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Aims and Scope

The special issue for the Universal Journal of Educational Research (Vol. 8 No 1A, 2020) is devoted to the theme “Empowering Education by Integrating Humanistic and Scientific Values.” The articles for this special issue were compiled from rigorously extended and intensely upgraded scholarly works from the 4th International Conference on Educational Research and Practice (ICERP) 2017 – under the theme “Empowering Education through Translational Research and Practices” and also the scholarly works from the 5th International Conference on Educational Research and Practice (ICERP) 2019 – under the theme of “Educating the Digital Society: Integrating Humanistic and Scientific Values.” The theme for this special issue, “Empowering Education by Integrating Humanistic and Scientific Values,” is developed due to the many important arising issues in the current field of education and educational research, particularly due to the focus on Industrial Revolution 4.0 and its importance in developing able teachers and learners in meeting the challenges in many areas of education, including communication and literacy skills, leadership skills, inclusive education, lifelong learning, and also the focus on Technical and Vocational Education and Training (TVET) and Science, Technology, Engineering and Mathematics Education (STEM).

As such, the scholarly works in this special issue focused on a number of important themes in the field of education, such as: Scholarship of Teaching and Learning; Curriculum and Instruction; ICT and Emerging Technologies; Ethics in Digital Age Education; Technical and Vocational Education and Training (TVET); Agricultural Education and Home Economics; Science, Technology, Engineering and Mathematics Education (STEM); Arts and Humanities Education; Religious and Moral Education; Language and Literacy Education; Entrepreneurship Education; Educational Leadership, Policy and Administration; Human Resource Development; Continuing education and lifelong learning; Kinesiology and Sport Studies; Physical Education and Health Education; Inclusive Education; Educational Psychology and Sociology; and, Counsellor Education and Counselling Psychology.

There are 40 papers carefully selected from more than 200 papers presented at the two conferences that focus on the themes mentioned above. These papers also signify the scope of education and educational research from issues related to curriculum, instruction, policy, ethics, administration, and human resource development, both at the national and international levels.

Editorial Statement

The editors of the special issue for the Universal Journal of Educational Research (Vol. 8 No 1A, 2020) under the theme “Empowering Education by Integrating Humanistic and Scientific Values” hereby state that the papers that are published in this special issue had undergone rigorous blinded review process. All of the papers published had undergone stringent and rigorous peer review process involving a series of reviews by internal and external reviewers. All of the papers have also gone under originality checking and plagiarism prevention check (i.e., through the use of Turnitin online service). Papers that were found to have more than 30% similarity index were not included in this special issue as to ensure the academic integrity of the journal. The editors are also NOT responsible for the any research misconducts that might have been conducted (i.e., plagiarism, manipulation of data, fabrication of data, republication, etc.) in these papers.

The editors would like to thank the contributors as well as the reviewers for their commitment and patience which had made the publication of this special issue possible. We hope that the articles published will assist researchers in expanding their knowledge on various issues related to education and educational research and continue to support the Faculty of Educational Studies, Universiti Putra Malaysia (UPM) in publishing articles of high quality and standard. We would also like to thank Universal Journal of Educational Research’s Editor-in-chief and the Chief Executive Editor, and their dedicated publication team, for their tremendous efforts, leadership, courage and dedication to improve the quality of the articles published in this issue.
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Models of Relationship between Emotional, Spiritual, Physical and Social Intelligence, Resilience and Burnout among High School Teachers

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Abstract

Burnout is a condition that can affect a person's work performance. Among the internal factors that contribute to burnout are emotional intelligence, spiritual intelligence, social intelligence, physical intelligence and resilience. This study explores the relationship among these internal factors toward the occurrence of burnout. A relationship model between variable of study was created based on the findings of the study. Instruments related to emotional, spiritual, social and physical intelligence and burnout have been distributed to 377 students of secondary school teachers throughout Selangor as a sample of chosen research using random-stratified sampling and cluster sampling. This study utilizes two approaches in analyzing data, which consist of descriptive statistics of IBM SPSS software statistics 22.0 and inferential statistics using advanced modeling analysis Structured equations (SEM) through the software Analysis of Moment Structure (AMOS) 22.0. The results of correlation analysis have shown that there is direct relationship for all intelligence factors against burn out. All variables have affected burnout except social intelligence. The findings of the study to demonstrate a model of emotional intelligence, social intelligence, physical intelligence, spiritual intelligence and resilience with burnout have reached the concurrence value. Teachers equip themselves with the intelligence and have resilience in carrying out its duties to increase the students’ achievement, thereby encouraging their excellence. The predictor of emotional, spiritual, physical intelligence and burnouts is an important indicator to certain stakeholder such as Ministry of Education Malaysia to improve vital elements to choose a teacher and courses that should be implemented to the teacher to prevent burnout from occurring.

Keywords

Intelligence, Internal Factor, Burnout, School Teachers, Emotional Exhaustion

1. Introduction

Burnout is a condition in which the individual involved is said to be physically, mentally and emotionally exhausted. According to Blazer (2010) burnout is a state of physical, mental, and emotional exhaustion from chronic stress. It is characterized by feelings of isolation, carelessness, indifference, low self-esteem, loss of interest in work, and inability to perform daily tasks. Maslach, Schaufeli and Leiter (2001) further developed the concept of burnout by explaining that there are three main things: emotional exhaustion, depersonalization and declining personal achievement. Emotional exhaustion is a situation in which an emotional need for something exceeds an individual's emotional source. Depersonalization is a personal psychological disorder in life while a decline in personal achievement is a negative self-assessment of one's achievement. Burnout is a condition that can affect a person's work performance. According to Anbar and Eker (2008), a lot of professions are exposed to burnout. Previous studies have shown that teachers' careers are among the jobs most exposed to burnout. This is because teachers need to connect with a large number of students, colleagues, parents and the local community in a variety of ways. Whereas Cherniss (1995) and Maslach and Schaufel (1993) say there are four factors that contribute to burnout. These factors are engagement with service recipients, individuals, work environments and societies. Maslach et al., (2001) explained that there are two main factors that cause burnout, namely the condition factor and the individual factor. They say that the factors for burnout conditions occur due to job characteristics, job description and job attitude. In addition to demographic factors, Maslach et al., (2001) described personality traits such as...
resilience or individual resilience affecting burnout. Low resistance will cause burnout. According to Brock and Grady (2002) individuals who are said to be burnout are usually associated with physical, intellectual, social, emotional and spiritual conditions. This study examines the internal factors that contribute to burnout namely emotional intelligence, spiritual intelligence, social intelligence, physical intelligence and resilience.

Emotional intelligence refers to one's ability to make sense and convey the right emotions, to use emotions to aid thought processes, to understand emotions, to assist thought processes and to understand emotions and to manage emotions in oneself and others. Mayer and Salovey (1997) state that individuals with emotional intelligence will be able to manage emotions, deal with stress, and deal with failure more effectively. This condition can prevent them from burnout risk. The findings from Pishghadam and Sahebjam's (2012) study of emotional intelligence consistently show that there is a relationship between emotional intelligence and burnout, which has also been proven by the study of Saiari et al., (2011) that proved a significant negative relationship between emotional intelligence and burnout among sports teachers. This indicates that individuals with high emotional intelligence will be able to reduce their risk of burnout.

Spiritual intelligence refers to the individual's capacity for knowledge, attitude or character that are formed in the heart as a result of understanding and evaluation. It is based on religious elements and pure values and is translated into action or action. According to Zohar and Marshall (2000), spiritual intelligence is related to the practice and knowledge of individuals in dealing with and solving questions of meaning and value. In work environment, the belief system or value that an individual hold will help them improve their productivity. Therefore, burnout occurs when the belief system and values are diminished within the individual. The study of Moradi, Sadri, Khazan and Dargahi (2017) on the relationship between spiritual intelligence and burnout shows that there is a direct negative effect of spiritual intelligence on burnout. These findings prove that the spiritual intelligence in individuals can enhance creativity, honesty, trust, positive personal development, organizational commitment, job satisfaction, work engagement, work ethic, motivation, performance and productivity of work which prevent burnout.

According to Anderson (2006), physical intelligence refers to the awareness and use of body's senses for health and wellness support, providing information on environmental safety and comfort, and enhancing the development of one's life. According to Brock and Grady (2002), fatigue and lack of sleep due to changes and unstable sleep patterns are as a result of burnout. Other physical symptoms such as illness and being involved in minor accidents due to loss of focus are indications of individuals experiencing burnout. According to Koruklu, Feyzioglu, Ozenoglu-Kiremit and Aladag (2012), findings of burnout studies have shown psychological factors such as depression, stress, confusion, chronic anxiety, low self-esteem and frustration contributing to burnout. Therefore, physical intelligence is one of the individual factors contributing to the occurrence of burnout.

Buzan (2002) describes social intelligence as a measure of one's ability to interact in society and the ability to interact with people around him or her. Build good social support. Resilient individuals depend on others to help them through difficult times. They also need to develop good social support networks from friends and family to help reduce the impact of stress in life. Burnout is not a natural thing, it is a development of the social interaction that exists in the individual and the environment. The study of Girgin and Baysal (2005) shows that teachers who have social problems with their peers experience burnout in form of high emotions and depersonalization compared to those who receive social support from their peers.

Grotberg (1997) explained that resilience is the human capacity to meet challenges, overcome obstacles and gain strength through experiences and difficulties that have been experienced in life. According to Siebert (1996) individuals who are said to have resilience are better at situations where others find it difficult. People who have no resilience are said to have high risk of burnout. According to Pietarin, Pyhalto, Soini and Salmela-Aro (2013) from a conceptual perspective, approaches to burnout syndrome and resilience are interrelated and derived from behavioral approaches to managing humans. Burnout can have an impact on motivation, satisfaction, quality of life and health. Resilience is a factor that can help reduce stress and burnout. The findings of Karimi and Adam's (2018) study, have shown that resilience is significantly associated with burnout.

According to maslach et. al (2001) identified several factors that are thought to contribute to burnout. These factors are workload, control, reward, community, fairness and values. These factors include resilience, emotional intelligence, social intelligence and spiritual intelligence. According to Krophne (2002), the theory of conservation of resources was introduced by Hobfoll in the early 1990s in his effort to establish a link between burnout and mental and physical health.

The study was conducted to examine whether factors such as emotional intelligence, spiritual intelligence, physical intelligence, social intelligence affect resilience and burnout among high school teachers. The study also produced a model of the relationship between emotional intelligence, spiritual intelligence, physical intelligence and resilience with burnout.

2. Methodology

This is a quantitative approach study using survey design. The objective of the study is to identify the factors...
contributing to burnout among teachers. A total of 377 secondary school teachers participated in this study from 40 secondary schools in the state of Selangor which comprises of 10 districts.

The questionnaire used in this study to determine the relationship between emotional, spiritual, physical, social and physical intelligence based on the teacher's perspectives. Meanwhile, the data collection process is carried out only using the questionnaire form. This study only measure quantitative data and do not involve qualitative data also involved only secondary school teachers in the Selangor state as a sample.

Questionnaires were distributed and there are seven instruments used in this study. The Workplace Resilience Scale instrument is used to measure emotional, social, spiritual and social intelligence. Whereas to measure burnout, the Burnout Inventory has been used. This study uses two approaches in the process of data analysis, which are descriptive statistics using SPSS 22.0 software and inference statistics that use advanced analysis of Structural Equation Modeling (SEM) through Analysis of Moment Structure (AMOS) 22.0 software.

3. Findings

The findings show there are direct effects of emotional intelligence, physical intelligence, spiritual intelligence, social intelligence, resilience and burnout based on the nine hypotheses that have been tested. The hypotheses tested are as follows:

- **H1**: There is a significant positive direct effect between Emotional Intelligence (KE) and Resilience (DT)
- **H2**: There is a significant positive direct effect between Social Intelligence (KSo) and Resilience (DT)
- **H3**: There is a significant positive direct effect between Physical Intelligence (KF) and Resilience (DT)
- **H4**: There is a significant positive direct effect between Spiritual Intelligence (KS) and Resilience (DT)
- **H5**: There is a significant negative direct effect between Emotional Intelligence (KE) and Burnout (BO)
- **H6**: There is a significant negative direct effect between Social Intelligence (KSo) and Burnout (BO)
- **H7**: There is a significant negative direct effect between Physical Intelligence (KF) and Burnout (BO)
- **H8**: There is a significant negative direct effect between Spiritual Intelligence (KS) and Burnout (BO)
- **H9**: There is a significant negative direct effect between Resilience (DT) and Burnout (BO)

Hypothesis testing for direct effect was performed using the analysis of SEM-AMOS. Results of direct effects analysis for emotional intelligence (β = .42, p = .000), physical intelligence (β = .29, p = .000) showed significant positive values of resilience. Meanwhile, emotional intelligence (β = -.85, p = .000), physical intelligence (β = -.35, p = .000), spiritual intelligence (β = -.68, p = .000) and resilience (β = -.78, p = .000) show a significant negative value with burnout. Therefore, these findings accept H1, H3, H5, H7, H8 and H9. The direct relationship can be described as, the higher the level of emotional intelligence and the physical intelligence of teachers, the stronger their resilience. Similarly, the higher the emotional intelligence, physical intelligence, spiritual intelligence and resilience, the burnout among teachers will be lower. However, the results of the direct effects analysis revealed no significant significance, namely on social intelligence (β = .03, p = .571) and spiritual intelligence (β = .09, p = .134) on resilience. On the other hand, social intelligence (-.08, p = .460) on burnout also shows a not significant result. This finding rejects the hypotheses H2, H4 and H6. The detailed report is listed in Table 1.

In total, six of the hypotheses tested (H1, H3, H5, H7, H8 and H9) were accepted. Meanwhile, the findings for H2 (KS → DT, β = .03, p = .571), H4 (KSp → DT, β = .09, p = .134) and H6 (KS → BO, β = .08, p = .460), indicate no effect of the direct relationship between the tested variables. The findings show that emotional intelligence and spiritual intelligence have nothing to do with a teacher's resilience. Similarly, social intelligence has nothing to do with burnout that occurs among teachers in schools.

