas which are their style' characters, whereas the divergers displayed the characteristic feeling-orientation when they found that the time was nearly up:

> "…[While writing the story with my friends] I reminded Gap that we were running out of time [Monitoring] but he still continued to work…I told him only one time…I *felt* sorry for him [Diverger: be feeling-orientated]. I couldn't help him much when he was writing the English version. I didn't want to push him… (#Bell: G.2)

Other variables affecting learning strategies

In addition to the effect of the nature of the task and the students' cognitive styles which were reflected through different foci on the use of learning strategies, the students' roles, either leading or supporting which were partly based on their proficiency, also had an impact on their strategy choices. In this study, the assimilators from both groups, i.e.

John and Max from group 1 and Gap from group 2, took the leading roles which encouraged them to use more strategies to complete the task. All the divergers, Fay, Bell, and Jane from the two groups accepted that the assimilators in their groups had higher English proficiency and participated in the group as good supporters.

When assimilators had to lead the group to complete the task successfully, they needed to use more metacognitive strategies, such as *Analyzing*, *Editing* and *Evaluating*, to achieve the task while working with others. When the divergers took supporting roles, they did it open-mindedly by accepting other people's ideas without becoming frustrated.

Summary, discussion and implication

The findings reveal the interactions among the three variables, task variance, such as the nature of the task, learning strategies, and the students' cognitive styles, which reflect the cooperative learning of the students. The data shows that the nature of the task affected the choice of learning strategies. While creating a story together, all the students irrespective of whether their cognitive styles were those of divergers or assimilators, used the *Working with others*, *Planning* and *Outlining* story strategies.

In this study, it was found that cognitive styles can be reflected through the different foci while using learning strategies. According to Kolb's model, divergers combine CE and RO. The perceiving and processing of CE and RO are achieved through feeling and watching; divergers are likely to be imaginative and interested in other people's feelings and also show open-mindedness while listening to others' opinions or feedback. Assimilators combine RO and AC where the perceiving and processing modes are watching and thinking. Therefore, they tend to organize the information obtained through their thinking processes while working with others. However, it was also found that even though students with different styles employed the same strategies, the reasons they gave for using them were different and reflected their learning styles. For example, the divergers employed the *Planning* strategy by linking it with imagination and feeling, whereas the assimilators employed the same strategy but for the whole process of the task.

The findings of the study suggest that both the nature of the task and the students' cognitive styles have an impact on the use of learning strategies. The data revealed that the students' role (leading or supporting), also affected the learning strategies they used which in turn reflected the cooperative learning pattern of the group.
In addition to cognitive styles and learning strategies, the data also revealed that the students' roles which were assigned based on their proficiency, influenced the choices of their use of learning strategies while completing the task. As can be seen from the study,

the students who took the leading role from groups 1 and 2 employed a variety of learning strategies, especially metacognitive strategies.

Therefore, when working in groups incorporating the two different cognitive styles, both divergers and assimilators impact the group-work in different ways. The divergers in both groups, being interested in people, were open-minded in accepting the ideas of others while brainstorming and this created a positive atmosphere in the groups. The assimilators in the two groups took the main roles and frequently used metacognitive strategies to help their group to complete the task successfully. However, the interaction of the students in each group depended on the task in which they were engaged.

While brainstorming, all the students, both divergers and assimilators, worked cooperatively. The interactions among the group members were revealed when all the students needed to discuss and share ideas to outline the plot for writing the story. Group members with different cognitive styles were able to foster cooperative learning because they had different strengths that they could use when dealing with the task. Those strengths were used to complement each other while completing the group-work task. As can be seen from this study, careful thinking by assimilators, and open minded divergers can help group work to proceed smoothly and create a good atmosphere in the group. Besides, having their characteristic imaginative ability the divergers, supported the creation of the story. It should be added that the requirements of the task may affect and control the choices of strategies the students employ. As noted by Cohen (2012), it is important to call attention to the effect that a particular task might have on the choice of strategies, as well as on the effectiveness of the selected strategy or set of strategies.

When the students had to write a story together, they all realised that they had to complete their writing in a limited time. Groups 1 and 2 used more learning strategies to write the story in English based on their first language, Thai, and to seek help, such as asking friends and searching for information through the Internet, if they had problems. Cooperative learning was reflected through the students' interactions based on their different roles, such as those of leaders and supporters while they shared the same goals.

In group 1, all the students accepted having two assimilators who jointly took the leading role in writing the story because of their high English proficiency, whereas the diverger was delegated to prepare the PowerPoint slides for the role play. Though the students did not work face to face at this stage that does not mean that they did not work cooperatively, since all of them were working to achieve the same goal. According to Johnson and Johnson (1987), working cooperatively operates beyond being physically near other group members, and in an educational context, student-student interaction can be created through computers and social networks, e.g., by e-mail or through chat rooms (Soh & Soon, 1991; Koschmann, 1996; Rankin, 1997; Wegerif & Scrimshaw, 1997). In

this study, group 1 sent their completed story to the diverger through a social network to prepare the PowerPoint slides and to practice her role in the dialogue in the role play. At this stage, cooperative learning by group 1 occurred by delegating responsibility based on the students' proficiency and interacting through social networks in order to reach the goal they set.

For group 2, the sole assimilator took the main role in the writing process and encouraged the two divergers to participate in the group process at all times, as is reflected in this group's shared strategies. The interactions among the group members occurred while they were all writing the story together. All the students realized that they had to finish their work in a limited time and the assimilator, who seemed to be taking the leading role, continually checked the progress of the work and whether it could be finished in time. The other two divergers who perceived the same goal accepted that they had less English proficiency than the assimilator, so tried to be good supporters to help the group complete the task in time. Although it is clear that the cooperative learning by group 2 was achieved through face-to-face interaction, this group also interacted through computers and social networks to complete the task.

Although some different interactions among the students from the two groups were shown, all the students still presented their effort to help each other to achieve the task. The effort encouraged them to work cooperatively. As Dornyei and Murphy (2003) noted, when group members help one another while engaging in a group-work task, this brings about effective learning.

Based on the findings from the study, the interactions among cognitive styles, learning strategies and language task induced group climate and group cohesiveness, while students are performing group work. The shared goal affected the same use of learning strategies, whereas the individual goal which was derived from roles, leader and supporter in particular, influenced the students' employment of different learning strategies. To achieve both individual and shared goals, there is an influence of learning styles which is seen from the choice of strategies and the reasons given for those choices.

Between Group 1 and 2, it was found that Group 2 consisting of two divergers, Bell and Jane, and one assimilator, Gap, revealed high cohesiveness because all of them actively engaged in the group. Even though the divergers are not good at systematic thinking and using logic, when they were encouraged by the leader to participate more, they were able to exercise more strategies. Therefore, it can be said that being involved in all processes while working in group could encourage the students to develop the skills which are not their strength. In group 1, it can be seen that group cohesiveness is not as high as group 2 because the two assimilators played more active role than the diverger. However, because the diverger, Fay, is people oriented and prefers to listen with an open mind, she still felt

that she belonged to the group and accepted the responsibility delegated by the leader. But she could not practice as many strategies as the Group 2 did.

When the students have to work with their friends who are different from them, they learn more from each other while working collaboratively. However, group work could lead to some problems in case some group members have a lack of eagerness and willingness to participate in group work (Davies, 2009); thus having effective learning can be achieved by forming a good group where all group members try to pull each other to participate in group work (Dornyei & Murphy, 2003). Therefore, when the students do the group work, understanding several variables, especially *students' cognitive styles and their learning strategies,* which could affect working in group would be beneficial because the information obtained could help the teachers succeed in preparing and providing group work task for the students in the classroom. Besides, that could help the students perform effectively while working with others.

Also, being actively involved in the group processes could help the students learn better (Davis, 1993; Murphy, Mahoney, Chen, Mendoza-Diaz & Yang, 2005). Encouraging cohesiveness while doing a group work is important because it could help students learn how to develop teamwork skills which would benefit the learners as teamwork is regarded as one of the skills for 21st Century learners. Shaw (1981) states that high cohesiveness links to group productivity, satisfaction, social in group and interaction. Thus the teachers should be aware of the factors which affect it. From the literature, factors which may affect effective group work include having appropriate group composition (Harris and Harris, 1996; Bradley & Frederic, 1997; Wageman, 1997) shared and individual goals (Francis and Young, 1979; Critchley and Casey, 1986; Kets De Vries, 1999; Scarnati, 2001), positive interaction among group members (Critchley & Casey, 1986; Harris & Harris, 1996; Smith, 1996; Kets De Vries, 1999), and group cohesion (Bradley & Frederic, 1997; Wageman, 1997; Johnson, Heimann, & O'Neill, 2000; Scarnati, 2001).

To achieve appropriate *group composition*, successful group needs to have group members with different strengths to contribute to the task the group is performing. Clarifying member roles and responsibilities should also be considered. In relation to *shared and individual goals*, sharing the group goal and understanding their purposes are helpful for having a strong group. Providing each member with prestige and recognition by delegating them a specific responsibility could enhance more effective group work. In order to create *positive interaction among group members*, all members in the group need to trust and respect each other. Besides, while interacting among the group members it is necessary for them to listen the shared ideas including to give and accept feedbacks with open mind. Therefore, in order to promote *group cohesion* which is a part of having a successful group, getting the group members involved and making them satisfied with

their work could create the relaxed and comfortable atmosphere for the group. That would motivate the members to perform better while working together.

Conclusion

Successful cooperative learning can be achieved through the use of group-work tasks which provide the opportunity for students to work together. While completing a task, the students' cognitive styles and the nature of the task affect their use of learning strategies. The students are able to appreciate that each stage of doing the task may require different learning strategies. It is not only knowledge which they learn from each other, but also how to interact with others appropriately, which is a valuable lesson for them. The results of this study should raise teachers' awareness of factors, such as the nature of the task, the different characteristics of students with different cognitive styles, and the choices of learning strategies they use, which can contribute to success in implementing cooperative learning in the classroom. Teachers should also accommodate students with different cognitive styles so that they can participate successfully in the group process while dealing with a group-work task. It is recommended that teachers should encourage students to have a shared goal in order to engage them more cooperatively and effectively in group-work.

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APPENDIX A

Criteria for the classification of cognitive styles

Cognitive style	Characteristic	Example
Diverger	• rely on imaginative ability.	• enjoy creating the story.
	• can generate many alternative ideas and enjoy brainstorming.	• enjoy while sharing the ideas.
	• be interested in people and are feeling-oriented.	• concern others' feeling.
Assimilator	• pay attention to ideas.	• try to make all group members understand his ideas.
	• tend to think carefully.	• take time to think while working.
	• have systematic planning and goal setting	• show clear steps while working to reach the set goal.

APPENDIX B

Criteria for the classification of learning strategies

Learning strategy	Example
• Working with others	- Interacting with others while completing the task.
• Planning	- Planning the task as a whole picture. - Planning the steps how to accomplish the task (i.e. choosing strategies for specific goal).
• Outlining the story	- Writing down the rough idea of the story. - Brainstorming the overview of the story.
• Analysing	- Making a decision by breaking the existing context down into parts.
• Elaborating	- Adding new information to the task. - Adding ideas to each other.
• Translating	- Using L1 as a basis for understanding and/or producing the second language. - Using L1 to create the story.
• Monitoring	Checking comprehension about: - problems while completing the task. - progress on the task (i.e. time & work / understanding about the work).
• Resourcing	Seeking help to help learners solve problems by: - using reference materials such as dictionaries, encyclopedias, textbooks, the Internet, or looking at friends' note while completing note-taking (not alive source). - asking friends or teachers (alive source).
• Editing	- Correcting mistakes found in writing. - Simplifying the ideas.
• Evaluating	Judging the outcome (a certain extent) about: - quality of the work when the task is finished. - the information or ideas obtained while completing the task.

AUTONOMY IN TEACHING CURRICULUM DEVELOPMENT AT VIETNAM NATIONAL UNIVERSITY, HANOI: CURRENT SITUATION AND SOLUTIONS

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Abstract

Vietnam National University, Hanoi (VNU) has been entrusted by the Government with the pioneering role in training high quality human resource, initiating new directions for the development of the country's science and technology. Since established, VNU has been given autonomy in curriculum development and opening new training disciplines. With this autonomy, VNU has always focused on developing spearhead scientific and academic disciplines to meet the diversified and increasing demands of domestic and international labor markets. VNU, then grant the autonomy to its member universities. However, the decentralization to member universities and faculties in developing teaching curriculum encounters certain difficulties. The questions put forward are "How much autonomy in developing curricula can be granted to member universities and faculties?" and "How to improve the quality of the curricula?" The data collected from 256 staff by means of a survey questionnaire and 15 VNU managing officials through in-depth interviews reveal the reality in developing curricula at Vietnam National University Hanoi and the advantages and disadvantages of the autonomy. Based on the results, some solutions are suggested to improve the curriculum quality.

Keywords: Autonomy, teaching curriculum, curriculum development, VNU

1. Literature review

1.1. Overview of autonomy in curriculum development

Accountability may take many forms: legal requirements such as licensing, financial audits and reports, quality assurance procedures such as program or institutional accreditation, benchmarking exercises to compare programs across institutions, professional qualification examinations, budget allocation mechanisms that reward performance, and oversight structures such as governing boards with representation from external stakeholders (Emiliana, and Petrow, 2008).

Governments have also occasionally used their financial influence to introduce or reduce some broad fields of study—another veterinary or medical school or a reduction in the numbers studying teacher education. But such influence has been at the macro level and there are very few, if any examples, in Anglo-American and European systems at least, of government attempting to influence the content of curriculum.

Whether all of this amounts to an undue undermining of autonomy or intrusion into academic freedom is a matter for debate. A majority of Australian academic staff certainly regard government interference as excessive—coming second only to Korea and twice the rate of Sweden—in an international poll which asked about government interference in important academic matters. (Don Anderson & Richard Johnson, 1998).

Universities in the majority of European countries (29) are essentially free to develop their own academic profiles. Universities in several European countries, generally the new member states, are able to open programs independently for fee-paying students, while the number of government-funded places need to be negotiated with the relevant authorities. (Thomas Estermann & Terhi Nokkala, 2009)

Enhancing capacity of autonomy and accountability relies on the smooth functioning of a system comprised of many interconnected factors in the HEIs. It is widely accepted that for education to yield good results there has to be a proper mix of teacher quality, school curriculum, school environment, home environment, and other factors that motivate students and teachers to apply themselves and increase student knowledge (Vegas and Petrow, 2008). The analysis of the most important factors affecting education is a necessary step to understand how an education system should change in order to improve its outcomes (Arcia et al, 2010).

Many scholars around the world have studied the development of curricula such as "*Curriculum development: theory and practice"* (Emmanuel Atanda Adeoye, 2006), "*Developing Curriculum"* (Piter F. Oliva, 2008), "*Guidelines for developing curricula based on capacity"* (Yvonne Osborne, 2010) with the main focus on the development of models, guidelines, and review of curricula.

Since 2005, the university autonomy in Vietnam has been formally defined in the Education Law with similar content to the basic autonomy of universities in developed countries. Subsequently, universities were officially granted financial autonomy under the Government's Decree No. 43 dated April 25, 2006 and the Law on Higher Education in 2012 that regulates universities' autonomy. Many scholars have studied and published works to clarify the unclear issues mentioned in these documentations (e.g. the definition of autonomy; the advantages and disadvantages of autonomy, etc.); to study popular

university autonomy models in the world and the practical basis that can be applied in Vietnam, especially the suggestions and proposals at the macro and micro levels in order to effectively implement autonomy in Vietnam. Some studies can be named such as "Autonomy and social responsibility of universities" (Thiep Lam Quang, 1999); "Factors affecting the autonomy and self-responsibility of universities" (Hai Dang Xuan, 2002); "The relationship between the role of state management on education and autonomy and self-responsibility of universities" (Hai Dang Xuan, 2004); "University autonomy in the context of globalization" (Huong Vuong Thanh, 2005); "Increase autonomy and accountability of higher education institutions to improve quality in Vietnam" (Nha Phung Xuan, 2016). In addition, there are many studies on different aspects of university autonomy suggesting solutions to more effectively implement the autonomy of domestic universities.

In Vietnam, curriculum development has drawn interest of many researchers in the past 10 years. Remarkable studies can be listed such as "Assessing the Higher Education Curricula" (Ngoc Le Duc, 2005); "Curriculum Development" (Chinh Nguyen Duc, 2015); "Curriculum Development and Management" (Hien Nguyen Vu Bich, 2015); "Developing Curricula in Compliance with CDIO" (Trinh Doan Thi Minh, 2015); and dozens of other studies on curriculum development. These studies focus mainly on issues related to models and processes to develop and review or design curricula following CDIO approach.

There has been no in-depth research on the autonomy of curriculum development. Therefore, this research was done with a view to bridging that gap in the literature.

1.2. Theoretical basis for autonomy in curriculum development

Autonomous university typically refers to a university which exercises independent control over its day-to-day operations and curriculum. It implies that the sponsoring state does not have control over academic matters of the school. Conversely, universities that are not autonomous generally have their curricula controlled, even dictated by the state's Ministry of Education or government agency regulating higher education (Wikipedia, 2017).

Institutional autonomy allows a public college or university the flexibility to fulfill its mission without undue interference from external bodies such as political or special interest groups. Scholars have identified two types of institutional autonomy, the first surrounding academic matters and the second concerning administrative activities. Substantive autonomy, also labeled academic flexibility (Volkwwein, J.F., 1997), has been identified with the “goals and programs” of the academy (Berdahl, R. O, 1999). Procedural autonomy subsumes the processes by which these are achieved (Berdahl, R. O, 1999), including the financial and personnel tasks in administrative procedure (Volkwwein, J.F., 1997).

University is where new knowledge is created and academic freedom is an absolute right. University lecturers are free to undertake research and publish their research, free to undertake their lectures and academic discussions; free to criticize the university’s censorship and regulations. According to Shils, academic freedom is its self, related to the university’s core objectives which are freedom in studying and disseminating the truth. The truth is considered as a mandatory principle, but not a barrier to academic freedom (Callahan M., 1995).

Curriculum development is a process of improving the curriculum. Various approaches have been used in developing curricula. Commonly used approaches consist of analysis (i.e. need analysis, task analysis), design (i.e. objective design), selecting (i.e. choosing appropriate learning/teaching methods and assessment method) formation (i.e. formation of the curriculum implementation committee / curriculum evaluation committee) and review (i.e. curriculum review committee) (Piter F. Oliva, 2008)

Curriculum development process includes 6 following steps (Chinh Nguyen Duc, 2015):

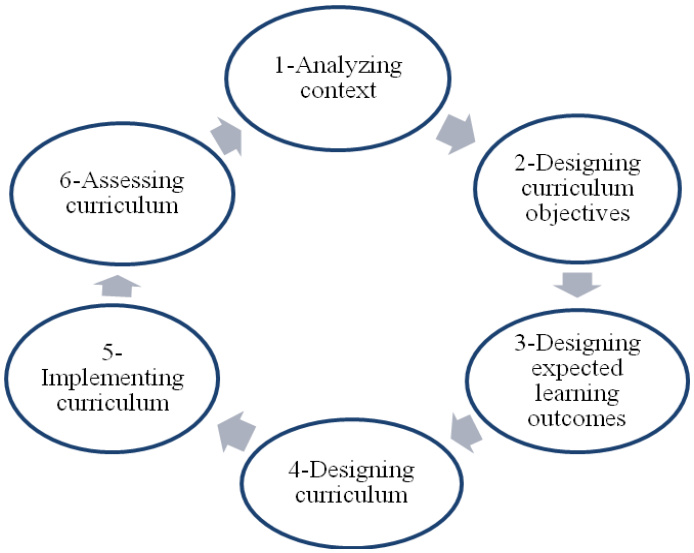

Figure 1: Curriculum development process

Curriculum development consists of six steps in a successive and closed-loop process as follows:

Step 1: In the context analysis, all internal and external elements of the institution should be considered and analyzed to adjust the institution's vision, goals and core values to adapt to the world educational trends.