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Notes: KE: Emotional Intelligence; KS: Social Intelligence; KF: Physical Intelligence; KSp: Spiritual Intelligence; DT: Resilience; BO: Burnout
The model fits for the relationship between emotional intelligence, social intelligence, physical intelligence, spiritual intelligence and resilience and burnout as shown in Table 2. The values of fitting for the models of emotional intelligence, social intelligence, physical intelligence, spiritual intelligence and resilience and burnout have achieved minimum requirement for fitness with the study data. Indicators of RMSEA = .103 and GFI = .987 reinforced the findings of this model's compatibility analysis. The CFI = .994 and TLI = .955 values and the CMIN / df = 24.914 values show that the model developed achieves good fit.

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</table>

Figure 1 shows four variables that are predictors of burnout in this study: emotional intelligence (KE), social intelligence (KSo), physical intelligence (KF), spiritual intelligence (KSp) and endurance (DT). These variables are linked to form nine structural relationships. The findings show that these variables contribute to burnout in teachers in Malaysia. The relationships formed represent the relationship models of emotional intelligence, social intelligence, physical intelligence, spiritual intelligence and resilience and burnout achieved good fitness (Chisq / df = 4.914, RMSEA = 1.03, CFI = .994, GFI = .987, TLI = .955). The double correlation coefficient (SMC or R2) showed that 61% of the variance in burnout was explained by factor emotional intelligence, social intelligence, physical intelligence, spiritual intelligence and resilience. Furthermore, emotional intelligence, social intelligence, physical intelligence and spiritual intelligence showed a R2 value of 59% of the variance in resilience.

4. Discussion

Findings have shown that there is a significant positive direct effect on emotional intelligence and resilience. The findings of this study are in line with findings from the Study of Armstrong et al., (2011); Dhamodharan and Ravikumar (2014); Schneider, Lyons and Khazon (2013) who studied the relationship between resilience and emotional intelligence among 414 respondents aged 24 to 58, showed how respondents respond to negative events in their lives. Respondents were placed in three groups based on their resilience, high or medium or low. The findings show that there is a positive relationship between resilience and emotional intelligence. Individuals in the higher resilience group were also reported to have high levels of emotional intelligence. A teacher needs emotional intelligence because it can help a teacher to act and be resilient. The findings also show that there is a significant positive direct effect on physical intelligence on resilience. This finding has been supported by studies of resilience also associated with physical activities that contribute to physical intelligence. Study by Cornu's (2009) MacFarlane and Montgomery (2010) found that resilience and physical activity contributed to physical intelligence and were positively related. They think that college careers are difficult and stressful, but the most natural way to gain resilience is to engage in physical activity that can help to increase physical intelligence. This physical intelligence will lead to high resilience and help in managing stress in your career. Monshouwer et al. (2012) conducted a similar study that investigated at the relationship between physical activity and resilience to control for the effects of social relations, self-image, socioeconomic status, gender and age. The findings of their study have shown that negative physical activity is related to mental health problems, as well as poor resilience. Therefore, a teacher needs to have physical intelligence at school or home as it helps teachers improve their service quality at school. The findings of the study have also shown that social intelligence and spiritual intelligence that do not affect resilience. The findings show that spiritual intelligence has a positive relationship with resilience.
The findings show that there is a significant negative direct effect on emotional intelligence and burnout. The findings of this study are in line with the findings of a study conducted by Alavinia and Ahmadzadeh (2012), Pishghadam and Sahebjam (2012), Robiatul Adawiyah (2013), Saiiari et al. (2011), Vaezi and Fallah (2011) and Zysberg et al. (2017) who conducted their respective studies in Iran, Spain and Indonesia on high school teachers. This situation clearly shows that a teacher with emotional intelligence will be able to control his emotions so that he can act rationally and will not suffer burnout. Emotional intelligence is also important in ensuring that teachers do not burnout. Teachers need to maintain their emotional intelligence especially in dealing with today's students. The study also found that spiritual intelligence also has an impact on burnout among teachers. This finding is supported by a study conducted by Moradi et al. (2017) who looked at the direct impact of spiritual intelligence on burnout among workers at Iran's Mohagnesh Ardari University who have shown (p > 0.01, = -0.41) significance among spiritual intelligence with burnout. Psychologists believe that the major success of large organizations depends on the director and spiritual intelligence of their employees, Moradi et al. (2017). This study was also supported by Akbarizadeh, Bagheri, Hatami, Hajivandi (2012), Captari (2010), and Wachholtz and Rogoff (2013), respectively, looking at the effects of spiritual intelligence among medical students, nurses and college assistants at the university. Their research also shows that spiritual intelligence contributes to the occurrence of burnout. The findings of this study also show that there is a significant negative direct effect on physical intelligence and burnout. The findings show that the higher physical intelligence, the less risk of burnout. The findings of this study are supported by the study of Salvagioni et al., (2017) who stated that the physical effects that may have on those who are on burnout include hypercholesterolemia, diabetes, heart disease, cardiovascular disorders, muscle aches, chronic pain changes, prolonged fatigue, headache, gastrointestinal problems, respiratory problems, severe injuries and death under 45. Psychological effects include insomnia, depressive symptoms, use of psychotropic and antidepressant drugs, mental disorders and symptoms of psychological illness. These findings indicate that physical intelligence is one of the factors that affect burnout. There are some previous studies, which look at the aspects of social intelligence with burnout separately; studies that cover topics related to each other are limited. Although there are studies involving burnout and social intelligence or vice versa in areas other than teachers such as nursing (Taormina & Law, 2000), human services (Liang & Hsieh, 2008), and manufacturing workers (Gao, 2013), such studies directly combining teacher burnout and social intelligence have shown no effect on burnout. The findings of the previous study are the same as the findings of this study. However a study conducted by Lynn (2013) which examined how academic confidence, teacher socialization, and teacher diversity related to teacher burnout with 98 primary school teachers showed that academic and cohesive optimism was negatively associated with their emotional exhaustion and temporary discomfort that have a positive relationship with personal achievement. The findings also show that resilience contributes to burnout. The findings of this study are supported by the findings of De Saousa et al., (2018) showing that only 6% of respondents with high resilience tend to burnout while 53%
say respondents say high resilience causes them not to have burnout. Their research has also shown that resilience is one of the predictors of burnout among teachers in higher education institutions. Among the dangers of resilience are self-efficacy, living conditions, calmness and resilience, each contributing to burnout. This can be attributed to the state of the teacher having a high degree of resilience to adapt to the situation, adaptive ability and overcome any obstacles that may arise in the workplace.

5. Conclusion

Overall the findings of this study have shown that the internal factors that contribute to burnout among teachers have been proven. These factors are emotional intelligence, spiritual intelligence, physical intelligence, social intelligence and resilience. Predictors of emotional intelligence, spiritual intelligence, physical intelligence, social intelligence and resilience can explain the contribution of burnout. This finding explains that it is important for a teacher to equip themselves with that intelligence and to have the ability to carry on with the task of enhancing student achievement which in turn motivates them to excel. This model of emotional, spiritual, physical intelligence and burnout is an important indicator for certain parties such as the Ministry of Education Malaysia to improve key elements in selecting a teacher and the courses that need to be taken to prevent such burnout from happening. This model can be used as a reference, in which ways changes and improvements can be made to teachers. The forms of the course and the content of the course also need to be reviewed by certain parties at the MOE to help teachers avoid burnout.

REFERENCES


Professional Learning Community (PLC): Approach to Enhance Students' Achievement in Language Learning at Public University, Malaysia

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Abstract Professional Learning Community (PLC) is a form of self-development for educators which has been known internationally and currently through the phase of implementation in Malaysia. Purpose of this study was focused on PLC implementation that had been applied widely in Higher Education Institution (HEI) which; 1) to identify the relationship between educators’ comprehension, readiness and strategies for language learning, and 2) to form a predictive model of relationship between educator’s knowledge, preparation and strategy toward improving student’s language learning. Three dimensions of PLC which comprehension, readiness and strategies in PLC were analyzed by using SPSS and AMOS. Three hundred sixty students and five lecturers involved as respondents. Correlation analysis and structured equation modeling were used to answer the research objectives. Qualitative data as the predictive model achieved a good fit value of RMSEA=.055, GFI=.980, CFI=.981, TLI=.983 and Chisq/df=2.164. Interview data of 5 educators showed that decency was the main key theme in improving student language learning achievement. The implementation of PLC that related to language as well decency learning had given a new approach in teaching, particularly for educators and students in a language course. The predictive model can be used as primary source guidelines in elevating the Malay language at a higher level, especially for next researches. Secondary source supported the finding.

Results showed that there were significant values derived from the relationship between comprehension and language learning ($r=0.401$, $p=0.000$), the relationship between readiness and language learning ($r=0.541$, $p=0.000$), and the relationship between strategy and language learning ($r=0.891$, $p=0.000$).

Keywords Professional Learning Community (PLC), Comprehension in PLC, Readiness in PLC, Strategy in PLC, Predictive Model

1. Introduction

Formal or informal language generally divides into three primary levels, which are delicate or polite language, rough language and abusive language. Respectful communication means the most beautiful expression is used to replace certain words that thought as rude or can hurt other people’s heart and feeling (Asmah, 2008). The use of polite language is an effort to deliver communication with suitable ways so that the individual who involves in communication events does not receive unwanted impacts. The use of beautiful or polite language often relates to the concept of speech or language act among individuals who speak the language.

Language act means daily speech that gives specific meaning according to particular contexts. It is a form of language that produces to create actions, and different from sentences as well cannot be related to other grammar levels. Language act consists of various types such as greeting, requesting, apologizing, complimenting and rejecting. For example, is the following sentence, “He told me to join this program. hmm it is quite interesting. But, he already joined other activity, madam”. This sentence can give meaning that the speaker wants to reject his friend’s suggestion to join the program organized by the university, whereas his friend does not enter the program. The speaker does not use correct sentences maybe not to offend his friend’s honor or feeling. The structure of speech usually depends on gender, social factors and context of learning culture in Malaysia. Educator’s influence as a role model to the students also plays essential roles in creating language act. Language act is very related to the concept of linguistic politeness. This relatedness is vital in the relationship between educator and student. Language act always relates to etiquette, moral and delivery that can help to teach the quality of educator (Wilson, 2016).
Therefore, educator plays important roles to help students to drive themselves towards elevating self with positive attributes through the implementation of PLC. The term of PLC has been common to debate in society. It has been used to illustrate a practice that implemented continuously (Dufour, 2008). For example, in the context of teaching force at HEI, an educator can continue the exercises in lecture rooms to the community, or bring a community to HEI to support learning and teaching session by involving students, educators and administration through collaboration in education (Dina Mazlin & Abdul Rasid, 2016). This is similar to the interpretation by Wilson, (2016) who names it as a community that continue to implement research activities and make improvement. To ensure it can be achieved, an educator must involve continuously in finding and sharing learning as well as practising the knowledge so that students can gain benefits (Mohd. Faiz, Muhammad Rozaimi & Jamal, 2016).

Thus, this study was conducted to identify how far the relationship between practices of PLC that had been fully implemented through five strategies as outlined by Dufour, (2004) in helping language decency aspect among students who were taking a language course at HEI in Malaysia. Student perception towards their educator was identified according to research objectives as follows:

1). to determine the relationship between educators’ comprehension, readiness and strategies in PLC implementation with increasing language learning of a student, and;

2). to form a predictive model of the relationship between educator’s knowledge, preparation and strategy in PLC implementation with increasing language learning of selected HEI student in Malaysia.

Hence to answer the objectives there are three hypotheses were tested, as follows;

H1: There is a significant relationship between dimensions of comprehension with achievement in enhancing language learning among the students in a higher education institution of Malaysia.

H2: There is a significant relationship between dimension of readiness to implement PLC with achievement in enhancing language learning among the students in a higher education institution of Malaysia.

H3: There is a significant relationship between dimension of strategy in PLC with achievement in enhancing language learning among the students in a higher education institution of Malaysia.

2. Background of the Study

Language learning has been studied a lot by linguists. Meanwhile, there is a lack of research about language learning in the context of Malay language community in Malaysia that connected with PLC. This is because learning decency learning particularly in the context of Malay language has not been studied in detail except while discussing the aspects of language activities such as indirectness (Mansor, Ahmad & Yaakub, 2010). It is similar to the study that combines both PLC and decency language variables in Malaysia. However, there is empirical proof to relate the relationship between these two variables by studies that have been done in Malaysia and other countries.

For example, PLC in Higher Education Systems’ have been proved that the implemented was created the conditions where educators support one another’s practice in PLCs, educator’s feel more confident and develop a strong sense of self-efficacy; they believe in their ability to influence student learning and make a difference in student outcomes and achievement. This appears to strengthen teachers’ commitment to working collaboratively with their peers and improving their instruction to meet students’ needs (Margalef & Pareja Roblin, 2016).

2.1. Language and Decency Learning among Students

Generally, language learning is divided into few categories. Decency aspect is a communication skill that creates verbal interaction or relation through a medium or vice versa with other people. According to Chong, Muhammad Faisal & Zuraidah (2015), the communication process is the foremost necessary and cannot be avoided by someone in doing daily activities. This is because the process occurs by itself when interaction exists between two individuals. At the same time, decency becomes essence in the smooth communication process, and speech goals can be delivered precisely to the receiver.

An educator is a medium that develop student’s personality. Education institution is a social institution that emphasised the importance of effective communication in the classroom to create universal social development (Badrul Hisham & Mohd. Nasaruddin, 2016). The decency of spoken language creates active learning. It is an interactive process that gives space for students to interact, help each other, carry out the responsibility, build confidence, and so on (Jyh, 2013). Even, students are encouraged to give opinions and ideas effectively if teaching and learning held in an attractive and fun environment. Besides, spoken decency language gives implication from the social skills aspect by helping students to react with the environment as well self-control in facing challenges to enhance self-excellence (Mansor, et. al, 2010).

Along with the past findings, Ismail, Ghani & Abdullah, (2014) emphasise that educator who has excellent communication skills in building attractive and fun teaching environment can influence student’s decency in expressing the language well. A study by Norhiza, Faridah & Farah, (2014) proves that the ability to communicate efficiently can help the educator to apply positive attributes such as language decency Mansor, et. al, (2010). Therefore, an educator must have interest, experience and fundamental professional skills to produce students with virtue includes the aspects of social, physical and emotion (Intel, 2014). Mansor, et.al (2010) have stated that spoken decency language is a process that gives meaning and able
to influence someone to believe and do something as asked. This is because polite words either verbal or non-verbal, will involve knowledge transfer, understanding or feelings that are shared through the delivered message (Maros, 2011). In the context of teaching, educator functions as an individual who provides knowledge and must have various types of skills include speech, classroom control, teaching technique and use effectively as well as organize communication. Professional responsibility must be implemented wisely and systematically. This is because educator not only deals with students but also with other people such as community and administration. Educator not only functions to deliver knowledge but must build interaction through various paths which lead to the smoothness of teaching and learning process and produce students with better decency language.

2.2. Professional Learning Community (PLC) at HEI

Professional Learning Community (PLC) defines as a practice that must be implemented continuously in the long term. According to Ruland [25], PLC is a culture factor which contributes to the success of the organization. In defining PLC, Dufour, (2008) argue that educator must give high commitment in doing works through collaboration especially in inquiry collective activity and action research to produce better findings. While Smith, (2013) states that PLC is a practice at the workplace which involving active and efficient teaching activity. This is due to the contributory factors of success such as efforts of the administration in supporting educator’s learning and high commitment levels of co-workers. In further, PLC is a practice that emphasized on collaboration aspect among the community in the organization. There are five dimensions, as suggested by DuFour, (2008) in explaining the implementation of PLC. However, this study only focuses on three big dimensions which are;

(a) Comprehension Dimension

This dimension divided into three aspects which are knowledge sharing, vision and mission as well as values. Vision can be formed by asking stakeholders in teaching about what is their expectation towards institution (Hord & Hord, 2003). Meanwhile, the effectiveness of the vision statement is specifically on the future of the organization, and it is enabled to motivate the institution’s community to achieve the vision (Dufour, 2004 & Wilson, 2016). Therefore, building a vision is one of the success factors for the institution in the long term (Rosenholtz, 1985). Ezwafahmey, (2018) states that PLC practices can be achieved if the institution has a clear vision, mission and values which can be shared with stakeholders. In other words, educator and the higher management need to share the vision, mission and values of the institution that supported together with students.

Therefore, this strategy also helps the community in HEI organization to develop a clear picture of the collaborative work that educators can do in PLCs, when they were really shared vision and mission to achieve. It could be demonstrated by interactive sessions include modeling the collaborative routines, professional behaviors, and collegial practices that are crucial to holding productive PLC meetings (Bangeni & Kapp, 2017).

(b) Strategy Dimension

An educator who implements the practices of PLC must continuously identify the best teaching strategy to enhance student achievement. The wish will come true if educators perform their works in an environment that encourages collaboration (Hargreaves & Fink, 2018). In HEI organization, educators always need to create reflection dialogue, do self-assessment and solve student’s learning problems together (Roslizam, Jamilah & Yusof, 2018). This will lead to the improvement of teaching pedagogy in the educator’s lecture room (Wilson, 2018). Therefore, the head of the institution must support educators by giving them a period to implement collaboration (Badrul Hisham & Mohd. Nasaruddin, 2016).

From the collective aspect, the community of institution that practices PLC usually gives focus on the action after setting a mission to achieve the vision (Dufour, 2004). This action is in the form of action research to identify the best strategy in teaching, Dehdary, (2017) that carried out by collective and continuously (Ezwafahmey, 2018). Accurately, Dufour, (2008) state that the focuses of inquiry collective in PLC are as follows; (i) identify the best practice in teaching and learning, (ii) evaluate the development of nowadays practice, and (iii) assess the trend of student’s academic achievement. Inquiry collective will enable to enhance new skills of the institution community and change the behavior as well as belief (Chauraya & Brodie, 2015).

Therefore, the administration and management of the institution must provide educators with information and knowledge basis about their research so that they can make the right decision on student’s achievement. This is explained by Siti Nafsiah, Zuraidah, Abdul Jalil & Salwati, (2018) that higher management needs to guide educators to analyze and interpret data about student’s achievement, provide time and schedule for educators to discuss about student’s performance, and provide time for educators to be guided about action research to cultivate love in research culture. This kind of supports will enable educators to implement inquiry collective continuously because they are transparent with guidance and goals set by the higher management.

So that, the educators will get the benefit from assistance from those who can bring specific expertise to PLCs, such as how to analyze data, unpack standards, identify the most effective instructional strategies to address a standard, identify effective assessment strategies, use student work as a reflective tool in PLCs, and adjust instruction to meet student (Baygin, Yetis, Karakose, & Akin, 2016).

(c) Readiness Dimension

This dimension is divided into two aspects which are structure and leadership. Effective leadership is a leader who gives some powers to subordinates employers (Dufour...
& Eaker, 2008). For example, the head department involves educators in making decisions collaboratively through these efforts: (i) encourages educators to take risks and try something new, (ii) provides reinforcement and positive motivation, (iii) gives opportunity for educators to enhance self-competency, (iv) provides time for educators to supervise and do reflection (Dufour, 2008 & Smith, 2018).

Somehow the leaders for example the dean or head of department in HEI organisation can assist educators in connecting PLC meetings and changes in instructional practice by regularly attending PLC meetings and conducting learning walks, a process in which a small team participates in classroom walkthroughs to observe how decisions made in PLC meetings are implemented in the classroom. This element also would be a good starting point to polish the readiness to implement the PLC in HEI.

Therefore, educators must increase competency to face the increase of responsibilities (Dufour, 2008). Ratts, Pate, Archibald, Andrew, Ballards & Lowney, 2015) explained that competency levels of educators are essential because the current position of educators as a leader is forcing them to increase commitment and accountability to achieve the goals of the institution.

3. Methodology

3.1. Research Design

This study was conducted to identify the relationship between PLC implementation with increasing student’s language learning. Therefore, quantitative method of survey was used by using a questionnaire. A qualitative approach as a secondary source was used to collect summative data as support by interviewing five educators. This research design was flexible, which could be modified according to the situation’s needs.

3.2. Research Sample

This study involved 360 students at five public HEI. The data was collected by distributing questionnaires forms to students. All questions and answers were in the Malay language. At the same time, the researcher went to the field study to observe while the program was being held with students as respondents to get empirical proof about how far language learning achievement particularly decency language had been mastered by them. Five educators were being interviewed to get secondary data as support.

3.3 Data Collection and Instrument

All participants completed the research surveys assessing their perception of how well the PLC’s dimension has been implemented in the university setting in a language course. While the researcher has interviewed five academic staff who from selected universities to provide any information about the implementation of PLC in their organization. The Professional Learning Community Assessment (PLCA) questionnaire was employed in this study. The instrument was adapted from Olivier & Hipp, (2010). It consisted of 56 items was combining five Likert's scales in measuring three dimensions of PLC, i.e. shared values, vision & mission; collective learning and application and leadership & supportive sharing.

3.4. Reliability and Validity of the Instrument

Reliability is defined as how consistent a measuring device is. Besides, a measurement is deemed reliable or consistent when similar results can be replicated in similar circumstances. To establish the reliability of the analysis of this study, the Cronbach Alpha value of ≤ 0.60 is considered to be not reliable, while more than ≥ 0.70 indicates that it is highly acceptable. The reliability analyses for this research were presented in Table 1.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Number of Items</th>
<th>Alpha Cronbach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td>15</td>
<td>0.809</td>
</tr>
<tr>
<td>Readiness</td>
<td>15</td>
<td>0.861</td>
</tr>
<tr>
<td>Strategy</td>
<td>26</td>
<td>0.781</td>
</tr>
<tr>
<td>Language Learning</td>
<td>Self-reported by students</td>
<td></td>
</tr>
</tbody>
</table>

All the dimensions were achieved the high acceptable value when alpha Cronbach value > .60. The dimension of comprehension =0.809, dimension of readiness =0.861, dimension of strategy=0.781 and dimension of language learning was self-reported by students based on their marks given in their exam. Therefore, this instrument was achieved the reliability and validity to measure all the variables in this research.

4. Analysis and Findings

The data were analyzed using correlation and regression analysis by the method of structural equation modeling. The correlational study was applied to test the assumption of whether there is a statistical relationship between the variables.

4.1. Correlation Analysis

Findings of correlation analysis showed that there was a significant relationship between all measured variables. Results were as in Table 2 below;

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>R</th>
<th>S</th>
<th>LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readiness</td>
<td>.676***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy</td>
<td>.709***</td>
<td>.757***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Language Learning</td>
<td>.524***</td>
<td>.585***</td>
<td>.704***</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: C: Comprehension Dimension; R: Readiness Dimension; S: Strategy Dimension; LL: Language Learning; N=360; ***Significant at, p<.000
Based on Table 2, correlation analysis showed that there was a significant relationship between comprehension and student’s language learning ($r = .524$, $p = .000$). The direction of relationship for both variables was positive, which means the knowledge of educator on PLC implementation had direct contact with the achievement of student’s language learning. This gave the perception that educators at HEI understood the vision, mission and goals of PLC implementation, which bring implication towards the increase of success in student’s language learning. Next, readiness and outcomes of student’s language learning ($r = .585$, $p = .000$) showed significant and positive value. This means the higher readiness of educator in implementing PLC, the better outcomes of student’s language learning. A positive, meaningful relationship also was shown between the strategy of implementing PLC with the results of the student’s language learning ($r = .704$, $p = .000$). These results were supported hypotheses testing for H1, H2 and H3.

4.2. Structural Equation Modeling

Structural Equation Modeling (SEM) analysis was done to produce a predictive model for the relationship of educator’s comprehension, readiness and strategy in PLC implementation with increasing of student’s language learning. This analysis showed good compatibility value to verify the predictive model, which had been developed Results of SEM analysis showed the compatibility value as follows; RMSEA=.055, GFI=.980, CFI=.981, TLI=.983 and Chisq/df=2.164 (Figure 1).

Based on the results of SEM analysis in Figure 1, good compatibility value was achieved, and this showed that factors of educator’s comprehension, readiness as well strategy to implement PLC had contributed towards increasing of language learning among students. About 59% of variance value had been contributed by factors of educator’s comprehension, readiness and strategy. From the three dimensions that had been studied, educator’s preparation which was structural and leadership showed the highest contribution with $\beta$ value=.89 compared to comprehension and strategy dimensions.

Meanwhile, educator’s comprehension which related to knowledge sharing, vision and mission as well attributes showed the lowest contribution with $\beta$ value=.40. Strategy dimension which was collaborative and collective aspects only gave $\beta$ value=.54, positioned in a range of 50% contribution value towards language learning. Good compatibility value that had been achieved will build a predictive model for the relationship of comprehension, readiness and strategy with language learning.

![Figure 1. Predictive Model of Relationship between Comprehension, Readiness, and Strategy with Student’s Language Learning](image-url)
5. Discussion

The language learning process is a must for students to ensure continuity of communication occurred. This study had found three dimensions of PLC implementation that played important roles to enhance student’s language learning achievement at chosen HEI. Reference [22] agreed that if an institution wished to create a learning community among educator and students, the higher management should play their roles effectively and efficiently. In other words, there was a relationship between dimensions that had been studied with aspects of commitment, effort to develop community by collaboration and sharing practice during PLC implementation.

5.1. PLC Implementation and Its Relationship with Language Learning from the Student’s Perspective

This study explored the relationship between educator’s comprehensions, readiness as well strategy of PLC and proved that there was mutual interaction between all variables in enhancing student’s achievement in language learning. Comprehension dimension was being studied on how far educator understood the vision, mission and values that shared by an institution with students. Findings showed that educator who had clear vision should view any problems in the organization’s scope and the solutions must be guided by a vision that had been fixed at the institution level.

Therefore, educator and higher management should draft the vision together to make it as implementation guideline in any actions that would be taken on issues related to student’s learning. The secondary source also supported the statement that comprehension of vision and values which shared would contribute to better achievement in student’s education. Shared information and knowledge could simplify the comprehension process among students on what would they achieve in their learning process as quoted in the second respondent’s answer;

“yes, we explained about vision and mission at the beginning of class, the outcome was the students were clear with the goals that must be achieved, so at the end of semester usually there were changes. Students were more confident to speak with friends ...” (R2, 35-37)

Findings also shows that collective and collaborative culture in strategy dimension of PLC implementation connected co-operation between educator, higher management and students that helped better language learning occurred (Smith, 2018). The community in the institution solved the problems together and improved the chances of collaboration learning. This caused the relationship within the community which educator, higher management and students became closer and increased the level of commitment to improve language learning. This was supported by secondary data from the respondent as follows;

“...in ensuring the success of one program such as short drama at the end of the semester, we divided students into groups. Many problems aroused at the beginning of the program. But, after we asked students to collaborate with different groups, they exchanged ideas and could do the show with excellence.” (R1, 75-80)

Meanwhile, focus commitment which mentioned in institution structure aspect and leadership were representing readiness dimension to illustrate close relationship within the community in the institution. In structure form, the higher management should give space and chance to the inside community to enhance self-achievement. For a close relationship within society, the higher management should self-communicate with educator and students to create excellent communication between them and enable the institution to achieve the vision that had been fixed.

These findings are similar to the study by Dehdary, (2017) who found that all parties were mutually respecting, believing and concerning to increase achievement. From the structure and leadership aspect, Dufour & Eaker, (2008) stated that higher management caused the barrier of effectiveness towards improvement in organization. The approaches used by the educator from top to bottom produced less commitment among the community of organization (Inatanam & Wongwanich, 2013). The success would become meaningful if HEI made efforts with stakeholders through collaborating and co-operating (Tan, Wong, Zulkifli, Teh, Latifah & Saripah Rabeah, (2017).