Step 2: Designing objectives regarding knowledge, skill and attitude that curricula can provide the learners with.

Step 3: Expected learning outcomes are designed on the basis of specifying the objectives of the curricula.

Step 4: Based on the goal and the expected learning outcomes of the curricula to develop courses. These courses need to meet the predefined learning outcomes.

Step 5: In curriculum implementation, educational institutions should pay attention to the conditions of quality assurance such as lecturers, researchers, administrators, infrastructure, learning materials, scientific research results, finance.

Step 6: Curriculum assessment is divided into three categories: overall assessment, periodic assessment and final assessment. The core objective of the

assessment is to determine the learners' capabilities and to review how well the curriculum meets expected learning outcomes. Based on the assessment and context analysis results, the curriculum will be adjusted to align with the objectives, the expected learning outcomes, the course content, etc. After completion, the curriculum will be transitioned to implementation and evaluation phases. This is a closed-loop process with uninterrupted steps.

1.3. Vietnam higher education system

Higher education system of Vietnam has the mission of training highly qualified human resources to meet the requirements of economic – social development of the country; scientifically researching and creating new knowledge to contribute to the development of human knowledge; technology transferring, providing community developing services. With a network covering the whole country, the establishments of higher education are not only training establishments, but also basic and important elements of the national innovation system. The higher education in Vietnam is teaching and training activities in higher education institutions. In 2016-2017 academic year, the higher education system has 2 National Universities, 3 Regional Universities, 299 universities and institutes, 214 colleges. System-wide, there are 118 establishments tasked to train doctoral degrees and 120 for master training. The training of our higher education system has 599 802 college students, 1 461 839 undergraduate students, 92 811 graduate students and 8 870 PhD students. The whole system has 91 633 lecturers, including 503 professors (0.75%), 3.114 (4.45%) Assoc. Professors, 10198 (14.8%) PhD and 44 688 Masters (47.0%) (MOET, 2017).

Since 2005, strategic policies on higher education have continuously mentioned about "autonomy rights, self-responsibility", "self-financing", implying a trend that assigns more power of decision-making to higher education institutions and decentralizes the power of the state. This trend of decentralizing power of the state and of increasing the role of universities and colleges in Vietnam is an important step and has followed the international experience. However, after 10 years of the renovation, "autonomy rights, self-responsibility" of higher education institutions has been challenged by the policy and the policy implementation. These challenges have come from both sides: the policy and the willingness of higher education institutions.

1.4. Vietnam National University, Hanoi

Vietnam National University, Hanoi, established in 1906, is one of the two national universities in Vietnam, which ranked 139 in Asia by QS World University Rankings 2017. VNU has 34 constituent units consisting of 7 member universities, 5 faculties, 7 research institutes, 2 training centres, and 13 service units. Currently, VNU has 95 undergraduate, 142 master and 121 doctoral programs with the annual enrollments of 7300 undergraduate, 3000 masters and 400 doctoral students. The total number of staff in VNU is 3,852, of which 1887 are lecturers and 199 are researchers (VNU, 2018). With its numerous high quality, multi-disciplinary, multi-field undergraduate, graduate education programs and fundamental and applied research fields, VNU plays a key role in the Vietnam education system.

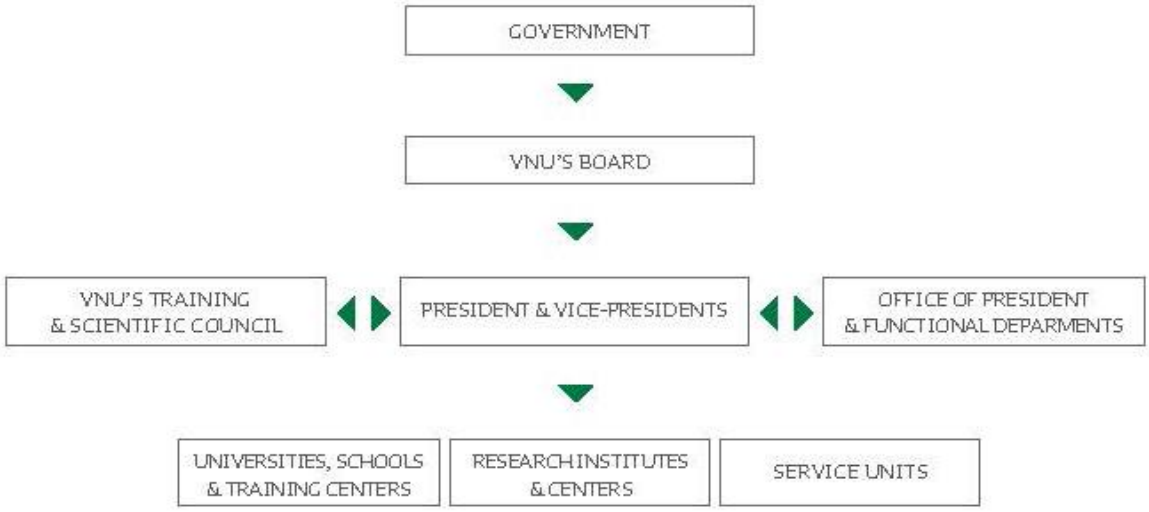

Figure 2: VNU's organizational chart (2017)

In Vietnam, the development of curricula that meet the needs of society is an important task of universities. In recent times, the survey of social needs for the development of curricula has always been a primary concern of the universities. In order to create more conditions for the universities, the Vietnam Ministry of Education and Training (MOET) has given certain autonomy in the development of curricula. Vietnam National University, Hanoi (VNU), being one of the two national universities in Vietnam, assigned by the Government the pioneering role in training high quality human resources as well as exploring new directions for the development of the country's science and technology enjoys a degree of autonomy that other higher education institutions in the country do not have. VNU has always focused on the development of spearhead disciplines to meet the diversified and increasing demands of the domestic and international labor markets. Thanks to high autonomy in the development of the curricula, since 1997, VNU has developed and deployed the curricula for talented students. This is the educational program delivered only at VNU. Graduates from these programs are truly outstanding and many of them have been admitted to master's and doctorate programs at the world's leading universities.

2. Research method

Two questions related to this issue put forward for the current research are: (i) How much autonomy in developing curricula can be granted to member universities and faculties? (ii) What needs to be done to improve the quality of the curricula?

The study used the Likert scale to measure the agreement of autonomy right in the range of 1 to 5 (totally disagree to completely agree). The cronbach's alpha coefficient of 0.790 indicates that the scale has good reliability.

A survey questionnaire was used to collect data from 256 staff of 18 training units. In-depth interviews with 15 VNU managing officials were also conducted to collect

information on autonomy in developing the curricula at VNU. SPSS software was applied to analyse the collected data. The sample size consists of 256 full names for academic and academic titles including professors, associate professors, PhDs and masters; sufficient representation for managerial and professional positions; representing years of experience from 1 to over 20 years.

Table 1: Number of staff involved in the survey

No	Content	Surveyed Number		VNU	
		Quantity	Ratio %	Quantity	Ratio %
I	**Title, Degree**				
1	Professor	2	0.78%	66	1.65%
2	Associate professor	26	10.16%	326	8.16%
3	Doctoral degree holders	88	34.38%	980	24.54%
4	Master's degree holders	105	41.02%	1529	38.28%
5	Bachelor	31	12.11%	1012	25.34%
6	Doctor	4	1.56%	40	1.02%
7	Other			41	1.01%
	Total	*256*	*100%*	*3994*	*100%*
II	**Gender**				
1	Male	106	41.41	1535	38.43
2	Female	150	58.59	2459	61.57
	Total	*256*	*100%*	*3994*	*100%*
III	**Professional position**				
1	Managers	74	28.91%	450	11.27%
2	Departmental staff	75	29.30%	1062	26.59%
3	Lecturers	87	33.98%	1686	42.21%
4	Technicians	4	1.56%	30	0.75%
5	Researcher	16	6.25%	292	7.31%
6	Other			474	11.87%
	Total	*256*	*100%*	*3994*	*100.00%*
IV	**Working experience in year**				
1	From 1 year to 5 years	74	28.91%	716	17.93%
2	From 6 years to 10 years	46	17.97%	269	6.74%
3	From 11 years to 15 years	44	17.19%	900	22.53%
4	From 16 years to 20 years	51	19.92%	761	19.05%
5	More than 20 years	41	16.02%	1348	33.75%
	Total	*256*	*100%*	*3994*	*100.00%*

3. Research results

3.1. Research results on MOET and VNU general regulations on the autonomy in curriculum development

In Vietnam, MOET undertakes the development and management of undergraduate, master and doctoral programs. Based on the list of coded training disciplines developed by the MOET, VNU develops a plan for its own training disciplines. Each year, based on the needs of the society, especially the demand of the labor market for high quality human resources, VNU can add its new training disciplines to MOET's existing list.

VNU member institutions have autonomy in identifying the needs of new occupations, in studying the socio-economic development trends locally and internationally, in implementing surveys and forecasting on human resource needs in order to propose the plan for developing curricula. The proposed plans will be submitted to VNU leaders, who will review them and then issue the decision on the plan for curricula for 5 years. During the implementation of the plan, if there are new demands for human resources, the VNU members can propose to VNU to adjust the plan for the following years.

MOET sets up regulations for all curricula of all universities nationwide. The regulations dictate that each undergraduate program should have 6 compulsory modules consisting of 27 credits which account for 20% of the program. For a master's program, there should be 2 compulsory modules consisting of 8 credits which account for 12% of the program. For doctorate programs, there is no regulation from MOET concerning compulsory modules. Instead, it is the university's job to decide the modules for this level. MOET organizes, manages the development of the syllabus and textbooks of all modules for all universities. These syllabi and textbooks will be taught in all universities nationwide. According to the VNU regulations for undergraduate programs, member universities have the autonomy in developing proposals to open new curricula on the list of VNU training fields. VNU sets the minimum amount of knowledge for the curriculum and the structure of the curriculum. In order to develop interdisciplinary studies, VNU developed 212 syllabus and textbooks of general education and divided the modules into major groups.

When developing new curricula, VNU member universities must comply with the modules of general education provided by VNU. A Vice Rector of a member university said: "*Our students can study at any VNU member for some interdisciplinary modules. This ensures the effectiveness of the curricula and saving the training costs*". In addition to the modules administered by MOET and VNU, VNU members can proactively develop the remaining modules of the programs. A rector of a VNU member university said "*The syllabus and textbooks are mostly written by the lecturers and professors. If needed, some materials of other reputable institutions will be referred"*. During the implementation of the curricula, member universities have autonomy to actively update syllabi and textbooks. If there is a change in the title or number of credits of the module, the institution is responsible for reporting to VNU for consideration and approval. A Vice Rector of a member university explained: *"Updating the content of the syllabi is an annual task of the lecturer to keep pace with the development of science and technology in the world, especially when the industrial revolution 4.0 is taking place".* A managerial officer said: "*The syllabi of the training modules are updated regularly, every 3 years on average, up to every 5 years.*

When a textbook is reprinted, the faculty members update the latest knowledge of the field into it".

Table 2: Comparison of the autonomy of VNU member universities and other universities

TT	VNU member universities	Universities outside VNU
I	***Process***	
1	*Category of academic disciplines*	
	Follow the MOET'scategory of academic disciplines and VNU plan of training disciplines	Follow the MOET'scategory of academic disciplines
2	*New curricula*	
	The universities develop new curricula, consisting of modules issued by the MOET, and by VNU; The universities actively develop new curricula according to the VNU's approved plan of training disciplines; VNU reviews proposed curricula; VNU approves the proposed curricula.	The universities develop new curricula, consisting of modules issued by MOET; The universities actively develop and review new curricula; The universities report to MOET; MOET approves the proposed curricula.
3	*Revision of current curricula*	
	The universities actively revise and review current curricula; The universities report to VNU; VNU promulgates curricula	The universities actively revise and review current curricula; The universities are allowed to promulgate the curricula by themselves; After that, the universities report to MOET.
4	*Development of the module syllabus*	
	The universities actively develop and review module syllabi (VNU promulgates some syllabi of general education)	The universities actively develop and review module syllabi; The universities have right to promulgate the syllabi.
5	*Compiling and publishing textbooks (for curricula other than MOET management)*	
	The universities compile and review	The universities compile and review

TT	VNU member universities	Universities outside VNU
	textbooks of some modules of general education in VNU's list of disciplines. The universities publish the textbooks.	textbooks. The universities publish the textbooks.
II	***Advantages***	
	The universities are flexible in the development of their curricula using the common, shared VNU resources. This facilitates the implementation of interdisciplinary, unique and pioneering programs which are impossible to implement in other universities. VNU controls the quality of these curricula. This helps to promote the interdisciplinary of programs and supports VNU members to develop the programs in the right direction, which meet the needs of society.	The universities are active and flexible in selecting and opening new curricula.
III	***Challenges***	
	The procedure sometimes limit the creativity and initiative of the members.	The universities are independent so there is less interconnectivity in training activities; It is difficult to implement interdisciplinary programs.

3.2. Research results on autonomy in opening new curricula

VNU issued a document (No.1366/QD-DHQGHN dated 25/4/2012) regulating the launching a new curriculum and adjusting an existing curricula. Accordingly, the steps for developing a new curriculum or adjusting an existing curriculum are clearly defined. The common point between new curricula and existing curricula is that after the institution completed the designing of a new curriculum or has made necessary adjustment, all curricula are sent to VNU for review and approval, and issued. The 4 steps in launching a new curriculum are as follows: (i) The institution sets up a project to develop the new curriculum, which is then reviewed by the institution at the grass root level; (ii) VNU organizes the curriculum appraisal, and then promulgate the new curriculum; (iii) the institution prepares training quality assurance conditions;(iv) VNU evaluates the conditions for the program delivery and then assigns the tasks to the institution (VNU, 2012).

A manager at VNU said *"Every year, due to the limited budget allocated by the State, VNU can only open 8 to 10 new curricula. There are so many projects for launching new*

education programs resulting in a huge waste of time and effort of lecturers. This even annoys the staffs who are involved in the projects".

According to survey data, 16% of the respondents agreed with VNU's decision to open all new curricula, meaning that they agreed to the status of build and manage new curricula at VNU, 25% of respondents agreed with the plan that institutions decide on opening all new curricula. This is also a solution to solve the shortcomings of a VNU manager mentioned in the in-depth interview in the expectation of not wasting of time and effort in making projects. 59% of respondents said that VNU should decide to open some important, specialized curricula, whereas normal curricula should be decided by the head of the institutions. Thus, the majority of respondents think institutions need greater autonomy not only in launching new curricula, in addition to being autonomous in identifying new demand for industry need, actively research the trend of social economic development domestically and internationally, take the initiative in implementing social survey on the demand for human resources and forecast future human resource need.

A survey of 256 VNU staff on university autonomy with regards to open program (Figure 3) shows that the 22% of them strongly agree and 37% agree that the university should be autonomous to open the program. Only 17% (11 + 6) of them did not agree in this issue. About 24% of them sit on the fence, they don't know whether it is better to give member universities this authority or should leave it for VNU. The Cronbach's Alpha (0.893) shows great reliability.

59% (22 + 37) of staffs and faculty members agree that member universities should be autonomous in opening up new curricula. Staffs and faculty members believe that VNU only needs to comply with regulations and supervise the opening of new curricula. Good implementation in certain member universities should be encouraged, financially and infrastructural supported by VNU. The universities that violate regulations need to be disciplined seriously. The important role of VNU is to coordinate and guide quality assurance activities for member universities.

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24% of them sit on the fence, they don't know whether it is better to give member universities this authority or should leave it for VNU. These staffs and faculty members believe that permitting member universities to be autonomous in opening new curricula could result in too many curricula being opened in a short period of time, affecting training quality. On the other hand, if VNU does not grant member universities the autonomy to open new curricula, this may result in a waste of resources when member universities develop many new curricula but not approved by VNU.

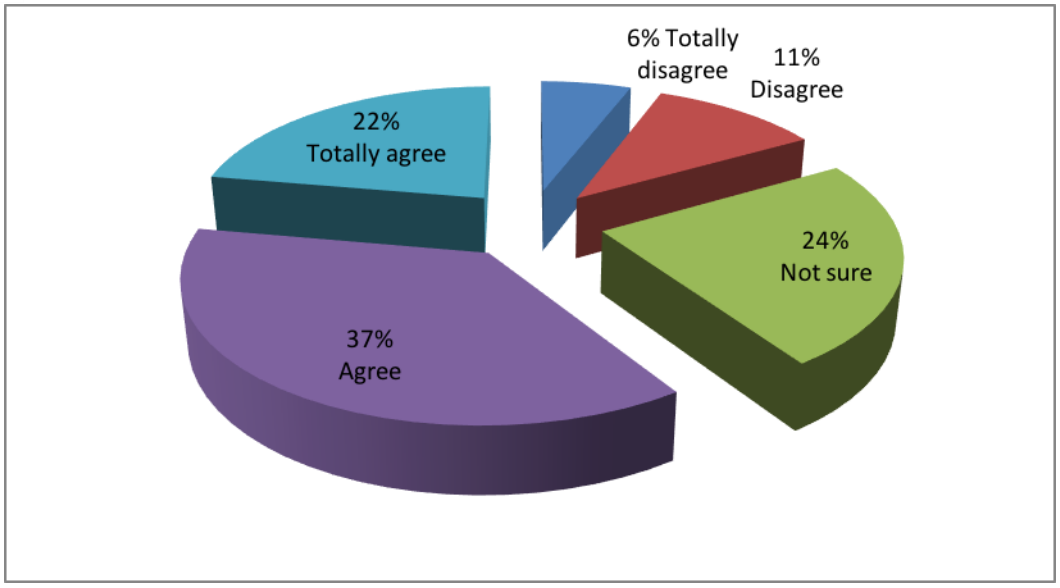

Figure 3: Survey on the right for universities to open new curricula

The interview results show that 59% of staffs and faculty members in the member universities wish to be autonomous in opening new curricula, yet 24% of them is uncertain and suggest to find a new management solution.

3.3. Research results on autonomy in adjusting curricula

According to Decision No.1366/QD-DHQGHN dated 25/4/2012, curriculum update and adjustment goes through the following steps: First, the faculty proposes the update, adjustment of the curricula and syllabi of the discipline; then, the Science and Training Council meets to review the updated, adjusted curriculum; after that, the institution submits documents to VNU for promulgation.