This study also had found a particular theme that was language decency which part of language learning element. It played vital roles for the effectiveness of PLC implementation as mentioned by the third and fourth respondent;

“my students showed changes; they spoke with more polite language..courtesy; figurative when lecturer showed he was listening, always communicated with them, for example when we met while walking, they greeted me..with respective titles compared to before, they did not realise my existence in their group”... [R3, 120-160].

A statement from the fifth respondent supported this finding:

“my students interacted well in class, they called their friends politely, even they began to voice their own opinions when certain activities were held, such as theatre show that we made last semester, it was quite fascinating when majority of my students were able to make plans, worked well in groups, did not fight like previously. All of these happened after we hold meetings, their voices were heard..all parties played their roles, head of the department joined to hear, educators also there and students definitely as an activator. The outcomes, yes..they able to do the show successfully and their soft skills became better, I mean
ways if they spoke, they could interrupt well during conversation ...” [R5, 201-220].

A study by Chong, Muhammad Faisal & Zuraidah, (2015) stated that Malay decency concern about harmony relationship and the concept of honour which negative language could dishonour the listener. This means that a good relationship between all parties by implementing PLC could help students to create better decency language. Although there was a different perception among students about the three dimensions that were tested in PLC implementation, an agreement was reached when these factors had contributed to the learning outcomes of students in HEI.

According to the findings, readiness dimension showed more contribution percentages compared to comprehension and strategy. This could be explained that although students realized the educator understood the vision and organization values, shared knowledge, cooperated in implementing PLC, but the readiness of educator from structure aspect such as practicing culture of mutually trust each other and creating continuous efforts were more important to help learning process. This goal could be achieved through the implementation of constant activities as well as interferences from educator and administration (Jones, Stall & Yardbourgh ,2013).

It could be concluded that correctly, this study had found three main dimensions in PLC implementation which comprehension, readiness and strategy that contributed to student’s language learning. In other words, the effectiveness of PLC implementation needs changes in process systematically and done in the long term by involving all parties. Researcher Roslizam, Jamilah & Yusof, (2018) also mentioned that a successful organization was an organization that able to build future based on its mound, realized that changes process was complicated and needed long term, had vision and mission and cared towards feedbacks.

6. Conclusion

The predictive model built could be used as a basic guideline for the government to uplift the Malay language as in teaching plan that had been drafted to ensure country teaching system parallel to global modernization (Ezwafahmey, 2018). Government effort as mentioned in Teaching Development Plan 2012-2025 was to provide all students (a) expert in the Malay language, (b) produce Malaysian that appreciate positive attributes, (c) increase quality of educator, and (d) potential leader practice good leadership. These efforts were included in PLC implementation which should be done continuously. This model clearly showed that contributory factors from comprehension, readiness and strategy aspects in PLC implementation had contributed to increasing student’s language learning.

As a conclusion, the implementation of effective PLCs depends on engaging between educators and students at HEI in ongoing conversations about teaching and learning that are directly related to their daily work. For that to happen, the dean, head of department or leaders in HEI’s organization must provide support and feedback and cultivate an atmosphere of sharing and trust, the conditions in which PLCs can thrive. When educators foster these professional learning environments, educators can act on the guidance that fellow educators provide to solve significant issues faced by educators and as a profession.

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Principals' Instructional Leadership Practices in Pakistan Elementary Schools: Perceptions and Implications

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Abstract Purpose: The purpose of this article is to outline the findings of an empirical study, ‘Principals’ instructional leadership practices in Pakistan Elementary schools’. This study aims to explore the instructional leadership practices in elementary schools in Pakistan. This study also intends to examine the conceptualization of instructional leadership within the context of Pakistan. This study categorizes the confines of the existing knowledge established on instructional leadership practices and also for enlightening a preliminary empirical understanding of how principals perceive and ratify their role as instructional leaders in Pakistan. Qualitative research design was used and semi-structured interviews were conducted with 42 elementary school principals in Pakistan. The sample included principals from 14 Government Rural Schools, 14 Government Schools in towns and 14 Government Schools in Urban areas. Initially qualitative data was analyzed inductively and successively coded to generate the findings and conclusions. Outcomes of the study indicated that Pakistani principals overall understood and defined tasks concerning to cultivate instructional practice. Specifically regarding supervision of teachers, how they monitored and evaluated the excellence of teaching and knowledge in their institutions. Data uncovered that more or less obligations and accomplishments related with being principal in Pakistan are mostly compatible with instructional leadership practices even without having the knowledge and recognition of the name of instructional leadership. Above all, monitoring and supervision of teaching and learning combined with leading professional learning were intensely signified in data. There is strong policy desire, delineated in the Pakistan National Education Policy that principals are responsible and answerable for overall improvement in the schools and supposed to be instructional leaders. Evidence indicates principals are ratifying some of the functions related to being an instructional leader but not others. The findings of this study offer some understandings into principals’ instructional leadership practices in Pakistan. It also offers a base for more in-depth investigations that can further increase the knowledge regarding principals’ instructional leadership practices in Pakistan.

Keywords Principal Instructional Leadership, Pakistan Elementary Schools, Students’ Academic Achievement

1. Introduction

It is widely accepted that school leadership is the key factor to enhance school performance (Harris et al., 2019; Fullan, 2007). Internationally, empirical data have acknowledged leadership in organizations as the prime indicator to boost learners’ performance (Day et al., 2008; Leithwood, Harris & Hopkins, 2008).

Educational leadership researches reveal that instructional leadership is one of the influential and persistent themes amongst the leadership attributes in educational organizations. (Hallinger, Wang, & Chen, 2013; Leithwood, Harris & Hopkins, 2008; Hallinger, 2005). Instructional leadership is determined as important and durable leadership model mainly because it has association to its impacts upon school, teachers and student results (Aziz et al., 2015; Leithwood et al., 2008; Hallinger & Heck, 1996). A variety of empirical evidence clearly highlights the quality performance at the school and learner’s learning with instructional leadership (Robinson et al., 2008; Leithwood et al., 2008; Hallinger & Heck, 1996).

Research shows that over the last four decades,
instructional leadership has gradually been implemented worldwide to enhance educational leadership practices (Hallinger & Wang, 2015; Walker & Hallinger, 2015). These practices have impacted positively on the quality of students’ learning and ultimately resulted in school quality improvement. (Harris et al., 2019; Hallinger, 2011; Leithwood et al., 2010; Marks & Prinny, 2003). Researches also have highlighted that one of the factors that have contributed to improving students’ outcomes is school leaders’ behavior (Hallinger, 2011).

The initial development of instructional leadership practices could be traced back to the late 1970s and early 1980s with development of research on evaluations of effective and ineffective inner-city elementary schools in North America. Many research workers conducted different researches to understand the factors that affect student’s accomplishment in different areas like socioeconomic status, racial background and facilities in schools, quality of teaching and many such related parameters of student’s achievements. General leadership and particularly instructional leadership were distinguished as main and vital factors to student success. Instructional leadership was represented and depicted as one element to distinguish between highperforming schools and lowperforming schools (Bamburg & Andrews, 1990; Heck et al., 1991). Instructional leaders set the vision and direction of school instructional practices, coordinate their efforts to improve students’ learning and outcomes (Heck et al., 1991; Bamburg & Andrews, 1990). Effective schools are seen as having shared visualizations, clear teaching goals, academic goals commitment and culture. This cultural convenience is not only for learning but also provides students with high beliefs and norms. (Heck et al., 1991; Hallinger & Murphy, 1985). Instructional leadership provides the foundation for teachers to improve their core functions in teaching and learning, thus enables students to accomplish better performance. In short, goal-oriented instructional leaders could be regarded as the catalyst for cultural change in society.

Bajunid, (1996) recommends that investigators should explore the local practices of successful leadership in the Asian region since they have different values and social cultures. It is pertinent to understand about the Western culture and examine how it could fit with the local practices. Despite the availability of wide-ranging proof about instructional leadership practices, information based on the Asian countries is still limited (Hallinger & Chen, 2015; Hallinger & Bryant, 2013). In many countries, the development of instructional leadership practices is still in the early stages (Harris & Jones, 2015; Hallinger & Walker, 2014). Hallinger, et al., 2018 argued that the knowledge found on instructional leadership is well set up in Western societies. Pragmatic study has just started to appear recently in the continents like Asia, Africa and Latin America. Within the countries in continent Asia, the information about leadership studies and its performance including instructional leadership studies is still scanty (Harris & Jones, 2015; Hallinger & Chen, 2015; Hallinger, 2011; Walker et al, 2005). Worldwide data on instructional leadership studies continue to grow and flourish rapidly, providing evidences from many countries and situations thus giving the signal to explore more on this shortcoming (Hallinger & Bryant, 2013; Abdullah & Kassim, 2011). This study aims to explore the instructional leadership practices in elementary schools in Pakistan. This study also intends to examine what the conceptualization of instructional leadership within the context of Pakistan is. This study explores the instructional leadership practices of the elementary school principals in Pakistan, utilizing the dimensions and functions outlined in PIMRS scale developed following the model of Hallinger and Murphy (1985) and reviewed in Hallinger & Wang (2015).

Information on instructional leadership in Pakistan is gradually increasing over the years, even though the available literature is scanty. Banjunid, (1996) indicated that the understanding of an aboriginal outlook requires real and concrete thoughtful considerate of theoretical foundations of subject which is important. Walker and Hallinger (2015) noted in their several analyses and found that existing literature in the countries like Asia is mostly written in local language or remains unpublished. Indeed, this is true in the case for Pakistan where not many materials on this topic are available (Ali, 2017; Niqab et al., 2014; Khan, 2012). Therefore, there is a need to increase the number of literature to create more awareness about the practices of instructional leadership in Pakistan.

**Context**

Some background information should be considered regarding Pakistan Education policy. Pakistan National Education Policy (2017) that outlines major objectives for considerably increasing and developing presentation in system of education. In the document it is mentioned that all leaders at school level (principals, headmasters, headmistress, vice principals, department heads and the subject teachers) are required to perform their respective leadership functions effectively. It contains organizational leadership matters related to improving institutional performance through activities like strategic planning, curriculum improvement and co-curricular activities plan. It is primarily notable and important that leadership here is as chartered in the country’s Education policy. It includes not only declared duties of principals but expands to those sharing formal leadership priorities in school including all the management from top to bottom. In terms of being a head-teacher or a principal in Pakistan, there are many vital features to be noted. There are many clear and noteworthy differences between education system and policies of leadership in European or American schools with the Asian countries (Harris & Jones, 2015) and Pakistan is of course part of that.
The highest position in Pakistani’s school is school principal which is normally held by the principal before retirement. School principals in Pakistan are usually older in age as compared to other teachers. The selection of head teachers, headmaster, headmistress, subject specialists and principals is consistently based on seniority as well as successive evaluation annually. In Pakistan, in-service training is a serious problem. To produce quality school leaders, professional qualification has been introduced as a national program but still insufficient and even not up to the mark. In the Pakistani system of education, there is another point which is worth to note that all head teachers, principals and teachers in public schools are government servants.

The role of the principal is well-defined and outlined which identifies the clear and exact duties related to their role. These responsibilities mainly the execution of educational programs predetermined and set by Education Ministry. Administration of teaching-learning arrangements, maintaining discipline, direction of all actions like curricular, co-curricular, extra-curricular and supportive connection in the Parent-Teacher Association (PTA) is included. Apart from the principals and head teachers who are vice principals. There are others to carry out leadership functions in schools including senior assistants, senior subject specialists and all directorial staff members. Head teachers and principals are answerable to district authority and the ministry. School leadership has to make sure that with instructional responsibilities they have to fulfill specific set of roles, job descriptions, duties and Key Performance Indicators (KPIs).

Principals in Pakistan have fundamental roles for school modification and improvement. The National Education policy (2017) provides the framework while school leaders are accountable and expected to adhere to the requirements set in the policy. They must be open to new work techniques, involve the public for improving in and out of school, and serve as teachers and mentors to develop the capacities of others. In short, Pakistani Principals are increasingly seen as education leaders, primarily answerable to the ministry on students’ performance, school performance and success implementation of the education system.

2. Materials and Methods

This study was carried out to determine the level of instructional leadership practices of the principals in Pakistani elementary schools. Qualitative research design was used and semi-structured interviews were conducted. The study attempts to disclose the perceptions and opinions of the teachers regarding instructional leadership in Pakistan. Intentions are to increase knowledge basis related to instructional leadership using inductive approach (Strauss & Corbin, 1998).

Interviews were conducted with school principals. Selection of Elementary school principals for current study is based on purposive sampling and their ability to share their experiences knowing that they have rich information about the roles as principal (Mitchell & Castle, 2005; Spillane et al., 2003). 42 elementary school principals were selected from district Muzaffarabad representing all three rural, town and urban settings in the state. Principals in study were dignified as proficient principals by District management also considered as better performing leaders. Furthermore, for this study their lengths of tenure and experience as principals were considered as valuable to answer the relevant questions. Below is the demographic information of the respondents in the study.

| Table 1. Statistics of principals’ demographics (n=42) |
| Demographics | Frequency | Percent% |
| Gender | | |
| Male | 26 | 62 |
| Female | 16 | 38 |
| Age in years | | |
| 36-40 | 04 | 10 |
| 41 - 45 | 14 | 33 |
| 46 - 50 | 08 | 19 |
| 51 – 55 | 10 | 24 |
| Over 55 | 06 | 14 |
| Qualification | | |
| Master degree | 24 | 57 |
| Bachelor’s Degree | 18 | 43 |
| Intermediate | 00 | 00 |
| Tenure as principal | | |
| More than15 years | 00 | 00 |
| 11 - 15 years | 06 | 14 |
| 6 – 10 years | 20 | 48 |
| 1- 5 years | 16 | 38 |

Semi-structured interviews were scheduled during data collection process. Consent forms were filled by all participants before interviews and also ethical procedures were observed, containing assurances of privacy and secrecy. Urdu language translation of interview schedule was prepared and confirmed by native language speakers as certain and perfect translation of the English version. In both languages Urdu and English interviews were conducted. Opportunities were provided to all principals to express and describe how they observed their role. Detailed interpretations of instructional leadership practices were hunted and chances were certain for principals to offer ‘rich narratives’ of their leadership practices, behaviors and engagements.