The evaluation and promulgation of curricula are VNU's jurisdiction. If 20% or more of the curriculum contents are being updated or adjusted, VNU will hold a specialised appraisal council and decide to issue. However, the fact that all the changes in the content must be approved by VNU has made institution hesitate to make update or adjustment even though it is necessary to do so. Interview results show that some curricula need to be updated regularly, such as Information Technology, Biotechnology, Journalism, etc. However, these curricula are only updated and issued every 5 years by VNU.

One principal said: "*VNU should stipulate that its member universities can update or adjust 20% of the content of their curriculum every year while VNU inspects and monitors the performance of each institution.*"

For curricula that are currently being carried out (Figure 4), 30% of the interviewees agreed with the current situation in VNU, that is, the heads of institutions organize the adjustment, VNU evaluates and issue adjusted curricula. A great number of staff (70%) wishing for some change, which means more autonomy is given to the head of institution so that they can decide for themselves the adjustment of their curricula. These officers propose universities autonomy in adjusting current curricula at this level. The results of in-depth interviews show that the principal of a university also suggested that VNU

should only check and supervise the performance of member universities, giving more rights to the universities in adjusting current curricula.

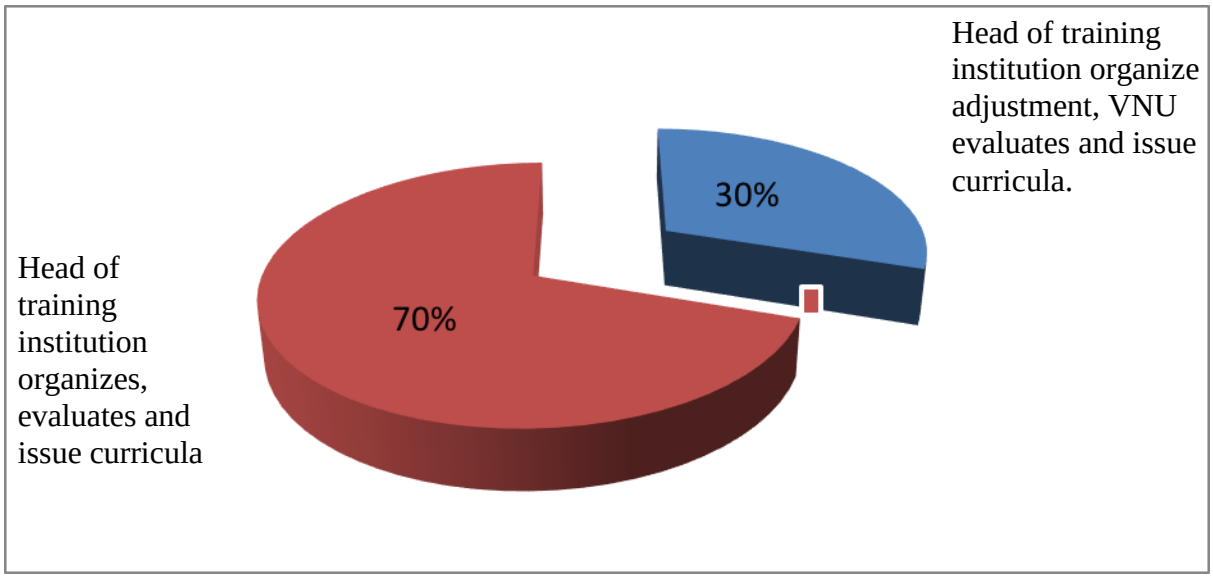

Figure 4: Survey on the right to adjust curricula

A survey of 256 VNU staff on the university autonomy in the program content (Figure 5) shows that 39% of them totally agree and 39% agree that the university is autonomous in this issue. Only 8% (3 + 5) staff did not agree to assign this right to the university. 14% of the respondents are unsure about whether or not the universities should be given autonomy in curriculum adjustment. The Cronbach's Alpha index of 0.882 indicates great reliability.

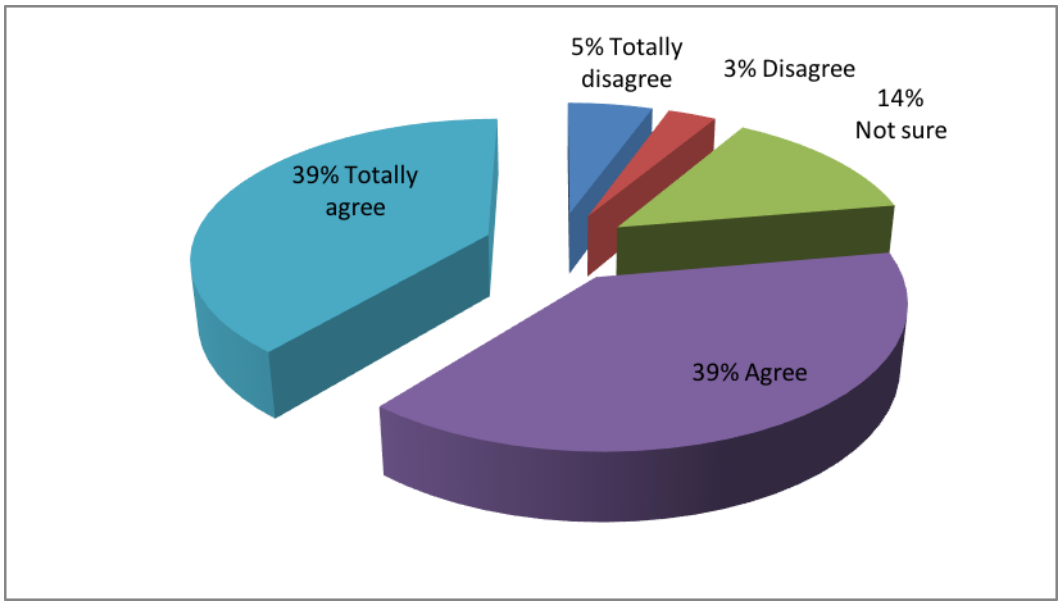

Figure 5: Survey on the right for content of the curriculum

The interview results show that most staffs and faculty members in the member universities wish to be autonomy in adjusting the curricula. VNU should only monitor and supervise the implementation. Only a few do not want to be autonomous. With the rate of 78% (39 + 39) supporting curriculum adjustment autonomy of member universities, combining with interview results with experts calls for change in curriculum management of VNU.

4. Solutions for enhancing autonomy in developing curricula

4.1. General solutions

- VNU should to develop a system of legal document stipulating the process of opening, adjusting curricula towards enhancing autonomous rights of training institutions in developing curricula.
- Training institutions of VNU should actively develop high quality curricula, setting budgets for implementing the curricula that helping them less dependent on government's budget. MOET issued Circular No. 23/2014/TT-BGDDT on 18 July 2014 that allowed training institutions develop for themselves high quality curricula. Many training institutions of VNU have good facilities, rich source of reference materials, highly qualified faculties, experienced managers to implement more and higher quality curricula.
- VNU develops more the modules of general education, digitalize and share them for all VNU members in order to strengthen the interconnectivity of VNU members, to increase the training effectiveness and create favorable conditions for learners to develop their capacities.
- VNU should not set up compulsory subjects, but compile syllabuses and reference materials for some of general subjects which are actively selected by training institutions. That will give institutions advantages to take initiative in opening new curricula.

4.2. Opening new curricula

VNU should require training institutions to invest in accurate disciplines planning, responding to human resource needs in the coming years, especially in compliance with human resource needs of industrial revolution 4.0. The institutions develop plans for opening new curricula which are matching with the list of allowed majors of VNU. The approval for plans will depend on quality criteria. Concurrently, VNU should to inspect, evaluate the quality assurance conditions of the institutions. That helps decrease wasting money and effort of institutions, and immediate implementation of the curricula would help them to be more up to date.

4.3. Adjusting curricula

For programs that have not had graduate students: VNU should evaluate and approve for adjusted curricula. Evaluation process needs to implement at 2 levels: internal level (at training institutions) and external level (at VNU).

For programs that have had graduate students: Leaders of training institutions adjust, evaluate, and deliver the curricula themselves. The leaders have responsibility to explain, report to VNU management and academic issues. Autonomy rights for training institutions will help curricula to be updated regularly, responding to the developing economic and social trends the country and international integration.

5. Conclusion

Capacity and willingness to exercise autonomy rights of higher education institutions is also a reason for ineffectively exercising autonomy rights. Higher education institutions do not have sufficient conditions and ability to completely exercise its autonomy rights.

With regard to these issues, Vietnam should have important steps to promote renovation of the governance. Especially, Vietnam should create conditions in terms of law and mechanism to exercise autonomy rights, and create a mechanism of elaborating responsibilities of higher education institutions.

Due to the autonomy rights that VNU enjoys, its member institutions have advantages in opening new curricula. The training institutions of VNU have had autonomy rights in most aspects of curriculum development and evaluation. However, when developing curricula, the training institutions have met some difficulties. The solutions for autonomy in developing curricula which the author mentioned above will contribute to the process of enhancing quality of curricula at VNU, helping it to implement the duties of a pioneer in training high quality human resources, opening new road in developing technological sciences of Vietnam.

VNU should to develop a system of legal document stipulating the process of opening, adjusting curricula towards enhancing autonomous rights of training institutions in developing curricula.

Training institutions of VNU should actively develop high quality curricula, setting budgets for implementing the curricula that helping them less dependent on government's budget. MOET issued Circular No.23/2014/TT-BGDDT on 18 July 2014 that allowed training institutions develop for themselves high quality curricula (Vietnam Ministry of Education and Training, 2014). Many training institutions of VNU have good facilities, rich source of reference materials, highly qualified faculties, experienced managers to implement higher and higher quality curricula.

VNU develops more the modules of general education, digitalize and share them for all VNU members in order to strengthen the interconnectivity of VNU members, to increase the training effectiveness and create favorable conditions for learners to develop their capacities.

VNU should not set up compulsory subjects, but compile syllabi and reference materials for some of general subjects which are actively selected by training institutions. That will give institutions advantages to take initiative in opening new curricula.

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THE MEDIATING EFFECT OF GRIT ON SLEEP QUALITY AND ACADEMIC PERFORMANCE AMONG UNDERGRADUATES IN MALAYSIA

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Abstract

This study aims to investigate the relationships among sleep quality, grit personality and academic performance among undergraduates, and whether grit is a mediator for the effects of sleep quality on academic performance among undergraduates in Malaysia. Grit scale, Pittsburgh Sleep Quality Index (PSQI), grade point average (GPA) and cumulative grade point average (CGPA) were used as measurements in this study. 400 participants were recruited by using purposive sampling method. Results found significant relationships between grit personality, PSQI and academic performance, and grit is a significant predictor of academic performance but not PSQI. However, sleep quality affected the grit level of undergraduates which in turn affected their academic performance. In other words, the results obtained supported the mediating effects of grit on the relationships between sleep quality and GPA, as well as the relationship between sleep quality and CGPA. The results suggested that even gritter undergraduates would be affected by poor sleep quality. Consequently, their GPA and CGPA will be affected. Based on the findings, it is suggested that programs should be launched to inform students of the importance of having good quality of sleep, and different strategies to improve their quality of sleep. This is to ensure that their levels of grit and academic performance will not be affected.

Keywords: Sleep Quality, Grit, Academic Performance, Malaysia, undergraduates

Introduction

Academic performance is most often defined in terms of one's academic achievement, one's achievement of learning objectives, and the skills and abilities one obtains (York, Gibson & Rankin, 2015). Various studies in the past have identified the factors that influence academic performance among undergraduate students, including cultural factors (Li, Chen & Duanmu, 2010), university environment and social support (Gloria & Robinson Kurpius, 2001), perceived stress and depression (Turashvili & Japaridze, 2012; Wintre & Yaffe, 2000), and the student's personality (Komarraju, Karau, Schmeck & Avdic, 2011), which includes self-efficacy (Richardson, Abraham & Bond, 2012) and grit (Credé, Tynan, & Harms, 2017).

Grit is defined as a personality to work continuously towards challenges, or maintaining self-effort and interest over years even in the presence of failure (Duckworth, Peterson, Matthews & Kelly, 2007). Grit has two facets, which are perseverance of effort and consistency of passion for long-term goals. Perseverance is defined as staying on the same course of action, having no intention of changing focus, facing obstacles along the way, and finding pleasure in finishing tasks (Park, Peterson & Seligman, 2004). The meaning of perseverance transcends more than just mere self-control, as the meaning of grit has an emphasis on long-term stamina rather than short-term intensity (Duckworth et al., 2007). Consistency indicates a strong desire towards an activity that defines oneself, that one enjoys, loves or finds important, and in which one invests time and energy in daily (Vallerand, 2012).

Grit is known to be one of the factors of academic tenacity, which is a term used to describe non-cognitive traits that enable a person to work hard and smartly for a long period of time in order to facilitate long-term learning and success. Grit is an important determinant of whether an individual will remain successfully in school because high achievement is based on persistent effort expended on an arduous task (Dweck, Walton & Cohen, 2011).

People with a higher level of grit are able to experience more positive outcomes or achieve their goals. Students who have this characteristic r are more likely to graduate from their high school (Eskreis-Winkler, Duckworth, Shulman & Beal, 2014). Students with a higher level of grit also tend to have higher academic performance and academic satisfaction (Lin & Chang, 2017). This may be because they have higher self-discipline and can perform well academically and strive to improve their performance over the years (Duckworth & Seligman, 2005).

Besides personality, duration and quality of sleep are also highly correlated to the academic performances of the students (Gilbert & Weaver, 2010; Hershner & Chervin, 2014). Sleep quality and quantity are important aspects of learning and memory retention of information (Ahrberg, Dresler, Niedermaier, Steiger & Genzel, 2012; Curcio, Ferrara & De Gennaro, 2006). Students' capacity for learning, memory consolidation, critical thinking and problem solving can be enhanced after a good sleep, as it acts as an agent that is said to repair and restore the functions of the brain (Lai & Say, 2013).

Studies on sleep quality and sleep duration are mostly linked to students because this portion of the population are known to be one of the most sleep-deprived (Ahrberg et al., 2012). Fewer studies have examined the causes of poor sleep quality among undergraduates while comparing to younger adolescents (Lund, Reider, Whiting, & Prichard, 2010). Possible factors linked to poor sleep quality include internet addition (Cheng et al., 2012), Facebook dependence (Wolniczak et al., 2013), engagement in social life and part-time jobs (Vail-Smith, Felts, & Becker, 2009), academic and emotional stress, and procrastination (Clevenger Jr, 2013; Lund et al., 2010).

A study by Yilmaz, Tangikulu & Dikmen (2017) found that students need to sleep at least six to seven hours per day and wake up feeling refreshed in order for them to consider themselves to have good sleep quality. Aung, Nurumal & Zainal (2016) also found that students with poor GPA had low quality of sleep, resulting in them facing difficulty in daytime functioning. They experience excessive daytime sleepiness that causes dozing off in class or concentration levels. Another study also found fourth year medical students who slept less than six hours during weekends scored significantly lower in their academic performance compared to students who slept between six to eight hours and more than eight hours during weekends. This may be due to sleep deprivation as a cause of daytime sleepiness and a reduction in attention span. It can be emphasized that sleep deprivation has an effect on academic performance. (Harlina Halizah Siraj et al., 2014).

Even a slight reduction in sleep duration and quality can also cause a deterioration in brain functions resulting in students' poor memorising ability, difficulties in maintaining concentration, and poor decision making (Orzel-Gryglewska, 2010). Partial sleep deprivation is considered to be less than six hours every day, which in 14 days amounts to between one and three days of total sleep deprivation (Banks & Dinges, 2007).

There has no study conducted to explore the relationships between grit and PSQI, and the relationships among grit, PSQI and academic performance. Past studies, however, examined the relationships between conscientiousness and sleep duration and sleep quality. It is essential to find out the significant relationships between grit and its link to sleep duration and sleep quality as grit is highly positively related to conscientiousness. (Duckworth et al., 2007).

Conscientiousness is one of the components in the Big Five personality, which is a trait that ''describes socially prescribed impulse control that facilitates task- and goal-related behaviour'' (p. 120, John, Naumann, & Soto, 2008). Conscientiousness includes self-control and perseverance facets (Ivcevic & Brackett, 2014). As the perseverance of effort in grit is similar to self-control and perseverance facets in conscientiousness, studies have found the similar positive relationships between academic performance and conscientiousness and between academic performance and grit. Nonetheless, the main difference between grit and conscientiousness is that grit emphasis on long-term stamina rather than short-term intensity (Duckworth et al., 2007).

Studies showed that conscientiousness is positively related to sleep quality as conscientious people have been shown to have earlier bed and waking times, which is known to be one of the factors of good sleep quality (Gray& Watson, 2002). Studies also

highlighted that students who scored higher in conscientiousness not only experienced better sleep at night but also obtained better results than those who scored lower in conscientiousness (Gray & Watson, 2002; Horzum, Önder, & Beşoluk, 2014). Low conscientiousness may be due to irregular total sleep times, procrastination on studies and schoolwork and mismanagement of time (Taylor et al., 2011).
It is interesting to find out whether sleep duration and sleep quality affect the grit level of students and their academic performance. According to the transactional perspective on personality development and social investment principle, personality can be changed through the influences of social roles, normative changes and major life events (Roberts, Wood, & Smith, 2005; Specht, Egloff, & Schmukle, 2011). In addition, the accumulation of minor events may also create similar effects as the experiencing of major life events (Luhmann, Orth, Specht, Kandler, & Lucas, 2014). Since many undergraduates face sleep deprivation (Gaultney, 2010; Hershner & Chervin, 2014), it is a concern that whether the poor sleep quality and short duration of sleep would affect their grit level, and whether the change of grit level can affect their academic performance. That is to say that even if undergraduates possess more grit and have better academic performance, poor sleep quality and short duration of sleep may affect their grit level, resulting in poor performance.

This study aims to explore these issues by using a cross-sectional survey. The findings of this study will provide information to enable better understanding on the importance of good quality of sleep, and the consequences it can have on personality development and academic performance. The objectives of this study are:

1. To investigate the relationships between PSQI, grit and academic performance.

2. To examine whether grit is a mediator for the effects of PSQI on academic performance.

The research questions are as follow:

1. What are the relationships between PSQI, grit and academic performance?
2. Does grit mediate the effects of PSQI on academic performance?

The hypotheses are:

1. There are significant relationships between PSQI, grit and academic performance.

1a. PSQI (sleep quality and sleep duration) are negatively corelated with grit (perseverance of efforts and consistency of passion)
1b. PSQI is negatively correlated with academic performance (GPA and CGPA)
1c. grit is positively correlated with academic performance.

2. Grit is a mediator for the effect of PSQI on academic performance.

Research Method

Participants

400 undergraduates participated in this survey (134 males and 255 females). Due to the incomplete responses and missing data, only 389 valid questionnaires were taken into account. 55.4% of the respondents were between 18 and 20 years old, while 44.6% were between 21 and 25 years old.

Instrumentation

Academic Performance. Grade point average (GPA) and Cumulative Grade Point Average (CGPA) were used as a measure of students' academic performance in this study. GPA shows the average point (score) that students earned for their final grade in courses within a semester. CGPA shows the average point (score) that students earned for their final grade in courses since the first semester. Since both GPA and CGPA are known to be a reliable and valid way of measuring a person's achievement outcomes that are affected by intelligence quotient (Bridgeman, McCamley-Jenkins & Ervin, 2000), they have been used to measure students' academic performance in some studies (Duckworth et al., 2007; Eliasson, Lettieri & Eliasson, 2010; Gilbert & Weaver, 2010; Lowry, Dean & Manders, 2010).

PSQI. PSQI was used to measure sleep quality and sleep disturbance experienced over the previous one month (Buysse, Reynolds, Monk, Berman & Kupfer, 1989). PSQI is a self-reported sleep questionnaire that includes nine self-rated questions and four self-written questions. The self-rated questions are answered using a Likert-scale. Each answer is rated on a scale of zero to three; "zero" signifies no sleep disturbances over the previous one month while "three" signifies having it three or more times a week. An example of a self-rated question is: "During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?" The self-written answers are in response to subjective questions (i.e. questions that prompt subjective answers). An example of a subjective question is: "During the past month, when have you usually gone to bed?" According to the scoring instruction, the scores of seven components were calculated first, then the total score was summed up from scores in the seven components. The total score ranged from zero to twenty-one. A higher total score indicated a poorer sleep quality of the person. The internal consistency of this questionnaire is ranged from $\alpha = 0.74$ to 0.83 (Buysse et al., 1989; Manzar et al., 2016). In this study, the reliability analysis of the PSQI was $\alpha = 0.63$. The results of factor analyses extracted two factors that explained 51.03% of the total variance. The first factor was labelled as sleep quality and the second factor was labelled as sleep duration. The mean scores of both factors were used to indicate participants' sleep quality and their duration of sleep. A higher mean score indicated poorer sleep quality and shorter sleep duration.

Grit. Grit is measured using a 12-item self-rated scale (Duckworth et al., 2007). This scale is used to test the level of grit an individual possesses. This assessment focuses on two factors, which are perseverance (persistence of effort), such as "I have achieved a goal that took years of work", and consistency (passion for long-term goals), such as "I

often set a goal but later chose not to pursue a different one". Participants put a tick in boxes to indicate the extent that each item described them on a 5-point Likert scale, from "very much like me" to "not like me at all". A higher mean score indicated that the person had a high level of grit. The internal consistency of this scale is 0.67 in this study while the internal consistency is 0.684 for perseverance and 0.772 for consistency.

Research Procedure

The questionnaires were distributed to undergraduates at a university using the purposive sampling method. Purposive sampling is a type of non-probability sampling method where the sample selection is based on the fit of the sample for the purpose of the study with special inclusion and exclusion criteria (Daniel, 2011). In this study, the criterion of sample is that for undergraduates to be the participants. Undergraduates were approached at different locations in the university that most undergraduates, such as the library and cafeterias in the various blocks. To avoid selection bias, the coin flip method was used to select undergraduates. An undergraduate would be only be approached only when the coin lands on the head. After explaining the aims of the survey, undergraduates were asked for their consent to answer the questionnaire. Those who agreed to fill in the questionnaire were then informed of their right to not participate and of the confidentiality of data. To ensure the anonymity, participants were asked to put their completed questionnaire into a box prepared by researchers. After collecting all questionnaires, the data was analysed using the Statistical Package for Social Science (SPSS), Version 22.

Results

Demographic Information and Academic Performance

The results of *independent t-test* showed that female undergraduates have a higher GPA (M=2.92, SD = 0.56) than male undergraduates (M = 2.76, SD = 0.59), t (339) = 2.41, p = 0.017. The female undergraduates also have a higher CGPA (M = 2.81, SD = 0.61) than male undergraduates (M = 2.67, SD = 0.58), t (349) = 2.03, p = 0.043. There was no age and degree difference in academic performance that emerged.

Correlations among Measurements

The results of *Pearson correlation* among all measurements are shown in Table 1. In hypothesis 1a, results revealed that PSQI is negatively correlated with grit, r (385) = -0.101, p = 0.049. However, only sleep quality but not sleep duration is negatively correlated with grit, r (385) = -0.153, p = 0.003 and r (385) = -0.003, p = 0.951, in order. Also, in Hypothesis 1b, grit is positively correlated with GPA and CGPA, r (338) = 0.163, p = 0.003 and r (348) = 0.146, p = 0.006, in order. However, only perseverance but not consistency is positively correlated with GPA. On the other hand, only consistency but not perseverance is positively correlated with CGPA. Lastly, PSQI is not correlated with GPA or CGPA, which failed to support Hypothesis 1c.

Table 1: Correlation coefficients among all scales

	GPA	CGPA	Consistency	Perseverance	Grit	PSQI	Sleep Duration	Sleep Quality
GPA	1	0.803***	.085	.154**	.163**	-.074	-.106*	-.033
CGPA	.803***	1	.128*	.082	.146**	-.084	-.081	-.064
Consistency	.085	0.128*	1	-.010	.761***	-.096	.039	-.171**
Perseverance	.154**	0.082	-.010	1	.642***	-.056	-.067	-.044
Grit	.163**	0.146**	.761***	.642***	1	-.100*	-.003	-.153**
PSQI	-.074	-0.084	-.096	-.056	-.100*	1	.685***	.856***
Sleep Duration	-.106*	-0.081	.039	-.067	-.003	.685***	1	.237***
Sleep Quality	-.033	-0.064	-.171***	-.044	-.153**	.856***	.237***	1

Note: * p < 0.05; ** p < 0.01; *** p < 0.001

Regression analyses on academic performance

Hierarchical regression was used to examine the associations among PSQI and grit on academic performance. For the first step, gender was entered as the control variable since the results showed significant gender differences in GPA and CGPA. PSQI factors and grit were entered at the second step. GPA and CGPA were used as dependent variables. The results showed grit but not PSQI was a significant predictor of GPA and CGPA (see Tables 2 and 3).

Table 2 Results of regression analyses on GPA

	Step 1			**Step 2**		
	B	**t**	**p**	**B**	**t**	**p**
Gender	.123	2.265	.024	.136	2.537	.012
Grit				.170	3.165	.002
PSQI				-.065	-1.219	.224
F	5.13*			5.80**		
df	1, 336			3, 334		
R2	0.015			0.050		
R2 change				0.034**		

Note: * p < 0.05 ** p < 0.01

Table 3 Results of regression analyses on CGPA

	Step 1			**Step 2**		
	B	**t**	**p**	**B**	**t**	**p**
Gender	.102	1.902	.058	.112	2.110	.036
Grit				.149	2.803	.005
PSQI				-.070	-1.313	.190
F	3.62			4.68**		
df	1, 346			3, 344		
R2	0.01			0.039		
R2 change				0.029**		

Note: * p < 0.05 ** p < 0.01

The Mediating Effects of Grit

In terms of GPA, as the results from *Pearson correlation* showed significant relationships between sleep quality with grit and grit with GPA. This indicated that grit may be a mediator for the relationship between sleep quality and GPA. The process macro was then used to examine the mediating effect (Hayes, 2016). The results showed sleep quality is a significant predictor of grit, b = -0.13, SE = 0.06, p = 0.032, and grit is a significant predictor of GPA, b = 0.209, SE = 0.699, p = 0.003 (see Figure 1). The indirect effect was then tested using a bootstrap estimation approach with 1000 samples (Shrout & Bolger, 2002). According to the decision tree proposed by Zhao et al. (2010), since the indirect effect was significant, b = -0.03, SE = 0.017, 95% CI = -0.071, -0.003, and the direct effect was not significant, it suggested an indirect-only mediation of grit on the effect of sleep quality on GPA.

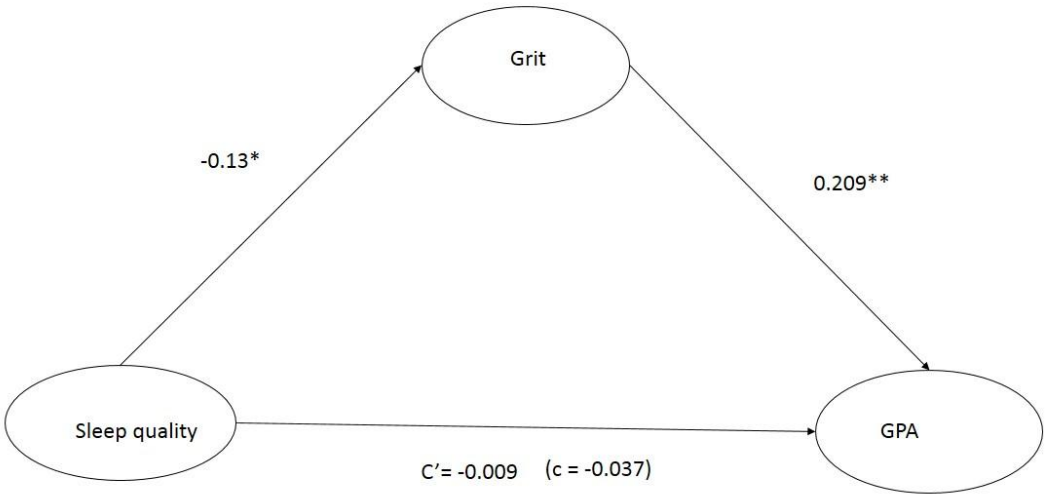

Figure 1: Path coefficcents of mediating analyses among sleep quality, grit and GPA
Note: * p < 0.05, ** p < 0.01

In terms of CGPA, as the results from *Pearson correlation* showed significant relationships between sleep quality with grit, and between grit and CGPA, it also indicated that grit may be a mediator for the relationship between sleep quality and CGPA. The process macro was then used and results showed sleep quality is a significant predictor of grit, b = -0.162, SE = 0.06, p = 0.007, while grit is a significant predictor of CGPA, b = 0.188, SE = 0.072, p = 0.009 (see figure 2). The indirect effect was then tested using a bootstrap estimation approach with 1000 samples (Shrout & Bolger, 2002). Since the indirect effect was significant, b = -0.03, SE = 0.017, 95% CI = -0.077, -0.006, and the direct effect was not significant, the results also suggested an indirect-only mediation of grit on the effect of sleep quality on CGPA.

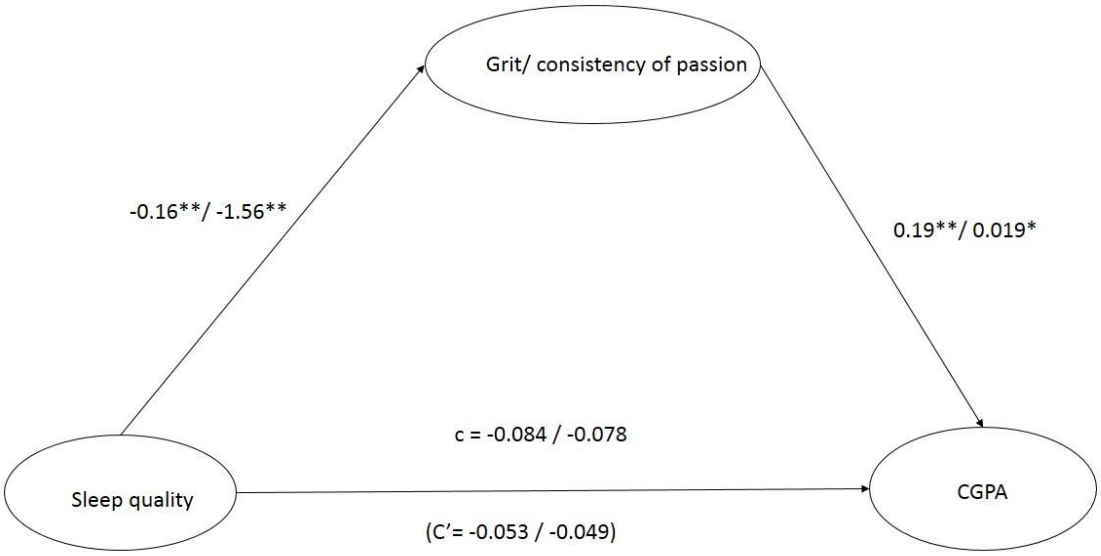

Figure 2: Path coefficcents of mediating analyses among sleep quality, grit / consistency of passion, and CGPA, Note: * $p < 0.05$, ** $p < 0.01$

In addition, as the results of *Pearson correlation* also showed significant relationships between sleep qualities with consistency of passion, and between consistency of passion and CGPA. The process macro was used and the results showed sleep quality as a significant predictor of consistency of passion, b = -1.59, SE = 0.53, p = 0.003, and consistency of passion as a significant predictor of CGPA, b = 0.018, SE = 0.008, p = 0.023 (see Figure 2). Again, the indirect effect was tested using a bootstrap estimation approach with 1000 samples (Shrout & Bolger, 2002). The results showed a significant indirect effect, b = -0.03, SE = 0.018, 95% CI = -0.073, -0.004, but no significant direct effect. Consequently, the results also suggested an indirect-only mediation of consistency of passion on the effect of sleep quality on CGPA.

Discussion

Lack of sleep and poor sleep quality are common problems faced by students nowadays (Ahrberg et al., 2012). Previous studies have shown the significant impact of sleep quality on students' academic performance, and the significant relationship between grit personality and academic performance. However, to our knowledge, no study has examined the relationships between sleep quality and grit, and the relationships among these three variables together. In addition, from the transactional perspective on personality development and social investment principle, it is expected that poor sleep quality would affect the grit level of undergraduates, and the changes of grit level would then further affect their academic performance.

Regarding the first research question, the results showed a significant negative relationship between PSQI and the level of grit. Nonetheless, only sleep quality but not

sleep duration in the PSQI is significantly correlated with grit. In other words, the poorer the sleep quality, the lower the grit level. These results indicated that the poor sleep quality may be an important life event for the undergraduates that may affect their personality development, as suggested by the social investment principle.

On the other hand, the results showed a significant positive correlation between grit and academic performance. These results as similar to findings reported in some studies (Eskreis-Winkler, Duckworth, Shulman & Beal, 2014; Lin & Chang, 2017). However, GPA is only correlated with perseverance of efforts, and CGPA only correlated with consistency of passion. These may indicate different functions of the two facets of grit, where perseverance is more relevant to a short-term goal but consistency or passion is more relevant to a long-term goal.

The non-significant correlation between PSQI and academic performance is out of our expectation. However, as the results showed the sleep quality is significantly correlated with grit, and grit is significant correlated with academic performance, which indicate that the relationship between sleep quality and academic performance may be mediated by grit personality. Accordingly, we examined the mediating effect in the second research question.

Regarding the second research question, the results support the mediating role of grit on the effects of sleep quality on academic performance. It can be concluded that sleep quality affects the level of grit, and the level of grit affects the GPA and CGPA. These results provide further evidence to support the transactional perspective on personality development and social investment principle, where poor sleep quality can be a life event that affects a change in personality among undergraduates.

Nonetheless, for the CGPA, a further mediating analysis suggested that consistency of passion is a more important facet of grit than perseverance of efforts. These mediating effects of consistency of passion indicate that students who suffered from poor sleep quality found it hard to maintain their passion for pursuing their long-term goal, which is to achieve a higher CGPA. It can be stressed that poor sleep quality will weaken their passion in study and affect academic performance.

Based on the findings, it is suggested that educators design programs to educate students of the importance of having good quality of sleep and highlight the negative impacts of sleep deprivation on their personality development and academic performance. Some studies have indicated that academic and emotional stress, social activities and part-time work are factors that are connected to poor sleep quality among undergraduates (Cheng et al., 2012; Clevenger Jr, 2013; Lund et al., 2010). Relevant training programs may be introduced to undergraduates so that they can adapt to university life and employ better time management strategies. As there are not many studies that study the causes of sleep deprivation among undergraduates in Malaysia, future studies may further investigate the factors pertinent to poor sleep quality so that appropriate programs can be designed to assist undergraduates to improve their quality of sleep.

It is advised that the interpretation of the results be read with caution, since only a cross-sectional survey was conducted and the results may be affected by uncontrolled variables. The sample was recruited from a particular university and is not representative of all university undergraduates.. Future studies may use a longitudinal design and a larger sample from different universities to examine the robustness of the findings.

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THE INFLUENCE OF FRESHMEN'S PSYCHOLOGICAL CHARACTERISTICS ON LEARNING PERFORMANCE AND RETENTION

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Abstract

A significant dropout rate of freshmen in university X during 2011-15 prompted us to carry out the present study to detect freshmen's attitudes and learning preferences. Holland's theory of six personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional was applied. The survey includes data from 1,558 freshmen from five colleges. The survey questionnaire had 194 items. The analysis showed Realistic and Investigative types were significant in males while Artistic and Social types were more projecting in females. Also, it revealed poor Person-Environment congruence and learning performance in the College of Science and Engineering. The students at risk need a transfer to another major or subject of their interest. Besides, differentiating instruction for customized service will satisfy the real demand and solve the thorny dropout problems. By data mining, all students at risk were advised to four channels for appropriate actions. The outcome of this study offers directions to low GPA students through psychological and physical assessments.

Keywords: Holland's Theory, Person-Environment Congruence, Learning Performance, Retention, Individual Interest, Counseling

Introduction

A psychological assessment of individual learning characteristics of the university freshmen is essential in order to create an efficient learning environment in an academic institution. A significant dropout rate of freshmen in University X during 2011-15 prompted us to investigate the reasons of their drop out. In a survey conducted by the office of the academic affairs at the University X, more than 46% students said lack of interest was the main reason for their drop out. Several factors may contribute to students' lack of interest. For example, school learning or materials may be too difficult or boring, teachers may be too strict, and or a preference for non-academic activities by students. Therefore, it is essential to investigate university freshmen's attitudes and learning preferences. On finding a relationship between freshmen's retention and their learning interests, one can offer an evidence-based analysis to decision-makers in the university.

According to a study, individual characteristics such as background, attitude, behavior, and performance play an important role in students' dropping out rates (Rumberger, 2011). The attitude, which we use as a general label to represent a wide range of psychological factors include expectations, goals, values, and self-perceptions. Both interests and goals contribute to positive effects on learning (Tobias, 1994). Poor interest can undermine motivation, thereby increasing the risk of dropping out. On the contrary, individual personality with positive effect leads learners to be energetic to the team commitment (Kim, et al., 2012). Dewey (1913) described that the power of interest could improve understanding. Interest can play the role of a driving force for a job or school performance and let students keep persistent in educational retention (Strong, 1943; Holland, 1997).