2.1. Insights

Questions asked were developed based on Hallinger &
Murphy’s PIMRS instrument (Hallinger & Murphy, 1985) and reviewed in (Hallinger & Wang 2015). Conceptual framework integrates and describes in detail three main dimensions: i) Definition of the School Mission, ii) Management of Instructional Program and iii) Promotion of Positive School Climate (Hallinger & Murphy, 1985). Each dimension is comprised of some related functions and is discussed in detail according to the data collected, analyzed and interpreted.

i) Defining the School Mission

School leadership literature meta-analysis endorsed significance of the goals and vision of institute leader’s in obtaining encouraging results (Robinson et al., 2008). The first dimension of instructional leadership ‘Defining the School Mission’ comprises the two functions a) Framing the School Goals and b) Communicating the School Goals. In this function framing the School Goals, principal determines areas of school that will be emphasized and its capitals will be invested during a given year (Hallinger & Wang 2015). In second function communicating the School Goals is linked with how principal communicates and what methods are used to communicate school’s core goals to parents, community, teachers and students (Hallinger & Wang 2015).

Related to (a) Framing School Goals, interviews uncovered that principals were not able to outline clearly about their own vision and objectives for school together with ambitions for its further performance. Their vision and aims are limited to the board results annually. They were not clear about their own goals and prospects. But at the same time regarding officially specified goals and targets of school given to them by District Management and Ministry they were clear and also on track to follow them properly. It was highlighted that Ministry and District management is responsible to determine the formal goals of the school centrally which is also generally limited to the board results majorly and very little about the multi-dimensional grooming of the students.

Ministry of Education along with the district management supervise the school, sets targets and they also try to give us assistance as well. We follow all what they say and all schools have to ensure this as expected. (R1)

Ministry and district management set goals and we accomplish them. (R2)

Second function b) Communicating School Goals: Data in the study revealed that Principals somehow described about the ways how they shared overall objectives with the teachers and students, they don’t have any newsletter or the school web-site but they emphasize to pass students in annual examinations and communicate this goal as well.

My vision is that I want and try that all students to pass examination. If students can’t do this parent will be unhappy and so does the ministry and district management. So we try to convey this main concern with parents. (R3)

Principals interviewed were not clear about their own vision and aspirations for schools but were able to describe and explain about the schools’ official vision and expectations and to communicate properly as well. They were somehow clear about their expectations and what they wanted from the school staff and students particularly about schools’ results. In short, in terms of setting official assignment and vision for schools and communicating it, they need a lot of improvement.

ii) Managing Instructional Program

Second dimension managing the instructional program emphasizes on management and regulation of curriculum and instruction (Hallinger & Wang 2015). There are three functions involved in this dimension: c) Supervising and Evaluating Instruction, d) Monitoring Student Progress and e) Coordinating the Curriculum. Principals while considering this dimension are majorly concerned about ‘handling technical core’ of school (Hallinger & Wang 2015). Principals and also other school leaders are supposed to be involved in administering, monitoring and improving instructions and learning (Hallinger & Wang 2015).

The interviews also discovered that supervising and evaluating instruction and monitoring student progress were the main concern of the principals and they carried out this role continuously. Principals tried to monitor and evaluate teachers seriously and systematically in Pakistan. Teachers and students progress are supposed to be officially assessed and witnessed by principal numerous times in school year. Principals devoted their times to supervise, monitor and evaluate teachers’ performance. In addition, principals provide the necessary support for teachers’ development to enhance students’ achievement.

Official I call teachers four times in a year to witness them. (R 04)

Each month we will monitor teachers. I will take 10, my vice principal will take 05. (R 05)

We witness, then we call and assist them. (R 06)

Each month I do a 25-minute observation of teachers with nominated team and report is submitted to (District office) annually so that they can measure performance of teachers. (R 07)

Principals communicated that along with the proper checking and evaluation of teachers, and they also daily take round by walking around school to notice teacher’s activities specifically about teaching informally as well. This is also a direction by the Education Ministry and district management for principals to take a round of school every day to maintain discipline and observing teaching even allowed to enter classrooms as well. Principals have to obtain general idea of the excellence of instructions in
classrooms and learning progressions by following this process.

Every day I visit classrooms and walk around the school. Teachers are used to it now. I observe some classes every day. (R8)
Sometimes, I walk around and check students’ work. (R9)
I try to ensure my walk around school at least once in a day and usually twice. When walking around I make sure things are in place. I don’t like to see garbage around. I check and ensure that classes are conducted, and teachers are teaching. (R10)
Every morning I walk around the school to check on classes, at least once to ensure teachers go to class on time following their schedule. (R11)

Principals in Pakistan walk round the schools every day for the purpose of formal evaluation of teachers and also for informal as well. Officially this role is given to them. Principals spent time in classrooms for the purpose of observation of teaching. Many principals emphasized that they were able to measure nature and quality of learning process and teaching through this walk in the school.

I gather suggestions regarding curriculum inside school time to time and pass it to higher management. (R12)
Same like all government school in Pakistan, I have one Vice principals supporting me in my day-to-day job and section in charges of primary and middle level. (R13)

There was little indication in data of principal’s opinion regarding their direct involvement with teachers about curriculum matters. The majority of principals in Pakistan have vice principals and also section heads who look after curriculum matters and are responsible for that.

I leave curriculum to vice-principals and section heads; they report as and when necessary (R14)

iii) Developing Positive School Climate

The third dimension comprises five functions: f) Instructional Time Protection, g) Professional Development, h) Maintaining High Visibility, i) Provision of Incentives for Teachers and j) Provision of Incentives for Learning. This third and final dimension of model is comprehensive in range and somewhere somehow overlaps second dimension as well (Hallinger & Wang, 2015).

Third dimension with its five functions emphasizes that in effective schools’ development there is always a belief of continuous expansion through a persistent focus on improvement of direct teaching in classrooms and learning. Inferring and demonstrating data, principals in Pakistan are not directly responsible for protecting instructional time but they help their teachers to do so by helping them multidimensional ways like reducing extra burden by division of proper workload and also by avoiding co-curricular or other activities during class times.

In terms of providing incentives for teachers and providing learning incentives, although school incomes are allotted centrally even then data indicated many examples, where staff and students were rewarded by principals by inventing creative ways i.e. through gifts, trips, certificates or free time. These practices were though different one to other principals.

I used to get involved with local community for gifts sponsorship for teachers as an incentive for exceptional teaching and also for long services if required. Teachers are encouraged when they are respected and acknowledged. (R15)

I try to explore ways to give incentive to teachers and rejoice their achievement. (R16)
In standings with upholding high visibility around the school, data discovered that monitoring visits of principals and day-to-day rounds of walk reflected to be the topmost technique for the accomplishment of certain goals.

Daily walks exhibited ‘that head teacher is attentive and always accessible to staff and students’. (R17)

Principals in Pakistan are not entirely responsible for promoting professional education, improvement of teachers and also this has no reflection in key performance indicators. But data disclosed that principals supported professional development and well indicated in data by sending them in different subject based on trainings and other general trainings related to teaching and learnings. Moreover, further studies of staff members were also appreciated by principals. Therefore, it can be concluded principals take this responsibility seriously to ensure professional development.

Every year and sometimes twice in a year training is organized centrally. All teachers are supposed to attend. Teachers acquire fresh knowledge, for the reason to motivate them. (R18)
I also train teachers and sometimes through other consultants. For the reason that as Head, you need to be well-informed. Certainly, I cannot be expert in everything. I am not a teacher of all subjects, but I can monitor all. (R19)
Training workshops planned by the Ministry that are obligatory, teacher do attend them all. But in line to stress of wanting to uphold or increase our standings teachers are constantly so dedicated on covering syllabus and getting students to pass exams,
occasionally they are not concerned to go for training. (R 20)
The data from study endorses that in relationship to professional development and leading professional learning principals may well be viewed as active instructional leaders.

3. Conclusion

This was a small scale study and limitations of the study are obvious and considered. On the basis of data collected and interpreted Pakistani Principals are instructional leaders in many areas even if they didn’t encounter with the terminology of instructional leadership but the practices they carry out in schools mostly subscribe to the model of Hallinger & Murphy (1985). Principals recurrently commence monitoring and evaluation of teaching. Focus on professional development of educators is considered actively. The interviews indicated that principals engage teachers in suitable and appropriate professional learning that ultimately paybacks to school improvement. Although they didn’t established active goals but very efficiently followed the official goals set by the ministry and district management as prime part of leadership obligation. Principals encountered some concerns in their present leadership roles. These concerns were related to issues on collectivism and collegiality versus compliance and control. Principals were of the opinion that they were under huge pressure of personal obligation and accountability for school enactment from the Ministry through district management.

I essentially need to produce worthy results that are integral part of job and I have no other choice. Normally a day is occupied for many responsibilities. (R21)
Principal is entirely accountable for the overall performance of the schools. It is an obligation. (R 22)
School results will affect the head teacher. Teachers are not to be blamed, but the headmasters will be blamed. Good or bad the head teacher is accountable. (R 23)
Ministry through district management desires us to follow set rules and regulations, which means we need to follow SOPs and cannot deviate from the guidelines and directions. (R 24)
Principals in Pakistan are not autonomous but are supposed to follow set standards, and implementation entirely is based on expectations from the policy. (R 25)
I just do my work. My administration style is receptive. (R 26)
I do not act as superior. I used to be welcoming with all staff members because when we are companions we can acquire better. (R 27)
Beyond all I need harmony in school. My struggle is to attain team work so that teachers realize and remain motivated. (R28)

Above all, it can be said that principals interviewed in the study gave a strong commitment to improve school performance through instructional leadership practices as expected by Ministry and District management.

3.1. Implications

The following is recommendations intending to inform future researchers that similarly investigate on the basis of small-scale exploratory studies about instructional leadership. Further in depth and more evidently empirical study is required to test investigative findings, primarily in relation to issues and the applied depiction of instructional leadership in Pakistani perspective. It is worth conceivable that at supplementary leadership stages within the school, further instances of authentic instructional leadership can be seen and reconnoitered, therefore it is proposed and worth examining and exploring in future empirical studies. In summary, study gives clear indication of the fact that Pakistani principals are expected to play their roles in instructional leadership. Instructional leadership is regarded as part of principal’s routine task, in line with other duties that are expected from them.

Another implication is related to the context and cultural practices of instructional leadership to be implemented beyond cultural boundaries (Harris & Jones, 2015). Previous investigations suggested some primary leadership practices to go beyond cultural borders (Leithwood et al., 2008). There are also indications from previous explorations displaying that leadership activities of principals’ behaviors are in cultural terms and also contextually certain (Harris & Jones, 2015; Hallinger, 2016). As far as Pakistan is concerned, description of role and anticipations charted out by Ministry of Education and District management play enormous part in in what way principals will be viewed and determine their role. Pakistani principals' leadership accomplishments are currently influenced by the instructions in the job description. For that reason to nurture deep, realistic and comprehensive instructional leadership across Pakistan principals will require some transformation. To begin with reducing in repetitive managerial responsibilities that almost all principals around Pakistan carry out on a day-to-day basis may well provide additional time to emphasize on instructional growth. Moreover, in Pakistan roles and responsibilities are supposed to be redefined by keeping in view the globally recognized instructional leadership. Literature available locally in Pakistan although is very little and the understanding of instructional leadership generally and particularly regarding the model of (Hallinger & Murphy, 1985) is insufficient. Despite of the fact findings of current study propose that principals in Pakistan are ratifying numerous functions of the instructional leadership. Principals are enthusiastically practicing instructional leadership practices following the Hallinger & Murphy’s instructional leadership model. The challenge is to educate all principals in Pakistan regarding widespread aspects of instructional...
leadership and to ensure all practices completely contribute directly to school and system improvement.

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Teachers' Readiness in Implementing and Facilitating 21st Century Learning

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Abstract In this technological world, pedagogy has changed in terms of strategy, approach, method and technique. The majority of teachers have limited been exposed to the 21st century teaching and learning strategy and as a result they are still struggling in mastering it. This study was conducted to identify the readiness of teachers towards the 21st Century teaching and learning specifically from the aspect of knowledge, skills and attitudes. A total of 77 language teachers at 15 national secondary schools in Penang were selected as respondents. The data were obtained through a questionnaire which included three aspects of readiness, which are knowledge, skills and attitudes of language teachers. Data were analysed using Statistical Package for Social Sciences (SPSS) version 22.0. The findings show that average mean of knowledge level (min = 4.06, SP = .396) and skills level of Language teachers (min = 3.70, SP = .377) toward 21st century teaching and learning are at high level. In terms of the attitude of Language teachers, the results showed that the mean of attitude was at a positive level (min = 3.77, SP = .390). In addition, the findings showed that there was a significant positive correlation between knowledge with skills (r = .619), knowledge with attitude (r = .601) and skill with attitude (r = .673).

Keywords Teacher Readiness, 21st Century Teaching and Learning, Knowledge, Skill and Attitude

1. Introduction

In this rapid development era, the Malaysian education system has undergone a change and needs to be transformed in order to achieve the goal of the National Education Philosophy. 21st century education had already been implemented in our country to produce a balanced human capital in physical, emotional, spiritual, intellectual and social series. Partnership for 21st Century learning (P21) which is based on Washington devised, a 21st Century learning concept. P21 (2015) emphasizes that 21st Century learning is the process of applying skills across content and learning competence based on approaches. 21st Century learning is also a process that emphasizes student-centered learning in the production of holistic students (Buletin Anjakan Bil. 5/2015, KPM).

21st Century education focuses on two key aspects which are student-centered learning and 21st century skills (KPM, 2017). The goal of 21st Century learning and facilitating is to produce skilled, productive and capable generation as the leader of the nation. It is undeniable that the 21st Century learning is different compared to the past learning. According to Buletin Anjakan Bil. 4/2015, the most significant difference is that the 21st Century learning is centralized and non-teacher-centered. Additionally, 21st Century learning goals are to learn for life in more practical approach. Furthermore, students also experienced the real situations with problems based on activities through the 21st Century learning in the classroom. The application of various strategies and activities is also one of the key aspects of student learning in the 21st Century learning. Among them include high thinking skills, communication skills, and collaborative skills. 21st Century learning emphasizes more on a group collaboration in order to exchange and share their opinions and ideas. In this regard, the readiness of Language teachers in implementing 21st Century learning and facilitating students is essential in creating an active and effective and interactive environment. Teachers’ quality will determine the effectiveness of students in knowledge learning (Buletin Anjakan Bil. 5/2015, KPM).