Holland (1997) proposed that interests are organized into six primary types: **R**ealistic, **I**nvestigative, **A**rtistic, **S**ocial, **E**nterprising, and **C**onventional, which are commonly known by their acronym as the RIASEC model (hereinafter referred as **RIASEC**). Interest is very important in the early stage of learning, as well as to differentiate between high and moderately skilled performers (Alexander, 1997; Hoffmann et al., 1998). Interest has been found to be a vigorous predictor of college major options (Eccles-Parsons, 1983; Holland et al., 1994). It is theorized that the greater the match, the better the satisfaction and greater the productivity (Dawis and Lofquist, 1984; Holland, 1997). Allen and Robbins (2010) found that students whose interests matched their majors tended to graduate on time or even early. Besides, interest-major fit can positively predict whether a student would stay in his/her entering major. Wilkins and Tracey (2014) have supported that when individuals' interests are compatible with their environment; they are more likely to stay in an occupation or persist in their major. According to Holland's (1997) theory, the assessment of congruence could be used to forecast learners' performance compared to the evaluation of interest scores only. Tracey and Robbins (2006) found that this definition of congruence was related to College grades point

average (GPA) and persistence. First semester GPA is an important outcome to study because it is not subjected to bias caused by data truncation with student dropout. Also, it is a strong predictor of ultimate college outcome and timely degree attainment (Allen and Robbins, 2010). Horn (2004) examined effects of ten indices measuring congruence between personality and academic major types on academic achievement for college students using data from a single institution. Many of Holland's hypotheses have received empirical support such as the hexagonal (circular) structure of RIASEC types (Tracey and Rounds, 1993) and the congruence of interests and environments being related to satisfaction, persistence and performance (Betz, 2008; Donohue, 2006; Hirschi, 2010; Holland, 1997; Spokane and Cruza-Guet, 2005; Spokane et al., 2000;; Tracey et al., 2012; Tsabari et al., 2005).The aims were: (1).To find out the interest type and person-environment congruence of freshmen. (2).To set up a predictive model of remedial options for decision makers. The research using Career Interest Survey from 'University Career and Competency Assessment Network (UCAN)' system was completed at the university X in Taiwan. The system could produce Holland Codes automatically and count the students' interest degree. Therefore, the present study attempts to apply Holland's theory of six personality types to collect the psychological data from freshmen in the university X and study the efficacy of Person-Environment congruence.

If we are able to identify misfit freshmen in the first semester, we can take corrective measures to adjust their majors or suggest optional courses which match their interests in the second semester to extend their retention. It is essential that student affairs office' personnel, counselors, and tutors responsible for guiding students through the college experience should seek to understand individual students' personality, values, and beliefs as they advise them on their academic major choices.

Also, it is our purpose to provide better and alternative approaches to predict remedial options. Data mining on psychological and physical assessments to explore the first semester GPA can contribute to precise accountability. Then, we can help the group who failed in subjects create the best opportunities for their success.

Literatures Review

In this section, psychological assessment of Holland interest and College Students' Adjustment will be illustrated. Besides, the advantages and application of data mining will be described.

Holland's Hexagon Code

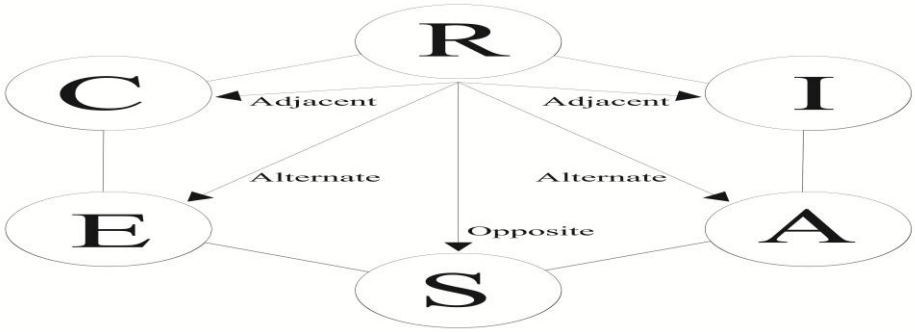

Figure 1 Holland's Hexagonal Model and Degrees of Congruence

Note: R= Realistic, I= Investigative, A= Artistic, S= Social, E= Enterprising, and C= Conventional

Based on preferred activities, interests, and competencies, Holland has developed six model environments that can be translated into a typology for academic disciplines; Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (Smart et al., 2000). Realistic individuals are interested in working with things. They usually have mechanical abilities, and they like to work outdoors; investigative individuals have more interest in science. They usually have the mathematical and scientific ability but like to work independently. Artistic individuals usually have artistic skills, enjoy innovation and have a good imagination. Social individuals like to be around other people and like to help others. Enterprising individuals have leadership and speaking abilities, are interested in business and like to persuade others. Conventional individuals have clerical and math abilities, and prefer indoor activities and organize things.

Holland's hexagonal model and degrees of congruence are illustrated in Figure 1. The hexagonal ordering distances mean the degree of similarity (Nye et al., 2012). For example, the adjacent types (e.g., R and I) have a heavy relationship, alternate types (e.g., R and A) have an intermediate relationship, while opposite types (e.g., R and S) means the least similarity. In our study, given the range of Hexagonal Model Index from 1 to 4, average congruence scores for each Holland personality code are estimated. Consistency and congruence scores were analyzed by different Colleges to see the relationships between individual interests and majors.

Person-Environment (P-E) Fit

The P-E fit is defined as the degree of compatibility or match between an individual and the characteristics of his or her environment (Kristof-Brown and Guay, 2010). The concept of fit has a strong influence in the areas of personality (Roberts and Robins, 2004), vocational interests (Holland, 1997), social psychology (Aronoff and Wilson, 1985), and industrial and organizational psychology (Schneider, 1987). P-E fit has generally been operationalized using congruence indices. Congruence is associated with the individual (values, personality, goals, and abilities) and the environment (Kristof, 1996; Schneider, 2001). If individuals perceive the environment to fit their personalities, it creates positive results, superior performance, and longer persistence. According to P-E fit research in the academic domain (Reutufors et al., 1979; Tracey and Robbins, 2006), it is expected interests to be related to higher grades point average (GPA) and longer retention in universities. In our research, the diagnosis of PE fit could detect the scores of students' major and provide guidance to redeem low congruence learners.

College Students' Adjustment Check List (CSACL)

College Students' Adjustment Check List (CSACL) is based on Mooney's Problem Theory (Mooney and Gordon, 1950). Chu and Tuan (2002) and Tsao (2015) described the CSACL as a good measurement tool for school counselors and instructors to understand students' problems. The CSACL comprises two hundred items in the questionnaire related to ten types of problems: living problem, time management problem, career problem, learning problem, family problem, interpersonal problem, love problem, emotion problem, spirit problem and physical problem. The rank of one hundred percentages is called PR value. If the PR value is smaller than 84, the participant belongs to normal area. If the PR value is between 85 and 94, it shows the students might have minor trouble in potential and low-risk in learning. If the PR value is higher than 95, it means the students might have major trouble in potential and high-risk in learning. About the major trouble learners, we call them high-risk group. The list is always drawn before the mid-term exam on the first entry in the first year. The CSACL alarms and can let tutors and teachers know that these poor learners need more attention. From GPA records, we linked the participants' CSACL scores and attempted to provide multiple remedial options except interest counseling for students who failed in the first semester in order to utilize school resources efficiently.

Data Mining

Data mining is a very important method in the academic and industrial areas. It is primarily used today in Healthcare, Market Basket Analysis, Education, Manufacturing Engineering, Customer Relationship Management, Financial Banking and Criminal Investigation, etc. Michael and Gordon (1997) stated that data mining could be used to discover patterns and rules in large amount of data involving methods such as artificial

intelligence, decision tree, statistics, and database systems. The goal of classification is to predict the value (the class) of a user-specified goal attribute based on the values of other attributes, known as the predicting attributes. The most used methods are memory-based reasoning, the Bayesian network, and Decision tree. Quinlan (1986, 1993) pointed out that a Decision tree is one of the predictive modeling approaches used in statistics, data mining and machine learning in artificial intelligence. There are classification and regression trees based on the categories of variables. The method can help us to create a model that predicts the target variable among different input variables. Bolstad (2007) described Bayesian networks (BNs), also known as belief networks (or Bayes nets for short) belong to the family of probabilistic 'Graphical Models' (GMs). These graphical structures are used to represent knowledge about an uncertain domain. In order to allocate reasonable funds for different demands, this research attempted to find rules from decision tree for the target at risk and compute the weight of different remedial options from the Bayesian network. Data mining on psychological and physical assessments to explore the first semester GPA can contribute to precise accountability for decision makers.

Methods

In Taiwan, 'University Career and Competency Assessment Network' (UCAN) system can support the career clusters interest survey according to States' Career Clusters Initiative (2005). There are Career Interest Survey and Competency assessment (common and professional competency) in UCAN. The research using Career Interest Survey was done at the university X in Taiwan.

Participants

The survey collected data online from 1,558 freshmen (585 males and 973 females) from five colleges (660 for Management, 197 for Science and Engineering, 126 for Design, 301 for Humanities and Social Sciences, and 274 for Information). We applied Chi-Square Test of Goodness of Fit to find that the compositions of gender and college can represent the population. The Chi-Square value of gender=0.135, $p=0.713>0.05$. Gender between sample and population is not in the rejection area (the expected ratio: male=0.38, female=0.62). And The Chi-Square value of college=8.256, $p=0.083>0.05$. College between sample and population is not in the rejection area (the expected ratio: Management=0.40, Science and Engineering=0.13, Design=0.10, Humanities and Social Sciences=0.19, and Information=0.18).

Procedures

The survey questionnaire consisting of 194 items have questions like which activities freshmen enjoyed most, their personality characteristics and the subjects they liked most (Show in Supplement). After mid-term exam in the first semester (Oct. 24-Nov. 20, 2016), the participants answered our survey. About the ethics assessment, we told them that we will do the research for academic purpose and will secure their private

information before they start to answer the questionnaire. Also, we informed them that after the data analysis, we will only share the report to the academic and students' affairs offices to improve the counseling to high-risk students.

These grades point average (GPA) were collected on Jan. 20, 2017. From GPA records of students who failed in the first semester, we linked their CSACL scores together (obtained from students' affairs office), attendance frequencies (obtained from academic affairs office) and freshmen's background data (obtained from information office). Finally, this study attempts to provide multiple remedial options by data mining for this group in order to utilize school resources efficiently.

Measures

In the analyses of statistics, independent variables are scores of Holland codes (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional-each having maximum 12 grades) and PR value of CSACL (living problem, time management problem, career problem, learning problem, family problem, interpersonal problem, love problem, emotion problem, spirit problem and physical problem), Colleges (Management, Science and Engineering, Design, Humanities and Social Sciences, and Information), gender (male and female), high school rank (Q1: the best 25%, Q2: 50% in the middle, Q3: 75% of the samples and Q4: the worst 25%) and ordinary attendance records (Normal and Poor Attendance). With regard to higher education, performance and persistence are especially appropriate as outcome indicators (Robbins et al. 2004). Therefore, the dependent variables include standardized GPA. The authors analyzed these in inferential statistics including ANOVA, correlation by SPSS and data mining (decision tree and Bayesian Network) by SPSS Modeler.

About the advanced scores, consistency has typically been operationalized using the relative match between the top two scores in a RIASEC profile. If the top two scores are adjacent to the RIASEC circle, then a score of 3 is given. If the top two scores are separated by another type, then a score of 2 will be given. If the top two scores are opposite, then a score of 1 will be given. So the 1–3 consistency indexes represented the similarity of the top two scores to the RIASEC circular structure. Congruence scores are assigned 4 when two codes are a perfect match and 1 when two codes are at opposite hexagonal positions. Therefore, higher scores indicate greater levels of congruence.

About data mining and remedial options, the University is accountable to its students, staff and funding bodies for the effective conduct of its teaching and consultative activities, and for the efficient and proper use of the educational resources. According to the GPA records of all freshmen, 50 participants failed in the first semester and were put into the category of objects at risk. The input variables were a degree of consistency and

congruence in Holland codes, worry types of CSACL, Colleges, gender, high school rank and attendance records. The output variable was the remedial options (Consultation, Remedial Education, Tutor or Parents care and Transfer) for learners who failed in the GPA.

Results

In this section, we can find the interest type and person-environment congruence of freshmen. Besides, through data mining, we can set up a predictive model of remedial options for decision makers.

About the reliability of this Student Interest Survey, the Cronbach Alpha value of inner consistency is 0.87. The reliability is larger than 0.7. It means the inner consistency is good. Besides, the questionnaire in UCAN system is from the Guidance Division Survey, Oklahoma Department of Career and Technology Education (2005). It was applied and promoted for more than 12 years for Career Clusters in the United States. So the validity is also trusted.

In basic descriptive statistics (shown in Table 1), the average scores of six type Holland codes are the highest in Social characteristics (Mean=5.88) but the lowest in Investigative interest (Mean=4.62). In addition, from ANOVA and post hoc analyses, gender and College are two important independent variables with interests. The analyses of correlation and data mining are linked between interest and GPA. They are shown as below.

Table 1 Basic Descriptive Statistics of Holland Interests (n=1,558)

Item	C	S	E	I	R	A
Number	1558	1558	1558	1558	1558	1558
Mean	5.13	**5.88**	**4.69**	**4.62**	4.77	4.72
Skewness	0.21	0.01	0.38	0.58	0.39	0.35
Kurtosis	-0.84	-0.94	-0.71	-0.33	-0.31	-0.75
Min	0	0	0	0	0	0
Max	12	12	12	12	12	12

Note: R= Realistic, I= Investigative, A= Artistic, S= Social, E= Enterprising, and C= Conventional

Gender Difference

From Table 2 it can be observed that male is interested in investigative (Mean=5.50) and realistic (Mean=5.73) areas ($p<0.01$). However, the female is more interested in social (Mean=6.25) and artistic (Mean=5.02) areas ($p<0.01$). The consistency (Mean=2.36) and congruence (Mean=3.35) is larger than the average. It means most of the freshmen fit well in the first semester with regard to consistency and congruence.

Table 2 Descriptive and ANOVA Results of Holland Interests by Gender (n=1,558)

Gender		C	S	E	I	R	A	Consistency	Congruence
	Mean	5.10	5.26	4.73	5.50	5.73	4.21	2.35	3.34
Male	SD	3.14	3.19	3.32	2.99	2.63	2.92	0.73	0.79
	Sig.				**	**			
	Mean	5.14	6.25	4.68	4.10	4.20	5.02	2.37	3.35
Female	SD	3.13	2.97	3.14	2.59	2.22	2.95	0.70	0.78
	Sig.		**				**		

Note: **. p<0.01; R =Realistic, I= Investigative, A= Artistic, S= Social, E=Enterprising, and C=Conventional.

College Difference

There are different interest attributes matching different majors. From post hoc analyses (shown in Table 3), it was found that (1) College of Management is significantly different in enterprising (Mean=5.07) and conventional (Mean=5.68) environments. (2) College of Humanities and Social Sciences is significantly different in social (Mean=7.01) environments. (3) College of Science and Engineering is significantly different in investigative (Mean=5.86) and the realistic (Mean=6.17) environment. (4) College of Design is significant different in Artistic (Mean=7.09) environment. About the congruence of five Colleges, College of Science and Engineering is significant inferior (Mean=3.16) to others and worthy for us to detect its GPA later.

Table 3 ANOVA and Post Hoc Results of Holland Interests by College

	Items	**N**	**Mean**	**SD**	**ANOVA**					
Types	**College**				**Source**	**SS**	**df**	**MS**	**F**	**Post Hoc**
C	1.Humanities and Social Sciences	301	4.67	2.98	Between Groups	530.57	4	132.93	14	2>4, 5>1, 5>3, 5>4.
	2.Science and Engineering	197	5.50	3.16	Within Groups	14745.51	1553	9.49		
	3.Design	126	4.42	3.02	Total	15276.07	1557			
	4.Information	274	4.33	2.82						
	5.Management	660	5.68	3.22						
S	1.Humanities and Social Sciences	301	7.01	3	Between Groups	776.63	4	197.19	21.75	1>2, 1>3, 1>4, 1>5, 2>4, 5>4.
	2.Science and Engineering	197	5.72	3.02	Within Groups	14054.86	1553	9.06		
	3.Design	126	5.39	2.98	Total	14831.49	1557			
	4.Information	274	4.73	3.03						
	5.Management	660	5.98	3.01						
E	1.Humanities and Social Sciences	301	4.71	3.11	Between Groups	335.06	4	83.88	8.32	1>4, 2>4, 5>4.
	2.Science and	197	4.91	3.18	Within	15653.03	1553	10.08		

	Items	N	Mean	SD	ANOVA					
Types	**College**				**Source**	**SS**	**df**	**MS**	**F**	**Post Hoc**
	Engineering				Groups					
	3.Design	126	4.32	3.23	Total	15988.09	1557			
	4.Information	274	3.8	3.04						
	5.Management	660	5.07	3.24						
	1.Humanities and Social Sciences	301	4.02	2.56	Between Groups	537.63	4	134.95	17.58	
I	2.Science and Engineering	197	5.86	3.14	Within Groups	11910.80	1553	7.68		2>1, 2>4, 2>5, 3>1, 4>1, 4>5.
	3.Design	126	5.08	3.01	Total	12448.43	1557			
	4.Information	274	4.96	2.85						
	5.Management	660	4.30	2.66						
	1.Humanities and Social Sciences	301	4.22	2.22	Between Groups	724.39	4	181.83	31.44	
R	2.Science and Engineering	197	6.17	2.48	Within Groups	8973.67	1553	5.78		2>1, 2>3, 2>4, 2>5, 3>1, 3>5, 4>1, 4>5.
	3.Design	126	5.32	2.49	Total	9698.06	1557			
	4.Information	274	5.27	2.79						
	5.Management	660	4.30	2.27						
	1.Humanities and Social Sciences	301	5.10	2.90	Between Groups	951.15	4	237.59	29.04	
A	2.Science and Engineering	197	4.68	2.83	Within Groups	12704.24	1553	8.18		1>4, 1>5, 3>1, 3>2, 3>4, 3>5.
	3.Design	126	7.09	2.56	Total	13655.39	1557			
	4.Information	274	4.07	2.90						
	5.Management	660	4.36	2.88						
	1.Humanities and Social Sciences	301	2.48	0.64	Between Groups	5.79	4	1.45	2.89	
Consistency	2.Science and Engineering	197	2.31	0.77	Within Groups	778.63	1553	0.5		
	3.Design	126	2.29	0.72	Total	784.43	1557			
	4.Information	274	2.32	0.74						
	5.Management	660	2.35	0.71						
	1.Humanities and Social Sciences	301	3.51	0.76	Between Groups	24.88	4	6.22	10.35	
Congruence	2.Science and Engineering	197	**3.16**	0.79	Within Groups	933.95	1553	0.6		1>2,1>5,3>2,3>5
	3.Design	126	3.57	0.64	Total	958.83	1557			
	4.Information	274	3.36	0.76						
	5.Management	660	3.28	0.81						

Note: R= Realistic, I= Investigative, A= Artistic, S= Social, E= Enterprising, and C= Conventional

Interest Correlation Analysis

As illustrated in Figure 2, the correlation coefficient of two random variables for each Holland personality code is measured as .674, the highest (Investigative and Realistic), but .388, the lowest (Investigative and Artistic).

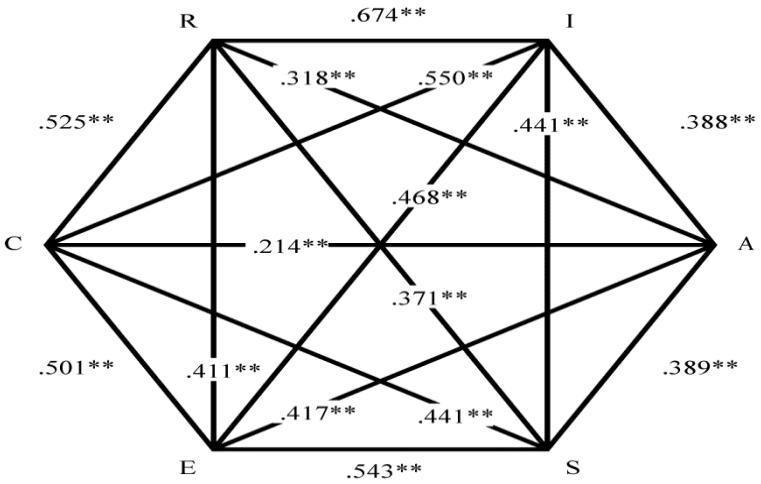

Figure 2 Pearson Correlation of Hexagonal Models

Note: R= Realistic, I= Investigative, A= Artistic, S= Social, E= Enterprising, and C= Conventional; **. p<.01

GPA and Interest

At the end of the first semester, the GPA was collected, and the results of correlation analysis were revealed (Table 4). Two sets of variables were Holland scores of six types and standardized GPA in five colleges. Either the significant value or the highest coefficients of six types were considered. It was observed that (1) Participants who studied in the College of Science and Engineering with Conventional, Investigative and Realistic characteristics performed better than other types. (2) Participants who studied in the College of Management with Conventional interests performed better than other types. (3) Participants who studied in the College of Design with Enterprising characteristics performed worse than other types. (4) The Social interest score was positive with the GPA in the College of Humanities and Social Sciences. (5) The Art interest score was positive with the GPA in the College of Design. (6) The Conventional interest score was positive with the GPA in the College of Information. Most of the findings fit the PE congruence theory.

Table 4 Pearson Correlation between Holland Codes and GPA by the college

	C	S	E	I	R	A
HumanSociety		0.010				
Science Engineering	0.191**			0.145*	0.166*	
Design			-0.190*			0.092
Information	0.032					
Management	0.099*					

Note: **.p<0.01; *. p<0.05; R= Realistic, I= Investigative, A= Artistic, S= Social, E= Enterprising, and C= Conventional

Decision Tree Analysis

Through C5 in SPSS modeler 18.0, there are four rules in the decision tree model as shown in Figure3.

- *Rule 1:* If the learners are with high family problems or high spirit problems (PR value is higher than 95), then it is recommended to take the remedial option of consultation. The probability of consultation is totally 24% in counseling suggestions.
- *Rule 2:* If the learners are with low consistency, normal attendance or with learning problems, then the remedial education after class is needed. The probability of remedial education is totally 44% in counseling suggestions.
- *Rule 3:* If the learners are with low PE congruence and low consistency or only with low PE congruence, then the learners should be transferred to another major or study more interesting areas. The probability of Transfer is totally 16% in counseling suggestions.
- *Rule 4:* If the learners are with only poor attendance, then the tutor and the parents could pay attention to and encourage the students more. In addition, it is our prediction of this group who join clubs or activities more so as to spend less time on subjects. The probability of automated care from parents or the tutor is totally 16% in counseling suggestions.

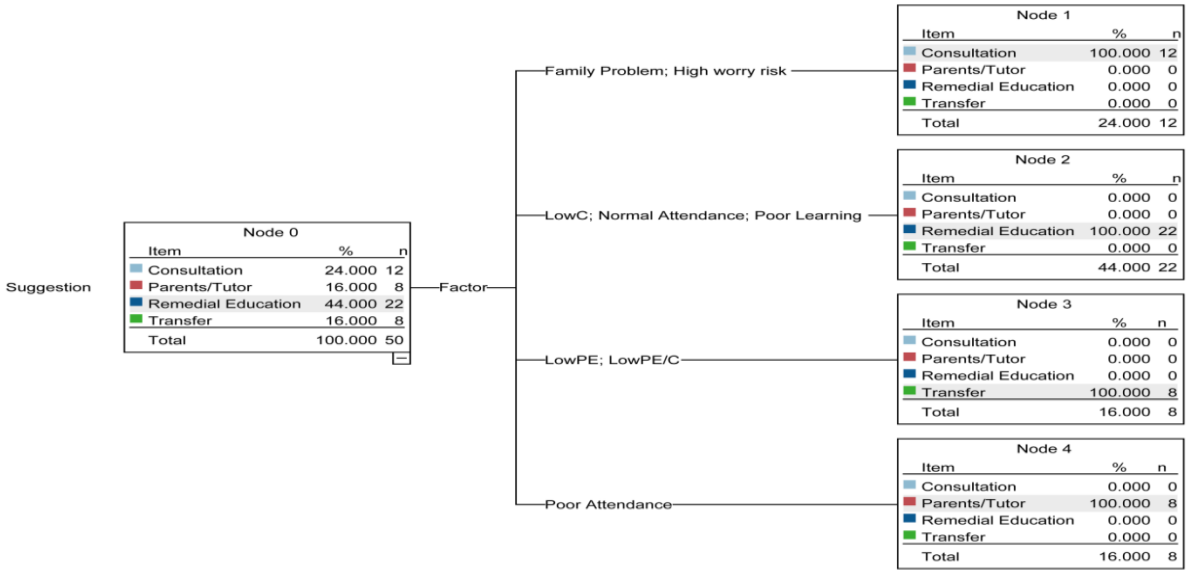

Figure 3 Decision Tree Analyses

Bayesian Network

According to input variables of records **(**consistency and congruence degree of Holland codes, problem types of CSACL and attendance conditions), the finding of Bayesian Network is shown in Table 5. From SPSS modeler, the goal variable yields four suggestions. The record conditional probability of high spirit problems is 1 to consultation. The probability of learning problem with 0.23 needs remedial education. The probability of normal attendance with 0.45 is recommended for remedial education. The tutor and parents are able to take good care of absence because of the probability of 1. It's necessary to provide remedial education because of the probability of low consistency with 0.32. At last, the probability of low PE congruence with 1 is proposed to transfer to another major or study more interesting subjects.

Table 5 Bayesian Network Analysis

	Record conditional probability		
Goal	**Percentage**		
Suggestion	*Adjustment*	*Attendance*	*Interest*
Consultation	1.00	0.00	0.00
Remedial Education	0.23	0.45	0.32
Parents/Tutor	0.00	1.00	0.00
Transfer	0.00	0.00	1.00

Discussion

Gender

In our study, it was found that male's interest belongs to Investigative and Realistic types while the females' interest lies in Social and Artistic areas. These findings are in

conformity with earlier research. Valla and Ceci (2011) described that a large percentage of males are interested in inanimate things (i.e., physical phenomena) rather than people or other living things, while a larger percentage of females are interested in people and other living beings rather than the inanimate things. Schmidt (2011) found a substantial sex difference favoring males on measures of technical aptitude in contrast to females. According to Ceci et al. (2009), specific interests, at least some of them are influenced in the case of males by prenatal hormonal conditioning (exposure to testosterone). Pinxten et al. (2015) observed a persuasive association between students' interest pattern and major chosen. Different interest patterns between male and female students primarily explained gendered choices. This gender difference in preferences could be handled by teachers by encouraging the fewer female students in the class so that they can feel confident.

College and Department

Scholars have long understood the impact of academic majors (and departments) on students, and have concluded that they often produce quite different influences on the development of students' interests and abilities (Chickering, 1969; Baird, 1988). Students who are interested in their major subjects and fit PE congruence well can get higher grades and persistence. In our study, participants who studied in the College of Science and Engineering with Conventional, Investigative and Realistic characteristics performed better than other types. Besides, we found that among the PE congruence of five Colleges, the average score of College of Science and Engineering is inferior to others. It needs our prior care and concentration. The diagnosis of low PE students suggests a transfer of students to another major or subject of their interest. For example, "art" lovers who study in Construction Engineering Department in College of Science and Engineering may choose design subjects in Architecture and Urban Design Department in College of Design.

Data Mining and Differentiating Instruction

Some practical applications of student performance prediction can provide timely interventions (Bienkowski et al., 2012; Gunnarsson and Alterman, 2012; Thomas and Galambos, 2004; Wolff et al., 2013). Educational data mining (EDM) focuses on model and algorithm development to improve predictions of learning outcomes (Siemens & Baker, 2012). Before institutional research, all students at risk were advised to participate in remedial education. But from data mining, remedial options can be classified into four channels (Consultation, Parents/Tutor care, Transfer and Remedial Education) to take further actions. The probability of consultation is 24%, remedial education after class is 44%, transferring to another major or areas is 16%, and poor attendance is 16%. Each academic or administrative staff can offer adequate service to different groups and enhance their continuation based on individual needs.

Take remedial education, for example, earlier studies have agreed that teachers differentiate their instructions when they accommodate or adapt whether the content, process, products, or the learning environment in order to support their students' individual needs (Tomlinson, 2001; Heacox, 2012). They recommended that differentiated activities should also show flexibility, variety, and complexity as students should be given the opportunity to choose on what to do in order to perform a task according to their interests. Application of easier and more interesting mode of teaching could be adopted in the class in the next semester so that low consistency learners who have flexible personalities are able to enhance their odds rates. Therefore, differentiating instruction for customized service will satisfy the real demand and solve the thorny dropout problems.

Further Research

Hidi and colleagues (Hidi, 1990; Hidi and Anderson, 1992; Hidi and Berndorff, 1998) argued that in addition to individual interest, situational interest also plays an important role in learning. By focusing on the enhancement of situational interest in academic activities, instructors and administration units at school can find ways to encourage students' involvement in learning and increase their learning motivation (Bergin, 1999; Lepper, 1985; Mitchell, 1993). In this research, individual interests were examined, but situational interests such as the flipped classroom, e-learning, interdisciplinary learning and master workers' sharing, etc. could also be applied and evaluated to explore their efficacy in the further research.

Conclusions

As an outcome of this study it is possible to identify core freshmen who need the first aid from the low PE congruence. In addition, our research combines psychological and physical attendance data to offer more remedial options to students at risk. Also, these records can predict final GPA and at the same time reduce dropout rates, and. help University in utilization of limited resources in terms and funds and staff. In recent environment the counselling office does not know the GPA of students, and the academic affairs office does not know the psychological problems. The present approach provides a predictive model to two offices so that both offices can coordinate in an effective manner to achieve educational goals. As the admissions office makes concerted efforts to attract students, it is important to have great synergy between the office of students' affairs and the office of academic affairs not only to prevent dropout rates but also to identify and nurture talents among the university freshmen.

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Career Cluster Interest Survey	
What is a career cluster interest survey?	
Everyone has a different way to describe themselves and what they like to do. This survey lets you rate activities you enjoy, your personal qualities, and school subjects you like. Then you can see which career clusters are a match for your interests.	
What will you learn?	
At the end of the survey, you will see a list of career clusters that are a good match for your interests.	
Part I：Activities	
There are 102 items, please check the activities that describe what you like to do:	
1	Learn how things grow and stay alive.
2	Make the best use of the earth's natural resources.
3	Hunt and/or fish.
4	Protect the environment.
5	Be outdoors in all kinds of weather.
6	Plan, budget, and keep records.
7	Read and follow blueprints and/or instructions.
8	The picture in my mind what a finished product looks like.
9	Work with my hands and learn that way.
10	Perform work that requires precise results.
11	Solve technical problems.
12	Visit and learn from beautiful, historical, or interesting buildings.

13	Follow logical, step-by-step procedures.
14	Use my imagination to communicate new information to others.
15	Perform in front of others.
16	Read and write.
17	Play a musical instrument.
18	Perform creative, artistic activities.
19	Use video and recording technology.
20	Design brochures and posters.
21	Perform routine, organized activities but can be flexible.
22	Be a leader or in a position of authority.
23	Make business contact with people.
24	Work with computer programs.
25	Create reports and communicate ideas.
26	Plan work and follow instructions without close supervision.
27	Communicate with different types of people.
28	Help others with their homework or to learn new things.
29	Go to school.
30	Direct and plan activities for others.
31	Handle several responsibilities at once.
32	Acquire new information.
33	Help people overcome their challenges.
34	Work with numbers and detailed information.
35	Work to meet a deadline.
36	Make predictions base on existing facts.
37	Have a framework of rules by which to operate.
38	Analyze financial information and interpret it for others.
39	Handle money with accuracy and reliability.
40	Take pride in the way I dress and look.
41	Be involved in politics.
42	Negotiate, defend, and debate ideas and topics.
43	Plan activities and work cooperatively with others.
44	Work with details.

45	Perform a variety of duties that may change often.
46	Analyze information and interpret it for others.
47	Travel and explore new things.
48	Work under pressure.
49	Help sick people and animals.
50	Make decisions based on logic and information.
51	Participate in health and science classes
52	Respond quickly and calmly in emergencies.
53	Follow guidelines precisely and meet strict standards of accuracy.
54	Investigate new places and activities.
55	Work with all ages and types of people.
56	Organize activities in which other people enjoy themselves.
57	Have a flexible schedule.
58	Help people make up their minds.
59	Communicate easily, tactfully, and courteously.
60	Learn about other cultures.
61	Care about people, their needs, and their problems.
62	Participate in community services and/or volunteering.
63	Listen to other people's viewpoints.
64	Help people be at their best.
65	Think of new ways to do things.
66	Make friends with different kinds of people.
67	Reason clearly and logically to solve complex problems.
68	Use machines, techniques, and process.
69	Read technical materials and diagrams and solve technical problems.
70	Adapt to change.
71	Play video games and figure out how they work.
72	Concentrate for long periods without being distracted.
73	Work under pressure or in the face of danger.
74	Make decisions based on my own observations.
75	Debate and win arguments.
76	Observe and analyze people's behavior.
77	Put things together.

78	Do routine, organized, and accurate work.
79	Perform activities that produce tangible results.
80	Apply math to work out solutions.
81	Use hand and power tools and operate equipment / machinery.
82	Visualize objects in three dimensions from flat drawings.
83	Shop and go to the mall.
84	Make displays to promote ideas.
85	Give presentations and enjoy public speaking.
86	Persuade people to buy products or to participate in activities.
87	Communicate my ideas to other people.
88	Take advantage of opportunities to make extra money.
89	Interpret formulas.
90	Find the answers to questions.
91	Work in a laboratory.
92	Figure out how things work and investigate new things.
93	Explore new technology.
94	Experiment to find the best way to do something.
95	Pay attention to details and help things be precise.
96	Travel
97	See well and have quick reflexes.
98	Solve mechanical problems.
99	Design efficient processes.
100	Anticipate needs and prepare to meet them.
101	Drive or ride.
102	Move things from one place to another.
Part II：Personal Qualities	
There are 54 items, please check the personal qualities that describe you:	

1	Self-reliant
2	Nature lover
3	Physically active

4	Planner
5	Non-judgmental
6	Good at visualizing possibilities
7	Creative and imaginative
8	Good communicator Good vocabulary
9	Curious about new technology
10	Relate well to feelings and thoughts of others
11	Determined / tenacious
12	Well-organized
13	Logical / analytical thinker
14	Patient
15	Tactful
16	Responsible
17	Friendly
18	Decision maker
19	Helpful
20	Good listener
21	Trustworthy
22	Orderly
23	Self-confident
24	Logical
25	Service-minded
26	Problem solver
27	Compassionate and caring
28	Good at following directions
29	Conscientious and careful
30	Self-motivated
31	Works well with others
32	Outgoing
33	Good communicator
34	Caring
35	Non-materialistic
36	See details in the big picture
37	Persistent
38	Good concentration skills

39	Precise and accurate
40	Adventurous
41	Community-minded
42	Optimistic
43	Realistic
44	Observant
45	Step-by-step thinker
46	Coordinated
47	Enthusiastic
48	Competitive
49	Persuasive
50	Innovative / inquisitive
51	Objective
52	Methodical
53	Mechanical
54	Intuitive and logical
Part III：School Subjects	
There are 38 items, please check the topics or school subjects you like:	
1	Math
2	Earth Sciences
3	Chemistry
4	Agriculture
5	Physical Sciences
6	Construction Trades
7	Art /Drafting / Graphic Design
8	Music
9	Speech and Drama
10	Journalism/Literature
11	Audiovisual Technologies
12	Computer Tech/Applications
13	Accounting
14	Economics
15	Science

16	Psychology
17	Banking / Financial Services
18	Business Law
19	Government
20	Language Arts
21	History
22	Foreign Language
23	Biological Sciences
24	Occupational Health classes
25	Social Sciences
26	Marketing
27	Food Services
28	Family and Consumer Sciences
29	Finances
30	Communications
31	Law Enforcement
32	First Aid/First Responder
33	Trade and Industry courses
34	Drafting / Computer-Aided Drafting (CAD)
35	Electronics / Computer Networking
36	Technical Classes/Technology Education
37	Computer Applications/Business and Information Technology
38	Electrical Trades / Heat, Air Conditioning, and Refrigeration / Technology

This tool was created by CAREERwise Education and is adapted from the Guidance Division Survey, Oklahoma Department of Career and Technical Education (2005).

THE IMPACT OF SOME PHYSICAL EDUCATION TEACHING STYLES ON THE MENTAL PERCEPTION TO INTERMEDIATE EDUCATION STAGE

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Abstract

This study aimed at identifying the effect of some physical education teaching styles (command, practice, reciprocal), on developing the mental perception dimensions (visual perception, auditory perception, motor sensation, and emotional state) in track and field to Intermediate education stage. The researchers applied the empirical method on the three experimental groups (command, practice and reciprocal). The sample consisted of (105) students, from the 4th graders Intermediate education stage. The validity of the instrument was verified by presenting it to arbitrators, whereas the reliability coefficient was calculated using Chronbach Alpha (0.85). The statistical processing (means, standard deviation, T-test, One-Way ANOVA, and TUKEY test) were used on the mental perception scale in the sports area. The results showed statistically significant differences at ($P \leq 0.05$) level among the groups as follows: There were statistically significant differences between the first group using the command style, and the second group using the practice style, in favor of the first, in developing the mental perception skill. And there were statistically significant differences between the first group using the command style, and the third group using the reciprocal style, in favor of the first, in developing the mental perception skill. And there were statistically significant differences between the second group using the practice style, and the third group using the reciprocal style, in favor of the third, in developing the mental perception skill. And there were statistically significant differences among the three teaching styles on the mental perception scale, in favor of the command style. And there were differences in all the dimensions of the scale between the practice style and the reciprocal style, in favor of the reciprocal style.

Keywords: Physical Education Teaching Styles, Mental Perception, Intermediate Education.

Introduction

Education is the first pillar of development and the base for keeping a pace with it. Through education, human resources are invested to provide human religious, behavioral, cognitive and specialization values in all aspects, so that the human becomes prepared for building in the modern society. All the reformers in education agreed that the increase of the teachers' effectiveness and professionalism, form a decisive factor in the success of the efforts currently spent to reform the educational process. Education is one of the most important features that play a wide role in the progress of nations, through identifying modern teaching theories, styles and methods (Oudat, 2010).

Education strategy aims at preparing a generation of educated people based on scientific methods, to enable them use technology to face modern life information technology pressures, practiced on the educational curricula in the knowledge explosion age. Teaching is a system of the desired skills the teacher performs in a certain educational situation to provide the students a pool of information and activities for the sake of achieving the teaching process objectives (Al Haliq & Oudat, 2014).