The 21st Century learning and facilitating is aimed to produce a balanced, harmonious, physical, emotional, spiritual and intellectual human who is in accordance with the National Education Philosophy. Challenges faced by
educators today are the changing of educational pedagogy either in terms of learning and facilitating strategy, approach, method or technique in the classroom. Currently, most scholars claim that language teachers are less likely to implement the 21st Century learning and facilitating (Suzlina Baharuddin & Badusah, 2016, Yahya Othman & Roselan Baki, 2015). This is because language teachers are less exposed to the concept of 21st Century learning and how to facilitate students. This causes the teachers not to diversify the teaching approach in the classroom. Therefore, the lack of knowledge and skills towards the concept has led teachers not to do so (Sandra Rahman, Abu Bakar Nordin & Norlidah Alias, 2013). In brief, the readiness of Language teachers towards the 21st Century learning and facilitating is essential to improve the successes and effectiveness of student learning.

1.1. Research Objective

The general objective of this study is to identify the readiness of Language teachers that are teaching at Seberang Perai Selatan, Penang National High School in the process of 21st Century learning and facilitating in the classroom. Specific objectives in this study are:

1. Identify the level of knowledge of Language teachers towards the 21st Century learning and facilitating.
2. Identify the existing skill level of Language teachers in the 21st Century learning and facilitating.
3. Identify the attitude of Language teachers towards the 21st Century learning and facilitating.
4. Identify the relationship between knowledge, skills and attitude of Language teachers in the 21st Century learning and facilitating.

1.2. Research Questions

Research questions are:

1. What is the teacher's knowledge level towards the 21st Century learning and facilitating at National High School in the SPS area?
2. What is the level of existing skills of Language teachers in the 21st Century learning and facilitating at National High School in the SPS area?
3. What is the attitude of Language teacher towards 21st Century learning and facilitating at National High School in the SPS area?
4. What is the relationship between the knowledge, skills and attitude of Language teachers towards the 21st Century learning and facilitating?

2. Teacher Readiness

21st Century learning and facilitation is a student-centred learning and the application of multiple skills. Some of the teaching approaches include the application of high level thinking skills, the use of information technology, and project-based learning. The appropriateness of the teaching strategies contributed a high impact on a meaningful learning in the classroom. Therefore, teachers' preparation of knowledge, skill and attitude towards the 21st Century teaching is extremely crucial and should take into account.

Norabeerah, Halimah & Azlina (2012) studied the competency of 118 teachers in the Federal Territory of Putrajaya. The results showed that the level of knowledge and understanding of the application of thinking skills in teaching is at a moderate level. On the other hand, Nor Hasmaliza Hasan & Zamri Mahamod (2016) studied 226 teachers' perceptions on the application of thinking skill strategies, indicating that the level of teachers’ knowledge is at a moderate level.

In addition to thinking-based learning, the use of information technology is also considered as one of the 21st century teaching and facilitating strategies. Maimon Aqsha Lubis, Nurul Syuhada & Mohd Isa Hamzah (2017) study on teacher readiness for multimedia use in teaching shows that teachers' knowledge level is at a high level. This shows that language teachers know how to convey teaching using computers and software. In line with above research, study by Suzlina Baharuddin & Jamaluddin Badusah (2016) related to knowledge, skills and attitude of Malay Language teachers in Web 2.0. application, found teachers having a high level of knowledge about internet usage teaching strategies.

However, study by Yahya Othman & Roselan Baki (2015) on the application of computers in the Hulu Langat, Selangor school district found that teachers hardly use the computers in teaching. Like what Simah Mamat (2017) mentions about the relationship between the level of ICT skills of 297 language teachers and the use of information and communication technology skills of teachers is at a moderate level.

Halimah Badioze Zaman & Azlina (2012) conducted a study on the awareness level of 44 teachers on the use of Augmented Reality (AR) in teaching Malay Language showing that teachers are at positive perception of the appropriateness use of AR in teaching. Siti Zabedah Ab. Ghani (2002) also made a study of teachers' attitudes towards language skills teaching. The results show that they have a positive attitude towards the use of information technology skills in the implementation of stimulus variation.

In conclusion, many studies have shown the skill level of language teachers is at a moderate level despite being positive and optimistic about those techniques that are constantly changing.
3. Methodology

3.1. Research Design

This study used a quantitative survey design. According to Chua, Y. P. (2011), survey research is a method often used by researchers, especially in the field of social science. The function of the survey research is to describe and forecast the current phenomenon (Khalid Johari, 2003).

The survey was conducted to examine the readiness of Language teachers in 21st Century learning and facilitating in the National High School district of Seberang Perai Selatan. This study was started with the selection of respondent. Subsequently, the researcher distributed the questionnaires to the respondents of the study. Then, the data collected were analyzed through the Statistical Package for Social Sciences (SPSS) version 22.

3.2. Sampling

The population is an individual group or unit of interest that has the same characteristics (Hanlon, B. & Larget, B., 2011). The population selected in the study was the teachers of Malay Language who teach in national high schools. This study used a non-probability sampling method in selecting the respondents of the study, which is a purposive sampling. According to Wiersma, W. (1991), purposive sampling is the selection of individual groups based on the characteristics associated with the study problem. Related to that, this study focuses on 77 Language teachers who teach at 15 National High School district of Seberang Perai Selatan, Penang.

3.3. Instrument

The research instrument used in this study is a questionnaire. The researcher was able to identify the readiness of language teachers towards the implementation of 21st Century learning and facilitating in National High School district of Seberang Perai Selatan through the distribution of questionnaires. The questionnaire consists of four parts: part A (demography information), part B (Knowledge), C (Skills) and D (Attitude). The Likert-5 scale has been applied in the measurement to make it easier for respondents in responding and having higher reliability (Chua, Y. P., 2011).

3.4. Data Analysis

The respondents included 77 teachers who teach Malay Language subjects in a high school. Before conducting research, the instrument contents were verified and had a high reliability value of .932. The data collected were analyzed using Statistical Package for Social Sciences (SPSS). Descriptive analysis and inference analysis have been applied in this study to explain the findings.

4. Research Findings

The findings of the study showed that the level of readiness of secondary school Language teachers to implement 21st Century learning and facilitating was at a high level (M = 3.84). Besides that, this study also indicated the result in three aspects of knowledge, skills and attitude of Language teachers.

4.1. Teachers’ Knowledge toward 21st Century Learning & Facilitating

Based on Table 1, the findings showed that the knowledge level of the Language teachers in whole research was at a high level with mean 4.06 (SD = .396). Item B4 'PAK21 is a student-centered, material and activity teaching that gets the highest mean in this study (min = 4.43, SD = .498). While B18 item 'teaching aids such as puppets can attract students' learning ', which gets the lowest mean (M = 3.86, SD = .738). In conclusion, this study shows that language teachers have a high knowledge level in 21st Century learning and facilitating.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Mean</td>
<td>4.43</td>
<td>.498</td>
<td>Very high</td>
</tr>
<tr>
<td>B4. PAK21 is a student-centered, material and activity teaching.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest Mean</td>
<td>3.86</td>
<td>.738</td>
<td>High</td>
</tr>
<tr>
<td>B18. Teaching materials such as puppets can attract students to learning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>4.06</td>
<td>.396</td>
<td>High</td>
</tr>
</tbody>
</table>

4.2. Teachers’ Skills toward 21st Century Learning & Facilitating

Table 2 showed the summary findings of the language teachers’ skills towards the 21st Century learning and facilitating. This study found that the skill level of language teachers towards the 21st Century learning and facilitating was at a high level (M = 3.70, SD = .377). The results indicated that the skill level of guiding and assisting of Language teachers was high with the highest mean (M = 3.92). On the other hand, the level of information technology skills is at a moderate level even with the lowest mean. In brief, language teachers have a high level of skill in the 21st Century learning and facilitating.
Table 2. Teachers’ skills toward 21st Century Learning & Facilitating.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C20. I was able to guide and help students that are poor in learning.</td>
<td>3.92</td>
<td>.532</td>
<td>High</td>
</tr>
<tr>
<td>Lowest Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C16. I’m good at using computers in implementing PAK21 in the classroom.</td>
<td>3.44</td>
<td>.819</td>
<td>Moderate</td>
</tr>
<tr>
<td>Overall</td>
<td>3.70</td>
<td>.377</td>
<td>High</td>
</tr>
</tbody>
</table>

4.3. Language teacher’s Attitude towards 21st Century Learning & Facilitating

Based on Table 3, this study indicated that Language teachers respond positively to 21st Century learning and facilitating. The findings showed that language teachers agree with item D10 ‘I believe that my willingness and ability to implement learning and facilitating are important (Mean = 4.04, SD = .443).

Table 3. Language Teachers Attitude towards 21st Century Learning & Facilitating.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D10. I believe that my willingness and ability to implement learning and facilitating is important.</td>
<td>4.04</td>
<td>.443</td>
<td>Very Positive</td>
</tr>
<tr>
<td>Lowest Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D8. I believe the implementation of 21st learning can improve student academic achievement.</td>
<td>3.65</td>
<td>.774</td>
<td>Positive</td>
</tr>
<tr>
<td>Overall</td>
<td>3.77</td>
<td>.390</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Furthermore, the language teachers are also positive to the statement of ‘implementation of the 21st Century learning, which can improve the students' academic achievement’ despite with the lowest mean. This could be concluded that language teachers are positively agreed towards the implementation of 21st Century in learning and facilitating.

4.4. Relationship between Knowledge, Skill and Attitude

Table 4 shows the results of the study on the relationship between knowledge, skills and attitude of language teachers towards the 21st Century learning and facilitating. Pearson's correlation analysis shows that there is a significant positive relationship between the knowledge, skills and attitude of Malay teachers towards the 21st Century learning and facilitating with a moderate relationship (Connolly & Sluckin, 1971).

Table 4. Relationship between Knowledge, Skills and Attitudes

<table>
<thead>
<tr>
<th>Mean of Skills (Correlation coefficient, r)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean of Knowledge</td>
<td>.619**</td>
</tr>
<tr>
<td>Mean of Attitude</td>
<td>.601**</td>
</tr>
</tbody>
</table>

** is significant at the 0.01 level

5. Discussion

5.1. Teachers’ Knowledge

The findings show that the level of Language teachers' knowledge in 'PAK21 is a student-centered, material and activity teaching' that was at a high level. This result is consistent with the study of Norliza Brahim (2012) which shows the concept of project-based learning as a student-centered learning method at a high level. In addition, the item 'Teaching materials such as puppets can attract pupils in learning' was at a high level. Study of Masroha Sepian (2010) also shows that 88% of teachers agree that the use of compact discs as a material can produce fun learning atmosphere. Finally, a high level of knowledge can improve readiness and ensure the quality of teaching Language teachers in schools.

5.2. Teacher’ Skills

This study demonstrates the level of skill in guiding and assisting of Language teachers is high. The results of this study are not consistent with the study conducted by Norliza Brahim (2012) which demonstrates the moderate skills of guiding and assisting teachers in project-based learning. Meanwhile, the use of information technology level in Language teachers in this study is moderate. This finding is consistent with the study of Simah Mamat (2017) which shows that level of Language teachers in using information technology in the process of learning and facilitating is moderate. In conclusion, Language teachers need to understand and master the 21st century skills to deliver effective teaching to students.
5.3. Teacher’s Attitude

The findings of this study indicate that Language teachers negatively respond to the statement 'Lack of time in implementing the 21st Century learning and facilitating'. The results of the study were in accordance with the study of Norliza Hj Brahim (2012) which showed that 73.8% of Language teachers stated that they did not have enough time to implement PBL in the classroom. Meanwhile, Language teachers are be positive toward the item 'I believe implementation of 21st Century learning can improve student academic achievement' despite the lowest mean. The findings of this study are consistent with research of Syed Kamal Azira Syed Mohamad Zain (2015) which shows that Language teachers are confident that the use of ICT can improve student academic achievement being at high level. In short, teachers need to change and accept the changes that take place in a positive attitude.

5.4. Relationship between Knowledge, Skill and Attitude

The result of this study shows that there is a significant positive relationship between the knowledge, skills and attitude of Language teachers towards the 21st Century learning and facilitating and a moderate relationship. The findings of this study were consistent with the results of the study of Norliza Brahim (2012) which showed moderate positive significant relationship between the three variables.

6. Conclusion

In conclusion, the readiness of language teachers is very important in implementing the 21st Century learning and facilitating to create an active and fun learning environment. This is because the teacher plays an important role in the realization of the educational transformation desired by the Ministry of Education. In addition, the findings of the study shows that knowledge, skills and attitude of teachers are very important and influence each other in increasing readiness. Therefore, Language teachers should always be prepared to improve their quality with the development and change of times.

REFERENCES


Review of the Importance of Technological Pedagogical Content Knowledge in Teaching Reading Skills

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Abstract  Malay Language subject is a medium of instruction at primary, secondary and tertiary levels in Malaysia education system. In learning and teaching of Malay Language as a formal language, students need to master the four skills of listening, speaking, reading and writing since elementary school. Though reading is an important skill that is able to improve learning motivation as well as language competency, the teaching approach for this skill is always far behind interactive and effective move. In order to facilitate the reading skills according to the need and interests of the present generation, the Malay Language teacher need to master (TPCK). To create an effective learning environment which is more fun and engaging or to enhance the creativity, innovation and stimulation of students related to reading skills it is essential and necessary for teachers to master the Technology Pedagogical Content Knowledge (TPCK) in order to create an effective learning environment which is more fun and engaging to enhance the creativity, innovation and stimulation of students. Therefore, review of information and disclosure of experiences related to TPCK in reading skills is essential and necessary as a reference material for the relevant parties.

Keywords  Technological Pedagogical Content Knowledge (TPCK), Effective Learning, Reading Skills and Education

1. Introduction

Reading skills are one of the components in teaching and learning of Malay Language as stated in the curriculums of schools in Malaysia. Reading is very important in the process of enhancing knowledge and improving the quality of one's learning. The minds and knowledge of people who are constantly reading will grow, be more open and understanding. According to Tamam, Zamri, Nik Mohd. Rahimi, & Jamaluddin (2010); Yahya & Maszuraimah (2013), a study on reading processes is important to help students in increasing their knowledge. Reading also can develop knowledgeable and insightful generation. Therefore, literate society can make knowledge as a living platform.

Technological Pedagogical Content Knowledge (TPCK) is a theory design which has been introduced by (Koehler & Mishra, 2009). Basically, TPCK is knowledge of technology-related technology integration that must be balanced between content knowledge, pedagogical knowledge, and technology knowledge. The idea is derived from the concept of Content Pedagogical Knowledge (PCK) by Lee Shulman in year 1986 (Hashweh, 2014). Knowledge Relations Content pedagogy technology is also best used in language teaching because of its uniqueness.

2. Reading Skills in Education

Reading is a power to interpret and translate letters, words, and sentences into meaning (Serravallo, 2015). Meanwhile, Beers & Probst, (2012) and Beltramo & Stillman, (2015) have stated that there is a difference between speaking and reading, which means that speaking is the ability to hear words and reading is the ability to understand words. If reader only says the word, it is not considered to read completely until he or she understands what it is. Once a reader can translate the word into meaning, it is considered reading (Nelson, 2019).

Implementation of teaching under the Primary School Curriculum (KSSR) is a benchmark of 21st century education effectiveness as envisaged by the Ministry of Education since 2014, which is in line with the transformation of national education stated in the Malaysia Education Development Plan (2014-2025). The Education Ministry has positioned internet as important medium to aid knowledge exploration in the era of information-based information explosion.
Hence, teachers play a huge role to improve students' language skills. According to Wong & Nur Ain Elzira, (2018) language skills are fundamental and must be emphasized during the process of learning and facilitating (PdPc) in the classroom. As curriculum implementation agents, teachers need to be concerned with the objectives of current curriculum to enable the ministry of education to achieve its goals in educating the students with technology. This is line with The National Education Philosophy (FPK) which aims to develop students’ individual potential of students as a whole and integrated physically, emotionally, spiritually and intellectually.

In language teaching and learning, listening, speaking, reading, and writing are skills that must be practiced (Kern, 2006). But, cross-curricular skills also have been emphasized in the Primary School Curriculum (KSSR) to enhance students' knowledge and self-esteem. The use of information technology is one of the cross-curricular skills that has been applied in the teaching of Malay language (Ministry of Education, 2015). In order to finish that, Malaysia Education Development Plan 2015-2025 has outlined three waves of Information and Communications Technology (ICT) in education. The First Wave (2013-2015) is to enhance the ICT base, where efforts are made to ensure that the basic ICT infrastructure and competencies are always available throughout the system, and not tied to any specific technology platform. This is to ensure that students and teachers have adequate access to ICT equipment, providing education system with sufficient learning platforms, and broadband networks and all teachers are competent in ICT (Radha, Noorizah, Kemboja, & Shahirah, 2017). Meanwhile, the Second Wave (2016-2020) is introduction of innovation in ICT.

The basis of innovation in education must be emphasized in shaping a progressive and innovative education system to drive change and progress (Noraini, Hani, Mahizer, Mohd, & Norazilawati, 2013). Innovation in education only succeeds if teachers are skilled and able to use the application in the teaching and learning process (PdPc). ICT is important to support teaching innovation. This issue has been explained through several other studies, so more attention is given to the role of teachers in technology integration, but technological knowledge alone is not sufficient to enable a teacher to master technology integration in the learning environment (Abbitt, 2011; Eady & Lockyer, 2013; Ozudogru, 2019). The 2013-2025 PPPM clearly states that Malaysia Ministry of Education (KPM) is exploring a range of innovations, particularly in terms of distance learning and self-directed learning that can be used to expand access to high quality teaching irrespective of the skill level or location of students. To address innovation in teaching and learning, teachers need to master the ever-changing technology and improve their knowledge. Teachers also need to practice culture such as reading and thinking during the PdPc proces (Yahya & Lailinanita, 2012).

3. Technological Pedagogical Content Knowledge (TPCK)

Technological Pedagogical Content Knowledge (TPCK) has been introduced by Mishra and Koehler (2006) based on the idea of content pedagogical content knowledge (PPK) by Shulman (1986). The PPK model introduced by Shulman (1986) has a component of content pedagogy and he stated that the content of a subject cannot be separated from pedagogy. Shulman, (1986) also emphasized that teachers need to master knowledge related to the subject matter and have pedagogical skills. Pedagogical components are the process and method of teaching and learning, while content component is the content of the subject in the syllabus which is being taught or learned (Eady & Lockyer, 2013).

Mishra and Matthew J. Koehler are the developers of TPCK framework (Mishra & Koehler, 2006). This theoretical framework involves three types of knowledge namely technology, pedagogy and content. All three knowledges are combined and form a new knowledge which is content technological pedagogical knowledge (TPCK). The basis for effective teaching by using technology requires the teacher's understanding to use appropriate technology, approaches and teaching techniques to convey the content of the lesson as well as students' existing knowledge. Researchers such as Aguinaldo, (2012); Atasoy & Aygün, (2016); Cherner & Smith, (2017); Norhiza, Zamri, & Wan Muna Razana, (2016) and; Papanikolaou, Makri, & Roussos, (2017) have argued that TPCK strives to address the complex nature, form, and knowledge of teachers involving content knowledge, pedagogy, and technology.

As a conclusion, there are seven constructs in the TPCK framework resulting from the complex interaction between three main knowledge constructs namely Content Knowledge (PK), Pedagogical Knowledge (PP) and Technology Knowledge (PT). The interaction of these three knowledges forms the other knowledge within the framework of the TPCK, namely Content Pedagogical Content (CPC), Pedagogical Technological Knowledge (PTK), Content Technological Knowledge (CTK) and Technological Pedagogical Content Knowledge (TPCK).

4. The Importance of TPCK in Teaching the Reading Skills

Koehler, Mishra, & Cain, (2013) defined technology knowledge as a wide range of technologies from low level such as pencil and paper, to digital technologies such as internet, interactive whiteboards, digital video, and program software. Furthermore, technology integration in teaching can enhance cooperative learning, curriculum integration, diversify learning strategies and styles, and improve teacher communication, community relations and

Studies on mobile learning also have received much attention and debate from many researchers. Most studies are conducted at the tertiary and secondary levels, and more focused on perceptions (Hwang & Tsai, 2011). Saipunidzam et al, (2012) conducted a study which focused on application design for teaching Malay Language, but the application is still a temporary concept. While, study by Nuraihan and Zamnah (2012) showed that reading comprehension exercises delivered to mobile phones can improve student reading performance in Malay Language. The results of pre and post tests showed that overall student performance was better than others (Rosnani & Nor Mashila, 2017).

In addition to mobile learning facilities, the internet also allows users to access more reading material without needs to spend a lot of money to buy printed material. Access to unlimited information enables extensive reading. According to Tanaka & Stapleton (2007), widespread reading refers to large numbers of casual language readings by focusing on quantity rather than quality. This means that the method focuses more on the meaning of language rather than on language (Tran, 2006). These activities can help to improve the vocabulary and structure of one's language (Shen, 2008).

Knowledge of pedagogy is an in-depth knowledge of the process of teaching and learning including the purpose and value of education (Harris et.al.2007). Shulman (1987) pedagogical knowledge refers to knowledge of teaching principles and methods, which includes of classroom teaching and learning such as approaches, methods and techniques, strategies, curriculums and syllabus, testing and assessment, and recovery and enrichment. While Koehler and Mishra (2009) defined pedagogical knowledge about teaching methods and processes and involved the knowledge of classroom management, assessment, lesson plan development, and student learning environment.

Today's education demands that all teachers need to possess a wide range of pedagogical knowledge, skills, and attitudes. Whoever entitled as a teacher needs to provide themselves with knowledge, positive personality and effective teaching methods or pedagogical skills to attract students to learn. Every teacher must experience the most difficult part of the learning and preparation process (PdPe). A successful and effective teacher is a teacher with deep expertise in the field or subject taught (Zamri Mahamod, 2014).

Mishra and Koehler (2006); and Bonner (2001) have stated that pedagogical knowledge is a ‘belief and perception that influence the implementation of the curriculum, and reflect the teaching strategies used by teachers to implement the teaching. Teachers who do not have pedagogical knowledge may not be satisfied with their career because some of the factors that contribute to success teaching depend on pedagogical knowledge (Padmavathi, 2017; Blackwell, Lauricella & Wartella, 2016; Abdul Halim, 2014; Abd. Shatar, 2007; Schempp, Manross & Tan, 1998). Therefore, teachers are said to be more comfortable and enthusiastic in teaching the students their specialty because they are able to tailor the pedagogical knowledge by the variety of students' abilities and interests in related subject or to teacher teaching (Shulman, 1986).

Shulman, (1986) also argued that content knowledge is an understanding of subject as a discipline. He explained that content knowledge is a knowledge structure that incorporates the theories, concepts, and principles of a learning discipline or subject. Theories, concepts and principles are different from the elementary learning discipline, or the discipline of mathematics subjects is different from the language learning discipline. Therefore, to teach a subject, teachers need to have good and up-to-dated content knowledge (Koehler, Greenhalgh, Rosenberg & Keenan, 2017; Chernner & Smith, 2016; Abd Shatar, 2007; Yusminah, 2004).

Besides, content knowledge is a construct which represents an element that describes the aspects of teacher's understanding on the teaching subject before translating it into a classroom teaching and learning activity (Muhammad Hafizan & Anuar, 2017). Based on this statement, mastery of content knowledge also means that teachers need to master and have a good grasp of the topics to be taught before devising methods to present them to students (Hlas & Hildebrandf, 2010) to ensure accuracy of facts and clarity of content delivered on objective built-in learning.

According to Norashihilah et al. (2013), the PCK approach requires teachers to deeply understand the concept of the subject’s content which is taught. Shulman (1986) also emphasized that a teacher must clearly understand what he or she is teaching, and comprehend the reasons and facts behind what he or she is teaching. Teachers' understanding towards teaching knowledge areas is the most important aspect (Magdeline & Zamri, 2014) in teaching and learning process because mastery of content knowledge is a reflection of how a teacher influences the content of lesson in a way that students can easily understand (Muhammad Hafizan & Anuar, 2017).

Therefore, it can be concluded that content knowledge is the knowledge, information or mastery of the subject’s content that he or she is teaching. The degree of mastery or depth of knowledge about the content of a subject is the most valuable and fundamental asset that every teacher in the teaching profession shall possess. The success of a teacher in producing quality teaching can be measured by
the possessed content knowledge because the mastery level of content knowledge is often distinguished by the effectiveness of teaching although similar teaching methods and strategies are used.

TPCK is a very important knowledge that requires all teachers to master it to teach effectively. This is because the TPCK is often linked to the ability and effectiveness of teachers in delivering the teaching content to students, and can be comprehended easily. Furthermore, teaching reading skills will be fun, engaging, enhance student creativity and innovation, and stimulate student learning. This is similar to Mishra and Koehler's (2006, 2008) opinion who stated that content technology knowledge is a pedagogical understanding of technology assisted teaching and teaching effectiveness based on a good understanding of the content of the subject.

5. Conclusions

Teachers with high level of knowledge are asset to the country in fulfilling the Ministry of Education's desire to strengthen the national education system into world class education. By mastering the teacher pedagogical content technology will determine the quality of teaching and directly influence the outcome of teaching. It can be concluded that teachers who master the content of Content Pedagogy Technology will be able to teach reading skills more effectively as the government suggests compared to teachers who do not have content pedagogical technology. Teacher exploration in Technological Pedagogical Content Knowledge (TPCK) consists of Technology Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), Content Pedagogical Knowledge (CPK), Content Technology Knowledge (CTK), and Pedagogical Technology Knowledge (PTK). These elements will contribute in enhancing teacher’s innovation and creativity.

REFERENCES


Teacher Communication in Teaching \textit{Al-Quran} to Special Needs Pupils with Hearing Disabilities

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Abstract People with hearing disabilities especially pupils with special needs have their own form of communication. The learning of the \textit{Al-Quran}, which is one of the components in Islamic Education, focuses on three main aspects: reading, memorization and comprehension. Since the level of hearing and speech impairment of the pupils with special needs are limited, it is essential that the communication aspect in teaching should be taken into the teachers' consideration. The objective of this study is to explain the form of communication used by the hearing impaired in Malaysia as well as the method of communication used by teachers in teaching them the \textit{Al-Quran}. This study utilized the qualitative approach in the form of a case study, using the interview technique and document analysis to obtain data. This study also utilized the model of communication presented by Bernice Burnip in Louise Porter. Some of the findings showed there were inconsistencies in the teachers’ communication in delivering the \textit{Al-Quran} to the pupils. Lack of proper codes or signs in studying the \textit{Al-Quran} was one of the reasons for lack of communication between the teachers and pupils with hearing impairment. Hence, an appropriate and effective communication system should be studied so that pupils with hearing disabilities are not being left behind in learning the \textit{Al-Quran}.

Keywords Communication System, Pupils with Special Needs, Hearing Disabilities, \textit{Al-Quran}

1. Introduction

The language needs of the hearing impaired are as important as the language needs of normal children. Everyone needs language to convey one’s intentions and feelings, despite the obvious differences between verbal and non-verbal communications. Sign language is the first language of deaf people formed by the deaf people themselves for the purpose of communication among themselves. This sign language is a visual and movement-oriented communication system. The deaf people in the United States use American Sign Language (ASL) to communicate (Grushkin, 2006 & Ciara Kelly, 2019). The use of ASL is also widely used in the US education system including in the fields of Science, Mathematics and Social Sciences. Several studies in America have demonstrated the importance of effective communication to relay information to the deaf and hearing impaired including children. Deaf and hearing-impaired children have communication difficulty during classroom learning (Antia, 2007). Carol Marchetti et. al (2012) in their study stated teachers can use various communication methods to achieve the learning outcomes of deaf pupils. Teachers who teach deaf and hearing impaired pupils need to have communication skills to assist in the improvement of pupils’ achievement in learning (Shirin D et al. 2009, Antia, Sabers, & Stinson, 2007).