Nations placed special importance on the physical education field, and scheduled specially designated times within the educational programs of the different school stages. Particularly, special attention was given to the middle stage, which is the true skill preparation period, as the student here is characterized by physiological, psychological, and social changes. The physical education lesson is the basic unit in the physical education curriculum, and important component in forming the student's personality with its physical, psychological, health and social aspects. Of similar importance is learning the motor skills, as this lesson contains various ways and styles of teaching. The teacher should take into consideration the different needs of the student, as well as his mental and social responses during the planning of the physical education lesson, and work toward satisfying this response (Oudat, 2017).

It is the responsibility of the teacher to prepare the generations and contribute to the development and advancement of the communities. His role is not confined to plan, prepare and implement the teaching process only. Rather it goes far beyond to identify the learners' developmental needs and features; observe their individual differences, and contribute to the diagnosis and solution of their psychological problems (Al Khateeb et al, 2011). Furthermore, the teacher is the leader of the educational process toward achieving the objectives, and translating them into a corporeal reality. Therefore, the teacher, in any development or success in the educational process, has a major and wide role. Nonetheless, the teacher is not given the attention proportional to his contribution to the educational system (Salameh & Oudat, 2013).

Choosing important teaching methods and styles is a difficult and complicated job, because they depend on many different elements, such as: objective of the lesson, educational environment, type of skill, extent of the student's knowledge, and the readily available possibilities. Thus, we cannot say that there is a certain optimal method, or that one is better than the other; as the more the activities diversity is, the more the methods and styles are (Marina et al, 2006). Teaching effectiveness widely depends on developing the personal relations between the teacher and students. In this concern, students prefer the democratic teacher who shares them their activity and organization, and treats the problems they face. The autocratic teacher is quite the contrary, performs everything by his own, and his teaching is direct, lacking enjoyment and liveliness (Ay, 2011).

Teaching method is the teacher's favorable pedagogical style in employing the teaching methods effectively, in a manner that distinguishes him from other teachers who use the same method. The command method is among the styles used in teaching, in which the teacher takes all the practical teaching process decisions, including planning, implementation and evaluation; and students have to carry out the orders of their teacher. Another method is the practice method, in which the student has the freedom in controlling certain situations of the lesson, especially in its major part. Here students can depend on themselves in the decisions (starting the application, ending the application, and the breaks). A third style is the reciprocal style, in which the student is a "doer" and an "observer", where the former's role is applying the skills, and the latter's roles are to follow-up the application, provide feedback and correct the performance of the doer student. All the information is already prepared by the teacher (Rahhal, 2010; Gassab, 2007).

Effective contribution to the educational decision-making stems from the research and studies based on the educational needs, employing the results of these works in activating the educational process, and making use of them in consistency with the educational system components. Since the educational system is responsible for preparing the learners to be active members in the world economy, the infrastructures of the information and communication culture should be well prepared, which form an important factor in defining the ability to relocate and shift toward the world economy, which is built on knowledge (Gia et al, 2015).

The significance of this study lies in exploring three teaching styles, which all fall within the direct teaching methods. They contribute to the development of the mental perception skill dimensions, and the development and adaptation of the students' ability with the real-life situations, as well as the development of their thinking skills. The mental perception is one of the modern concepts that existed to complement the practice and teaching process, due to its effective role in completing and perfecting the different sports skills. It is also the core of the successful thinking process, and reflection of the things

and features, which the individual had already perceived (Oudat, 2013; Khafaja & Mohamed, 2012). This study may be the first of its kind, which deals in physical education teaching methods, and the mental perception as one of the mental skills.

Statement of problem

Nowadays, we are in urgent need to use diversified teaching methods, and educational outcomes that fit the modern life requirements. The researchers noted that through their work in the field of education, some styles of teaching physical education are not consistent with the basic principles on which the new curricula were adopted. The time allocated for applying the skills is not sufficient to teach them, and the level of application of the students to the events is low. And that some teaching styles do not give students the opportunity to express themselves freely, or to participate in making decisions about the educational process. Therefore, the researchers conducted this study to shed lights on certain teaching styles (command, practice and reciprocal styles), and their impact on developing the mental perception skill (visual, auditory, motor and emotional state perceptions), among the middle school students. The researchers also noted that teachers did not concentrate on the mental aspect in teaching skill. The researchers attributed that to the lack of adequate teachers of different mental skills, and tools such, drawings, films and other teaching aids. By studying studies such as (Gabbard et al, 2008), (Weinberg, 2008), (Singer, 1999) it was found that mental training has a positive impact on the teaching process and achievement.

Research Objectives

This study aims to identify the impact of using certain physical education teaching methods (command, practice and reciprocal) on developing the mental perception in track and field events in Intermediate education stage.

Research Questions

1- Are there statistically significant differences at ($P \leq 0.05$) level between the two experimental groups, where the first used the command and the second used the practice style in developing the mental perception skill?
2- Are there statistically significant differences at ($P \leq 0.05$) level between the two experimental groups, where the first used the command and the third used the reciprocal style in developing the mental perception skill?
3- Are there statistically significant differences at ($P \leq 0.05$) level between the two experimental groups, where the second used the practice and the third used the reciprocal style in developing the mental perception skill?

4- Are there statistically significant differences at (P≤0.05) level among the three groups on the mental scale with the sample participants?

Procedures

The study population consisted of the 4th elementary graders in intermediate education stage (N=560). The sample comprised (105) students, who were distributed over three equal groups (command style, practice style and reciprocal style groups), i.e. (35) students each. The three groups were taught the track and field events according to the school curriculum. The researchers distributed the study instrument over the participants, and then collected it to obtain the responses.

Research Variables

The independent variable is the teaching styles (command style, practice style, reciprocal style), and the dependent variables are the mental perception dimensions (visual, auditory, motor sensation and emotional state perceptions).

Research Instrument

The researchers applied the mental perception scale in the sports field, i.e. Sport Imagery Questionnaire (SIQ), prepared by Martens (1983), whereas the reliability coefficient was calculated using Cronbach Alpha (0.85). The researchers also employed Likert's five-point scale on the answers of the questions of the mental perception as follows: very clear perception (5 points), clear perception (4 points), medium perception (3 points), unclear perception (2 points) and no perception (1 point).

The different uses of mental perception are to:

- Help students to quickly learn the skills of motor through the perception of the correct model of motor skills.
- Help students to speed the exercise through the perception of performance.
- Help students solve performance problems by conceiving some performance problems and trying to solve them.

The Exploratory Study

The researchers conducted an exploratory study on a sample of (13) students, from the study population and from outside the population, to verify the clarity degree of the educational units in all the styles and application mechanism, as well as suitability and validity of the place, tools and appliances. The exploratory study also aimed to identify the suitability extent of the time spent to implement every teaching unit, and discover and avoid the difficulties, which may face the researchers during application.

Data Analyses

Data analyses were performed by using statistical Package for Social Sciences (SPSS). And the M's, SD's, T-Test and One-Way ANOVA test to determine the differences between the M's. TUKEY test was used to identify the direction of the difference between the groups.

Results and Discussion

First Question: "Are there statistically significant differences at (P≤0.05) level between the two experimental groups, where the first used the command and the second used the practice style in developing the mental perception skill? Table (1) illustrates this.

Table (1). T Results between the First and Second Groups on the Mental Perception Scale.

Mental Perception Skill	Groups	M	SD	T	P
Visual Perception	Inter-group	14.91	1.05	-5.61	0.000
	Intra-group	13.43	1.07		
Auditory Perception	Inter-group	14.74	1.07	-5.37	0.000
	Intra-group	13.43	0.98		
Motor Sensation	Inter-group	15.11	0.87	-6.92	0.000
	Intra-group	13.46	1.12		
Emotional State	Inter-group	14.97	10.1	-5.52	0.000
	Intra-group	13.46	1.15		
Overall	Inter-group	14.93	1.02	-7.90	0.000
	Intra-group	13.45	1.08		

Table (1) shows statistically significant differences between the first and second groups on the mental perception scale, in favor of the first, where the total mean of the first was (14.93) and the second (13.45). The researchers ascribe this result to that the command style teaching contributes to the development of the mental perception skill with the intermediate education graders. The researchers are in line with O'loughlin et al (2013) that the command style is used in teaching once the skill becomes more difficult, because it requires accuracy and strictness. They emphasize the necessity to use the command style to teach the middle school students because of its positive effect on learning the different skills. In addition, it has characteristics and changes that occur during this educational stage.

Second Question: Are there statistically significant differences at (P≤0.05) level between the two experimental groups, where the first used the command and the third used the reciprocal style in developing the mental perception skill? For answering this question, M/s, SD's, T-Test of the sample participants were calculated, as shown in Table (2).

Table (2). T Results between the First and Third Groups on the Mental Perception Scale

Mental Perception Skill	Groups	M	SD	T	P
Visual Perception	Inter-group	14.91	1.05	-1.30	0.000
	Intra-group	14.57	1.07		
Auditory Perception	Inter-group	14.74	1.07	-2.82	0.001
	Intra-group	14.06	1.10		
Motor sensation	Inter-group	15.11	0.87	-4.10	0.000
	Intra-group	14.20	1.05		
Emotional State	Inter-group	14.97	1.10	-3.17	0.000
	Intra-group	14.14	1.03		
Overall	Inter-group	14.93	1.02	-4.08	0.000
	Intra-group	14.24	1.06		

Table (2) shows statistically significant difference between the first and third groups on the mental perception, in favor of the first, where the M's were (14.93) and (14.24), respectively. The researchers impute this result to that the command style is one of the best teaching methods, that helps students in learning, and contributes to the development of the mental perception, particularly in teaching difficult skills that need explaining, clarifying and follow-up. The researchers are in line with the study of Oduor (2012), that the command style is more convenient in teaching difficult skills than other styles.

Third Question: Are there statistically significant differences at (P≤0.05) level between the two experimental groups, where the second used the practice and the third used the reciprocal style in developing the mental perception skill? For answering this question, M/s, SD's, T-Test of the sample participants were calculated, as shown in Table (3).

Table (3). T Results between the Second and Third Groups on the Mental Perception Scale

Mental Perception Skill	Groups	M	SD	T	P
Visual Perception	Inter-group	13.43	1.07	-4.49	0.000
	Intra-group	14.57	1.07		
Auditory Perception	Inter-group	13.43	0.98	-2.70	0.001
	Intra-group	14.06	1.10		
Motor sensation	Inter-group	13.46	1.12	-2.93	0.000
	Intra-group	14.20	1.05		
Emotional State	Inter-group	13.46	1.15	-2.63	0.001
	Intra-group	14.14	1.03		
Overall	Inter-group	13.45	1.08	-3.39	0.000
	Intra-group	14.24	1.06		

Table (3) illustrates statistically significant differences between the second and third groups in the mental perception scale, in favor of the third, where the M's of both groups were (13.45) and (14.24), respectively. The researchers explain it by that the reciprocal style teaching contributes to the development of the mental perception skill with t he intermediate education graders more than other styles. In this style, the observing student follows-up the performance of the skill, provides assistance and corrects the performance; and then they exchange the roles. The researchers are in agreement with (Khalaf & Thiabat, 2013), that the reciprocal style encourages thinking to earn delicate details about the skills, and in assimilating the technical aspects of the skills (learn better and quicker), more than the practice style group.

Question Four: Are there statistically significant differences at ($P \leq 0.05$) level among the three groups on the mental scale? To answer this question, the One-Way ANOVA analysis was applied, as shown in Table (4).

Table (4). ANOVA results among the Three Groups on the Mental Perception Scale

Mental Perception Skill	**Source of Variance**	**Sum of Squares Total**	**gl**	**Mean Squares**	**F**	**P**
Visual Perception	Inter-group	341.97	3	113.97	64.70	0.000
	Intra-group	239.60	136	1.76		
	Total	581.57	139			
Auditory Perception	Inter-group	175.10	3	58.36	40.12	0.000
	Intra-group	197.82	136	1.45		
	Total	372.93	139			
Motor sensation	Inter-group	220.37	3	73.45	58.00	0.000
	Intra-group	172.22	136	1.26		
	Total	392.60	139			
Emotional State	Inter-group	145.77	3	48.59	33.14	0.000
	Intra-group	199.37	136	1.46		
	Total	345.14	139			
Overall	Inter-group	220.80	3	1142.36	101.36	0.000
	Intra-group	202.25	136	11.27		
	Total	423.05	139			

Results of Table (4) indicate statistically significant differences at ($P \leq 0.05$) level in the M's of the three groups on the mental perception scale, where F value was (101.36) with (0.000) significance level. To localize the source of differences, the researchers applied (TUKEY) test for the post comparisons, as shown in Table (5).

Table (5). TUKEY results among the Three Groups on the Mental Perception Scale

Mental Perception Dimensions	Groups	First Group	Second Group	Third Group
Visual Perception	First Group			
	Second Group	1.48		1.14
	Third Group	0.34		
Auditory Perception	First Group			
	Second Group	1.31		-0.62
	Third Group	0.68		
Motor sensation	First Group			
	Second Group	1.65		-0.74
	Third Group	0.91		
Emotional State	First Group			
	Second Group	1.51		-0.68
	Third Group	0.82		
Overall	First Group			
	Second Group	5.95		-3.18
	Third Group	2.75		

Results of Table (5) indicate statistically significant differences at ($P \leq 0.05$) level in the means of the three groups on the mental perception scale and the overall degree. There were differences in all the dimensions of the scale between the first group, on one hand, and the second and third, on the other, in favor of the first. And there were differences in all the dimensions of the scale between the second and third group, in favor of the third.

The researchers explain this result by that the command style has a positive effect on the other two styles, despite the constraints the command style imposes on the student. In this case, the teacher is responsible for taking all the decisions inside the classroom (planning, locating the place of the skill, method of application, distribution of the students, providing feedback and correcting the errors), and the students should obey and adhere to his instructions (Susan et al, 2011). The researchers agree with (Strachan & chandler, 2006) that the importance of mental perception skill to improve athletic performance and self-concept and self-confidence. The researchers agree with (Gia et al, 2015) that the command style has safety factors and control during application more than other styles, because the teacher in this style is the leader and follower-up of the teaching process. The researchers further agree with Oudat & Al Zboun (2013) that the reciprocal style is better than the practice style. It encourages students to think how to gain accurate details about

the skills, and understand all the technical aspects of the skill (learn better and quicker). And increases the interaction of students with each other.

Conclusions

Due to the nature of the study design, the study has several limitations of: (1) The finding are generalizable only to the target students and to the same setting; (2) The extraneous of some variable of (such as training and participation of the participants in activities inside and outside the university) cannot be completely controlled. (3) The study is limited to school students and the three teaching styles which used.

Although fully aware of the limitations of our study in terms of sampling, we believe that the results obtained showing importance of teaching styles as follows:

- The command teaching style contributes better than the practices and reciprocal style in the development of mental perception.
- The reciprocal teaching style contributes better than the practices style in the development of mental perception.
- The practice teaching style was the least styles to contribute to the development of mental perception.

This study is useful of teaching of students in the faculties of physical education, and teaching field training students in the faculties of physical education, and train teachers in service in the faculties of physical education and schools. The study gives a great role for the student in making decisions through the practice style, contributes to increasing students' interaction with each other through the reciprocal style and helps to shape the personality of the student through self-reliance.

In the light of the study results, the researchers recommend the teachers to use the command teaching style, when they teach the intermediate education stage certain skills, as it has a positive effect on the learning process. And increase the control and further adjusts the lesson better

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DEVELOPING LECTURERS' TEACHING PRACTICES INSTRUMENT

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Abstract

Measuring the Lecturers' Teaching Practices requires a measurable instrument to be developed. This study aims to test the validity and reliability of a developed instrument to measure Lecturers' Teaching Practices. The sample of this study consisted of 103 respondents as lecturers from Community Colleges, Yemen. The developed questionnaire termed LTP covered five concepts including problem centre, Activation, Demonstration, Application, and Integration. The validity and reliability of the 33 items of the LTP questionnaire were tested using Raasch Model analysis. The findings of the Raasch Model analysis showed that the developed instrument is valid and reliable to measure the Lecturers' Teaching Practices.

Keywords: *Teaching practices, Measurable instrument, Validity, Reliability, Raasch Model analysis*

Introduction

Assessing lecturers'' practices are vital for understanding and improving educational processes and coping with challenges in their profession influencing achievements of students (OECD, 2009). Assessing the lecturers' performance at higher educational institutions depends mainly on the scientific standards that are linked to accreditation standards applied worldwide, regionally and locally (Haptoor 2009; Basorah, 2007; Mukred 2010; Alhakimi, 2011). The application and implementation of the assessment process in accordance with these standards need experts specializing in quality and accreditation of higher educational institutions. Multi-methods for assessing lecturers were used in higher educational institutions by using self-assessment, portfolio and student assessments provide appraisers a comprehensive evaluation of the lecturers (Haptoor, 2010; Kuyran, 2010; Alhakmi, 2010; Abdulrab, 2011; Alkulaidy, 2011; Mukred, 2010; Alsharafi, 2010; Alshakeer, 2011).

Community Colleges' Goals and mission were identified and the Community Colleges' stakeholders recognize the significant roles of lecturers play in achieving those goals effectively. However, CCs face a problem with lecturers themselves on understanding their roles and responsibilities that influencing on their teaching practices. Lecturers need to be helped to explore ways to examine their beliefs and practices (Zeichner and Tabachnick, 1981; Thompson, 1992; Kennedy, 1997; Pajares, 1992; Luft, 1999; Mansour, 2009; Watson; 2012).

Currently, the implementation of the CC agenda for a varied participation has impacted on lecturers' teaching and learning methods, needing them to adjust and explore strategies to help students. Mofreh et.al, (2014) in their study and in his report study concluded that lecturer performance on teaching at community colleges was low and affected them in enhancing their professional knowledge and experience). The lecturers need to improve actively their present practices to improve their professionalism, explore a firm understanding of the pedagogy of their subjects and of how students learn and become reflective practitioners (Alabidi, 2014).

Developing the researcher's own instrument requires knowledge about the construction of items, scale development, format, length, validity, and reliability of the instrument and its scores (Sekran, 2003; Calmorin et al., 2008; Creswell, 2012; Johnson and Christensen, 2012). The objective of this study is to identify the construct validity of the Lecturers' Teaching Practices (LTP) at Community Colleges, Yemen. To achieve this objective, psychometric properties were tested using Rasch Model analysis to determine if the developed instrument is sufficiently valid and reliable as a measurement tool.

Literature Review

Teaching Practices

The issue of teaching in the education literature is transferred from theory to teaching practice (De Corte, 2000; Defazio, 2006, Randi and Corno, 2007). Many researchers claimed that learning can be enhanced by teaching practices (Frick et al, 2007; Merrill, 2006, Thomson, 2002). Teaching practices refer to the practical training and academic activities, conferences and a range of facts and characteristics (Gujjar et al., 2010). During the teaching practices, students and lecturers are as learners acquiring skills. Teaching practices is a valuable opportunity, where conferences are capable of increasing their knowledge, making experiments based on the acquired knowledge and solving problems related to teaching. Education in any country is responsible for its development and its quality (Alsayed, 2004; Mukred, 2010; Esmail, 2010; Guskey, 2010; Shagrir, 2012; Campbell et. al., 2004). Because of that, it is essential to understand the lecturers' role play a critical role in the social, economic and political growth and change (Guskey, 2010; Latshaw, 1995; Alkulaidy, 2011). Teaching practices depend on what lecturers bring to the classroom. Professional competence is a vital factor in classroom practices (Shulman, 1987, Campbell et al., 2004; Scheunpflug et. al, 2006; OECD, 2010). The concept of teaching practices has been shifted in the literature from associating with an apprenticeship to be associated with an experimental model (Menter, 1989, Kiggundu and Nayimuli, 2009). Teaching practice defined as an integral component of teacher training and experiences (Marais and Meier, 2004; Perry, 2004; Maphosa, Shumba and Shumba (2007; Kiggundu and Nayimuli, 2009).

Teaching practices are the practical use of teaching approaches, teaching philosophies, teaching techniques and practical training and practices/exercise of different activities of daily living (Shagrir, 2013; Gujjar et al., 2010; Guskey, 2010; Campbell, 2006). Teaching practices have three main implications: the practices of teaching skills and acquiring the lecturer's role; the full range of students' experiences going through college/university; and practical aspects of the subject as opposed to theoretical studies (Stones and Morris, 1977).

Rasch Model

Rasch model (RM) is generally the same as the measurement of a parameter in Item Response Theory (IRT) or also shown as Latin Trait Theory (LTT). The RM is a mathematical formula that specifies the form of the relationship between items that operationalize one construct. RM model is used to analyse the data from instruments to measure the variables that cannot be measured directly, such as the characteristics of ability, attitude, and personality. This measurement model is used primarily in areas

related to psychometric theory and techniques of measurement in psychology. This model shows the probability of people's ability to measure item difficulty (Wright & Masters, 1982). In RM model, the validity of an instrument can be identified by reference to the main analysis such as item polarity, item and person map, misfit and infit items, item and person separation, dimensionality and scale calibration (Bond & Fox, 2007).

For instance, a study conducted by Fox and Jones (1908) traditional and innovative uses of the RM in the development and validation of small and large-scale psychological instruments. Azrilah et.al, (2008), was conducted a study to determine construct validity of their instruments. Forkmann et.al, (2009) in their study concluded that evaluation of Rasch model fit (infit < 1.3), differential item functioning, dimensionality, local independence, item spread, item and person separation (>2.0), and reliability (>.80) resulted in a bank of 79 items with good psychometric properties. Wolfe et, al., (2009) in their study to develop an instrument to measure the social context of schools teacher perception of influence over school policy and classroom practice, teacher perception of students, and teacher perception of school climate.

The results of Rasch analysis indicated that a single dimension dominates each instrument, although the primary dimension for the school climate measures was somewhat weaker than the primary dimensions for the other two sets of measures. Also, RM analysis indicated that the teacher measures were highly reliable and precise. Analysis of the structure of the rating scale for each instrument indicated that these rating scales function as intended but that the number of rating scale categories may be too great: Teachers may not be able to reliably distinguish between the numbers of levels indicated by the rating scales. According to Mofreh et.al, (2014), dimensionality, item plurality, calibration scales and item fit analysis by RM were used to test the construct validity of lecturers' teaching functions instrument.

Methodology

The research carried out in Community Colleges (CCs) in Yemen as higher technical colleges. A total number 103 lecturers participating in the research questionnaires and served as the population in this study. This study used a quantitative descriptive survey design. A questionnaire was developed to measure Lecturers' Teaching Practices (LTP). The developed LTP questionnaire consisted of 5 constructs which are a Problem centre, Activation, Demonstration, Application, and Integration including 33 items.

However, this study aims to produce empirical evidence of the validity and reliability of research instrument by using Rasch model. Interestingly, Rasch model can effortlessly help a researcher to decide whether it is the person or item that needs to be omitted.

The RM analysis was used to test the validity and reliability of the developed instrument as a measurable instrument for measuring the Lecturers' Teaching Practices. The RM analysis used to answer the research questions of this study which is "Is the developed instrument valid and reliable to measure the Lecturers' Teaching Practices (LTP)?"

Findings

The findings of this study were obtained to answer the research questions which is:

Is the developed instrument valid and reliable to measure Lecturers' Teaching Practices (LTP)?

The research question was answered using the RM analysis to test validity and reliability of the developed LTP instrument. The RM analysis used was based on the objective of this study to "to identify the constructs of the Lecturers' Teaching Practice (LTP) at Community Colleges".

The RM analysis is a powerful tool for evaluating construct validity. Rasch fit statistics are indications of construct-irrelevant variance and gaps on Rasch item-person map are indications of construct under-representation.

Validity Analysis

RM analysis tested the validity LTP based on dimensionality, item polarity, item fit, and calibration scales and as criteria for psychometric properties. Item polarity or point measure correlation (PTMEA Corr.) is the early detection of construct validity (Bond and Fox, 2007). The analysis of appropriateness and inappropriateness items of LPT, the analysis was reformed using constructs one by one. Item measure can list the logit measurement information for each item. Appropriateness of items under schedule also showed the information for mean square (MNSQ) to make it easier for outlier detection or misfit. For the analysis of these constructs items, it appears to MNSSQ infit analysis value should be 0.5 <x <1.5, and PTMEA value should be positive and + 0.2 <x<1(Linacare, 2007). Also, other criteria to be considered to determine the misfit item is the standardized fit statistic (Zstd) value with acceptable range value -2<ZSTD<+2 (Bond and Fox, 2007).

Table 1 showed a good item correlation and item fit for LTP questionnaires. These findings indicated that very good items signifying that all the items were appropriate for both further statistical analysis and inference.

Table 1: Items polarity and fit analysis of LTP

Measure S.E	Model	Infit		Outfit		Pt-Measure		ExactOBS% EXP%	Match	Items
		MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.			
.33	.17	1.73	4.1	2.13	5.4	.51	.65	47.0	62.1	RWP.1
.00	.18	1.68	3.8	1.92	4.4	.49	.64	61.0	64.0	RWP.2
.30	.17	1.66	3.8	1.71	3.7	.47	.65	55.0	62.2	INK.28
-.10	.18	1.30	1.9	1.31	1.7	.59	.63	64.0	64.5	PSP.23
.45	.17	1.27	1.7	1.21	1.3	.54	.66	61.0	61.9	LPK.11
.84	.16	1.18	1.3	1.25	1.6	.56	.68	57.0	59.5	PRWP.14
1.12	.16	1.12	.8	1.18	1.2	.60	. 69	57.0	57.6	PRWP.13
-.68	.19	1.06	.4	1.11	.6	.59	.59	68.0	67.4	RWP.3
.18	.17	1.09	.6	1.03	.3	.64	.65	60.0	62.7	RWP.4
-.07	.18	1.06	.4	1.08	.5	.67	.63	77.0	64.3	PRWP.19
-.40	.19	1.06	.4	.92	-.4	.64	.61	69.0	66.0	INT.30
.00	.18	1.01	.1	|1.00	.1	.62	.64	64.0	64.0	LPK.7
-.13	.18	1.01	.1	.97	-.1	.68	.63	71.0	64.4	PSP.20
.-.43	.19	.95	-.3	.98	.0	.63	.61	68.0	66.2	PSP.25
.27	.17	.95	-.3	.91	-.5	.60	.65	69.0	62.2	RWP.5
.45	.17	.94	-.4	.88	-.7	.61	.66	72.0	61.9	PRWP.18
-.13	.18	.91	-.6	.83	-1.0	.70	.63	70.0	64.4	PSP.21
.30	.17	.87	-.9	.90	-.6	.69	.65	67.0	62.2	PSP.22
-.23	.18	.90	-.6	.81	-1.0	.63	. 62	67.0	64.9	LPK.8
.12	.18	.90	-.6	.87	-.8	.65	.64	73.0	63.2	LPK.12
-.68	.19	.84	-1.1	.74	-1.3	.65	.59	70.0	67.4	INK.29
-.68	.19	.84	-1.1	.71	-1.5	.69	.59	75.0	67.4	INK.27
-.07	.18	.83	-1.1	.77	-1.4	.68	.63	75.0	64.3	PRWP.17
-.30	.18	.81	-1.3	.77	-1.3	.69	.62	67.0	65.1	LPK.9
-.16	.18	.80	-1.4	.76	-1.5	..70	.63	70.0	64.5	LPK.6
.81	.16	.68	-2.5	.80	-1.4	.74	.68	65.0	59.6	DPRWP.15
.-.47	.19	.76	-1.7	.68	-1.8	.69	.61	78.0	66.5	PSP.26
-.33	.18	.70	-2.1	.63	-2.3	.75	.62	73.0	65.8	PSP.24
.09	.18	.65	-2.6	.66	-2.3	.73	.64	74.0	63.4	LPK.10
-.40	*.19*	*.61*	*-3.0*	*.55*	*-2.8*	*.76*	*.61*	*82.0*	*66.0*	*PRWP.16*

The dimension of LTP constructs was tested using dimensionality analysis of RM. The dimensionality aspect is important for determining that the instrument is measured in one dimension and one direction (Linacre, 2007; Bond and Fox, 2007). In RM analysis, a satisfactory dimensionality determined by raw variance explained by measures which should be more than 40% and unexplned variance in 1st contrast which should be ≤ 15. The dimensionality analysis results of LTP were shown in Table 2. The raw variance explained by measures value was 44.6%.0%, and unexplned variance in 1st contrast value was 6.7%%. Thus, dimensionality data results in posts that the LTP data fit the RM.

Table 2: Dimensionality analysis results of LTP

	Empirical			Modeled
Total raw variance in observations	4.1	100.0%		100.0%
Raw variance explained by measures	24.1	44.6%		45.2%
Raw variance explained by persons	4.7	27.1%		27.5%
Raw Variance explained by items	9.4	17.5%		17.7%
Raw unexplained variance (total)	30.0	55.4%	100.0%	54.8%
Unexplned variance in 1st contrast	3.6	6.7%	12.0%	
Unexplned variance in 2nd contrast	3.0	5.5%	10.0%	
Unexplned variance in 3rd contrast	2.3	4.2%	7.6%	
Unexplned variance in 4th contrast	2.1	3.9%	7.0%	
Unexplned variance in 5th contrast	1.7	3.1%	5.7%	

The scale of five categories was used for LTP instruments that consisted of 1 = never, 2= rarely, 3= frequently, 4= very frequently and 5= always. Some researchers agree that the optimal length of scales needs to determine the nature of what is to be examined and the extent to which respondents can discriminate among levels (Light et al., 1990 and O'Hrien, 1989). Table 3 and Figure 1 showed a summary of the category structure on a scale gradation and size structure of the intersection of LTP. In the column arrangement observation (observed count) showed the respondents' answers given to ranking scale. As shown in Table 3, the most frequent answer was the scale of respondents ranking 4 which 1407 (46 %). The next grading scale, that respondents selected, was scale 5 of 1238 (40%). The scale 3 had 352 (11%) respondents while the least grading scale of least were scale 2 with 90(3%) respondents and scale of 1 of 3 (0) respondents. The observed averages showed the pattern of respondents. A fairly normal pattern is expected with a systematic instrument from negative to positive. As illustrated in Table 3, the response pattern obtained started from -.24 logit and moved up monotonously towards +4.23 logit signifying that the pattern of respondents' answers was fairly normal.

Table 3: Calibration scaling analysis of LTP

Cat. Label	Obs. Count	Obs. (%)	Observed Average	Sample Expect	Infit MNSQ	Outfit MNSQ	Structure calibration	Category measure
1	3	0	-0.24	-0.72	1.22	1.11	NONE	(-4.83)
2	90	3	.56	.018	1.38	1.88	-3.70	-2.19
3	352	11	1.36	1.43	0.93	0.94	-0.57	0.05
4	1407	46	2.63	2.68	0.83	0.77	0.67	2.19
5	1238	40	4.23	4.18	1.05	1.02	3.60	(4.73)

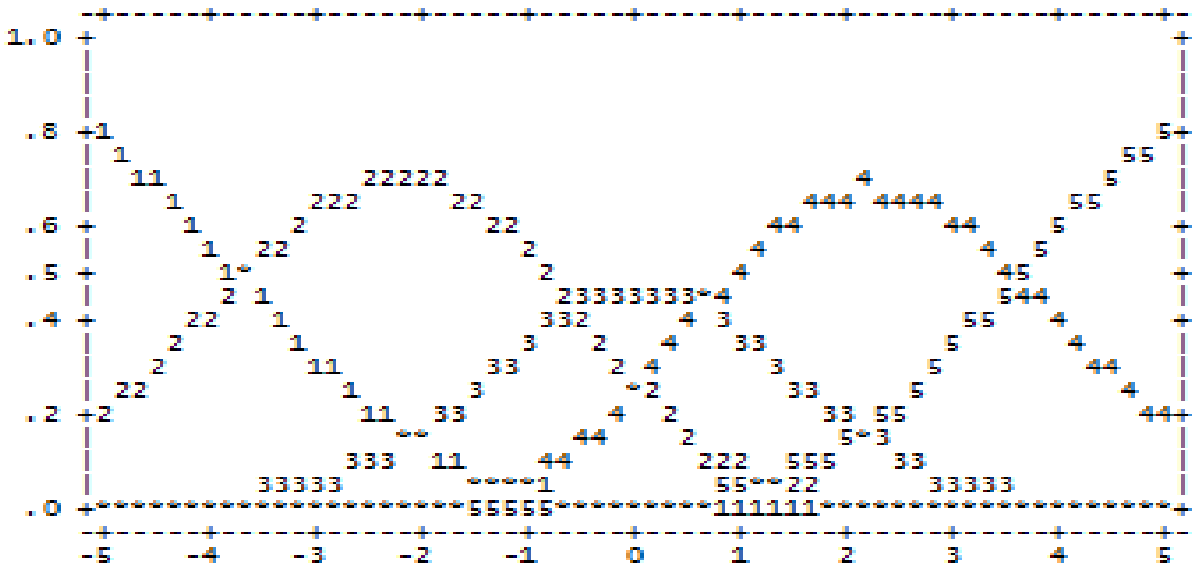

Figure 1: The summary of the category structure of LTP

Reliability Analysis

Reliability analysis was tested and conducted with 33 items for LTP instrument, among 103 lecturers of CC in Yemen. The criteria for accepting reliability in RM is exceeding 0.50 (Linacre, 2007; Bond and Fox, 2007). In addition, acceptable separation should be more than 2 (Fisher, 2007). The RM analysis measures reliability and separation of items and persons. This statistic showed the ability of the items to separate persons with different levels of the concept measured. Rasch reliability of the items was comparable with Cronbach's alpha (CA).CA is a measure of internal consistency and estimates the reliability of the scale by computing the variance between all possible pairs of items.

The RM analysis used to measure the reliability of LTP in order to answer the research question. As shown in Table 4 the person reliability value was high with 0.91, and the person separation was 3.27. Table 5 showed the item reliability value was 0.83 and item separation value was 2.22. Therefore, the results of person and item reliability and person and item separation for LTP indicated satisfactory readability. Analysis of the study showed the reliability of 103 respondents with 33 items in these constructs was high to measure the LTP at community colleges in Yemen. Thus, the reliability of item and person for LTP instrument values were fairly close together and both representing a strong acceptable level.

Table 4: Person separation and reliability analysis of LTP

	Raw Score	Count	Measure	Infit		Outfit	
				IMSQ	ZSTD	OMSQ	ZSTS
Mean	126.9	30	1.93	1.03	-0.2	1.00	-0.3
S.D	15.0	0.0	1.74	0.72	2.5	0.36	2.5
Real RMSE	0.51						
ADJ. SD	1.67						
Separation	3.27						
Person reliability	0.91						

Table 5: Items Separation and reliability analysis of LTP

	Raw Score	Count	Measure	Infit		Outfit	
				IMSQ	ZSTD	OMSQ	ZSTS
Mean	435.6	103.0	0.00	1.99	-0.1	1.00	-0.1
S.D	14.9	0.0	0.46	0.28	1.8	0.36	1.9
Real RMSE	0.19						
ADJ. SD	0.46						
Separation	2.22						
Item reliability	0.83						

Discussion

The constructs of LTP were developed and tested using RM analysis. The psychometric properties of LTP developed to determine if they are sufficiently valid and reliable as a predictor of LTP. The Rasch Model was used primarily in areas related to psychometric theory and techniques of measurement in psychology (Wright and Masters, 1982; Baker,

2001; Linacre, 2002; Liu, 2010; Bond and Fox, 2007). Thus, RM was used to test the validity and reliability of LTP.

The findings of this study using the RM analysis indicated that LTP instruments were valid and reliable. The developed LTP questionnaire contained Real-world Relevant Problem (RWP), Learner's Prior Knowledge (LPK), Performing the Real-World Problem (PRWP), Practicing Solving Problem (PSP) and Integrating New Knowledge (INK). This study had a good validity of LTP since there were no negative PTMEA values. The PTMEA values of items were more than 0.20 and had good dimensionality and rating scales as evidence of good construct validity. In addition, during the pilot test, some items were omitted because they were a misfit. The fit is expressed as a mean square (MNSQ) and as a standardized value. The criteria for excluding misfit items is the value of MNSQ out of distance $0.5<\times<1.5$ (Azrilah, 2010). Thus, by using RM analysis, the answer to research questions that show LTP instrument was developed with good construct validity instruments. The RM analysis measured reliability with person separation reliability of LTP, this statistic showed the ability of the items to separate persons with different levels of the concept measured. The reliability items s of LTP showed that each item could be described by the level of difficulty. According to this test for every level of difficulty of items, there were respondents could answer the items according to their abilities as shown in Figure 1 Thus, by using RM analysis, the researcher could answer the research questions indicating that LTP instrument was developed as reliable.

This study finding was supported by many studies that used RM for examining the construct validity (Fox and Jones, 1998' Forkmann et. al, 2009; Azrilah et al., 2008; Wolfe et. al., 2009; Mofreh et.al, 2014). For instance, a study conducted by Fox and Jones (1908) traditional and innovative uses of the Rasch model in the development and validation of small and large-scale psychological instruments. Azrilah et al., (2008), were conducted a study to determine construct validity of their instruments. Another study by Bateman, Teasdale and Williams (2009) used the RM to determine the validity of the constructs in a study entitled "Assessing Construct Validity of Self-rating Version of the European Brain Injury Questionnaire Using Rasch Analysis".

Conclusion & Implications

Measuring the lecturers' practices requires a measurable instrument to be developed and tested to measure the Lecturers' Teaching Practices. In this study, lecturers' teaching practices refer to lecturers practical activities by which the lecturers transfer experience and knowledge in actual situations to the learners by using proper teaching methods, techniques and a range of activities to prove and improve students' learning.

The findings of RM analysis indicated that the LTP as valid and reliable instruments can be used to measure Lecturers' Teaching Practices (LTP) of CC lecturers any lecturers in Yemen or other places who have the same characteristics, environment and context. The developed instrument LTP can be used as a standardized instrument to measure the LTP.

The implications of this study findings can be resulting for all lecturers in community colleges and stakeholders. The implication included suggestions of using LTP as a standardized instrument to measure the Lecturers' Teaching Practices. The LTP could be used as self-assessment teaching practices. Community colleges could use LTP in appraising lecturers as is a supportive process which will be used to inform continuing professional development. That may lead to all lecturers take responsibility for improving their teaching through appropriate professional development. Professional development will be linked to colleges' improvement priorities and to the ongoing professional development needs and priorities of individual lecturers.

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