A study in Iran showed some effects of poor communication on 32 deaf respondents between the ages of 18 and 55. The study showed the impact of poor communication on many areas which caused problems among the deaf, including in education (Zohreh Ghari, 2016). In Pakistan, the oral approach was used in the classroom teaching. Meanwhile, the Pakistani Sign Language (PSL) was differently utilized in various areas (Bushra Akram & Rukhsana Bashi, 2013). Communication training is very important for teachers in improving their teaching skills to deliver information and syllabus to deaf pupils. Studies in Pakistan showed teachers in Special Education schools were incapable of using the PSL properly during lessons. Eighty-eight percent (88%) of Pakistani teachers did not use finger spelling and 90% of the teachers did not use Cued Speech in the classroom (Khatoon, 2003). In Indonesia, in
the Islamic education, there were two main methods of communication. The first method used was the manual method of Sign Language with finger spelling. The second method emphasized on speech and lip reading exercises (Ns. Mardiayanti and Luh Putu Suta Haryanthi, 2018).

As in other countries, the deaf people in Malaysia also have their own Sign Language to communicate. The Malaysian Sign Language (BIM) is used by the Malaysian deafs in their daily life. The use of BIM in the government National School of Special Education and in schools that provide Special Education Integrated Program is limited, and even peripheral. The Malaysian Sign Language (BIM) is applied in the form of mobile or information technology to assist deaf pupils in learning the Malay language (Mat Redhuan Samsudin et al. (2018).

In Malaysia, pupils with special needs are certified as having hearing disabilities by medical practitioners, opticians, audiologists or psychologists either in the government or private services (Federal Government Regulation 2013). However, the most commonly used term under the ‘Code of Practice on Education is, Pupils with Special Educational Needs’. Usually pupils with special educational needs have hearing disabilities as well as speech, language and communication disabilities. One of the disadvantages of communicating with pupils with special educational needs is hearing impairment which will affect their learning process (Safani Bari et al, 2005). Therefore, effective communication is very important in education especially for children in primary schools (Asmawati et al, 2014). Pupils with disability in learning the Al-Quran in the Islamic Education subject at the primary level are placed in the Special Education Integrated Programme (PPKI) and Special Primary Schools (SKPK). Malaysia’s education system requires Muslim students to take Islamic Education subjects. The Education Act 1996 (Act 550, Section 50), stipulated that if there are five or more educational institutions have five or more Muslim students, teachers should teach Islamic Education as approved by the State Authority (Special Education Information 2007). According to the Act, there is no exception for pupils with special educational needs in learning the Al-Quran which is one of the components of the Islamic Education.

Teaching and Learning the Al-Quran has its own characteristics compared to other sciences in Islamic Education. Teaching the Al-Quran involves verbal skills, reading fluency, communication skills, verbal and non-verbal skills (Ministry of Education Malaysia 2004b). Having a mentor in learning the Al-Quran is the most effective technique which had been practised through ancient times until today. The main technique used in studying the Al-Quran via mentor is the Talaqqi or Mushafahah which means listening and reciting the Al-Quran, guided by the teacher. It is done by the either the teacher showing the method of reciting initially and followed by the pupils or the pupils recite and the teacher listens and corrects. However, the ability of the pupils with hearing disabilities to receive sound and information during Quranic recitation is extremely difficult. They could not recite the Al-Quran due to the hearing loss, the most important sense in receiving information. Therefore, appropriate sign language should be applied to the Al-Quran learning, the strategy adopted should also be applicable to any combination of disabilities to ensure there are no-drop-outs.

As pupils with hearing disabilities are not able to communicate well, the question of the method of communication used by teachers during Al-Quran learning should be taken into consideration. The Arabic language is used in reading the Al-Quran. In the Malaysian education system, Arabic is considered as a foreign or second language. Therefore, the discussion related to the study of the Al-Quran has its own perspective based on second language learning theory (Kamarulzaman et al, 2002). The main difficulty faced by pupils with hearing impairment is the disability to detect and receive sound. Therefore, the use of sign language is their main medium of communication. In terms of language acquisition and information, it is found deaf pupils are left far behind. They have communication difficulties among themselves as well as with normal pupils (Abdullah, 2001). Therefore, an appropriate communication system should be implemented to produce effective teaching for pupils with special needs in learning the Al-Quran.

The objective of this study is to determine the type of communication used by pupils with hearing disabilities in Malaysia and to determine the communication method used by the teachers in teaching the Al-Quran.

2. Method

This study utilized the qualitative approach i.e. a case study. The instruments used included semi-structured interviews and document analysis to obtain data. Tables 1 and 2 indicate seven respondents were selected based on purposive sampling, of whom five were teachers who taught the Al-Quran to the pupils with special educational needs in Selangor. The selection of the respondents was based on specific criteria where teachers had at least five years of experience in teaching the Al-Quran. Two officers from Special Education, Ministry of Education Malaysia who were involved in the Special Islamic Education and Special Education Curriculum unit were selected to support the findings.
The communication model presented by Bernice Burnip in Louise Porter (2002: 154) was used in this study. According to Bernice Burnip, communication is the act of exchanging ideas, ideas, needs and desires. He also stated that speech and language are part of the communication process. There are several components involved in communication. Bernice Burnip (2002) had classified it into non-verbal and verbal. This shows that communication can be done as non-verbal, by showing facial expressions, body gestures and so on. While verbal communication involves languages such as semantics, structure and pragmatic (Figure 1).

From the Bernice Burnip model, it can be understood that communication for special needs pupils with hearing disabilities can be conveyed via three main methods: oral, manual and combination of both oral and manual. The oral method involves auditory-verbal and speech therapy (speech reading), and the manual method involves the use of handwriting, sign language and fingerprinting. While a combination of verbal and gestural methods produces cued speech and total communication.

### Table 1. Teacher’s Demographic Background

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Sex</th>
<th>Age</th>
<th>Experience</th>
<th>School Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Female</td>
<td>40</td>
<td>19 Years</td>
<td>*PPKI</td>
</tr>
<tr>
<td>T2</td>
<td>Female</td>
<td>43</td>
<td>10 Years</td>
<td>*PPKI</td>
</tr>
<tr>
<td>T3</td>
<td>Female</td>
<td>36</td>
<td>10 Years</td>
<td>*PPKI</td>
</tr>
<tr>
<td>T4</td>
<td>Female</td>
<td>48</td>
<td>5 Years</td>
<td>*PPKI</td>
</tr>
<tr>
<td>T5</td>
<td>Male</td>
<td>32</td>
<td>6 Years</td>
<td>*SKPK</td>
</tr>
</tbody>
</table>

** Special Education Integrated Programme (PPKI)
* Special Primary Schools (SKPK)

### Table 2. Officer’s Demographic Background

<table>
<thead>
<tr>
<th>Officer</th>
<th>Sex</th>
<th>Age</th>
<th>Position</th>
<th>Unit/Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>O1</td>
<td>Male</td>
<td>50</td>
<td>Head of Department</td>
<td>Islamic and Moral Education</td>
</tr>
<tr>
<td>O2</td>
<td>Female</td>
<td>52</td>
<td>Section Head</td>
<td>Curriculum Development</td>
</tr>
</tbody>
</table>

### 3. Findings

#### 3.1. Form of Communication Used by Pupils with Hearing Disabilities in Malaysia

**a. Oral**

The oral method was first used at Penang Federal School (Chua 1976). In oral language, teaching was done using speech, lip reading and writing (Chua 1980). This method prefers speech rather than signs and speech must be taught to learn the language. However, the method was used for only 20 years and was renamed as Total Communication method. According to Greenberg et al. (Bee 1995), deaf pupils would have difficulty in speaking or reading if the oral language was solely emphasized. The result would be different if they were taught the sign language, lip reading and spoken language simultaneously. Oral methods could help deaf pupils read lips, but they only understood the movement of the lips and not the actual meaning. This would cause them to be deaf forever.

**b. Total Communication**

When the oral method became a failure, it was replaced by the Total Communication method. This method was first introduced at Maryland School Frederick, USA. It was also found this method was suitable in the education of deaf pupils and had been introduced in Malaysia. According to Fisher (1982), Total Communication is a form of gesture communication that uses the fingers, arms, hands, facial expression and body movements. Manually Coded Malay is a form of communication language that is built based on Total Communication and the code system was built based on the Malay language principle that everyone hears, speaks, writes, read and understand. Patsy (1995) stated the use of the Manually Coded Malay could explain two meanings for a word and it is very important to the deaf pupils as they can acquire language through communication.
c. Cued Speech

Cued speech was found by R. Orin Cornett (1966). This method is a combination of oral-aural pronunciations and syllable structure (clear visual representation of language). This method uses eight hand shapes and three hand positions. It was first used in 1992 at the Sultan Alam Shah Primary School in Petaling Jaya. Patsy (1995) stated that Cued Speech is a great language-learning tool for deaf pupils. This method does not receive favorable response and is found only to be used by certain parties such as non-governmental organizations (NGOs) that provide education classes to deaf pupils.

d. Verbal Auditory

This is another method introduced in Malaysia to convey information to the hearing impaired. This approach is used to encourage and train deaf pupils to hear either through hearing aid or through a “cochlear implant” to learn language. (Kartini Ahmad 1997). In Malaysia Verbal Auditory methods are relatively new and require strong and organized support to be implemented. Robinson (1998) found children who used cochlear implants showed better performance than children who used hearing aids. Children who used a cochlear implant at the preschool age were more likely to attend normal schools compared to children who used hearing aids. According to Simser (1997) there are four main principles of Verbal Auditory methods; Individual diagnostic therapy with parental involvement, speech use, natural development and language learning through natural and meaningful interactions.

3.2. Communication Methods Used by Teachers in Teaching the Al-Quran to Special Needs Pupils with Hearing Disabilities.

a. Oral (Speech)

As mentioned earlier, some special needs pupils with hearing disabilities have hearing loss but can speak. So, for pupils who can speak and recite, should be taught orally so that they can recite the Al-Quran. Most teachers prefer to use speech-based communication methods when teaching the Al-Quran to those hearing-impaired pupils who can read.

Question: How do you plan to teach the Al-Quran to pupils with various hearing disabilities?

“For those who can speak, usually they are not confident to speak or to recite. They prefer to follow other pupils who manage to do so.” (T1)

“According to learning the Al-Quran in the Islamic Education syllabus, special needs pupils with hearing disabilities must be taught how to recite.” (T2)

“They have to speak and recite the Quran.” (T3)

“Like other typical pupils, they must recite repetitively” (T3)

“Those who can listen, they will follow the recitation. I will use the sign language based on the text book for those who are unable to listen.” (T4)

“For those who can recite, I will teach them the Talaqqi too.” (T4)

Respondents O1, an officer in the Islamic and Moral Education Unit of the Special Education Division, also emphasized this method for students who manage to speak.

“We used to teach recitation only to pupils who are able to speak by training them to spell the Quranic letters.” (O1)

“For those pupils with hearing impairment or deaf, we will give some space for the teachers to follow the syllabus. However, they are eligible to use speech therapy method during the lesson.” (O1)

“There will be a high number of deaf pupils who can recite the Quran by themselves if the teacher uses the speech therapy effectively. Most of the time, we mostly use codes and signs.” (O2)

“We will strengthen the Quranic pronunciation for those who are able to speak.” (O2)

b. Manually Coded Malay

All the respondents stated they used the Manual Coded Malay (KTBM) as the main method in teaching the Al-Quran to the special needs’ pupils with hearing disabilities. This code is also referred to as the Coded Malay Language which is a form found in Ethnologue. This hand code is derived from the American Sign Language, with the addition of some local alerts, and grammar alerts representing additional nouns and verbs in Malay. This hand codes were originally used in special education schools to teach the Malay language to the deaf pupils. However, the Ministry of Education Malaysia has set the Manually Coded Malay as a code of sign language in other subjects including the Al-Quran which is a component in Islamic Education.

Question: What is the method of communication used in the study of the Quran?

“I use Manually Coded Malay to teach them.” (T1)

“We usually use text book. There are code signs in text books where pupils can learn from.” (T2)

“I use Manually Coded Malay in teaching the Quran” (T3)

“All teachers use manual code to teach special needs pupils with hearing disabilities.” (T4)

“Usually we use text books that contain Manually Coded Malay.” (T5)

In Malaysia, the main teaching method of communication in ‘Special Education Integrated Programme’ (PPKI) and ‘Special Primary Schools’ (SKPK) is the Manually Coded Malay. The Manually Coded Malay has a specific system for controlling the construction of structures, the sentences and meanings (Zulkifley 1994). The Manually Coded Malay is the only form of hand signs that the Malaysian government recognizes as the language of communication for the deaf and dumb in the government schools. The Manually Coded Malay is a verbal translation of the visual. It was introduced by the Ministry of Education Malaysia (MOE) in 1985. The religious codes were introduced in 1988. It is constantly
edited and refined when utilizing the grammar, and principles of the Malay language. It is carried out with the Total Communication (Bahagian Sekolah, KPM 1995).

c. Malaysian Sign Language

Some teachers were interviewed using the Malaysian Sign Language. However, the use of the Malaysian Sign Language in the teaching of the Al-Quran is just peripheral. This is due to the Manually Coded Malay is the main method used in the ‘Special Education Intergrated Programme’ (PPKI) and the ‘Special Primary Schools’ (SKPK).

**Question:** Is the hand codes available sufficient enough to teach the Al-Quran to the pupils?

“If depends on the situation. I will refer to other references such as the Malaysian Sign Language if the particular code or sign are not available in the Manually Coded Malay.” (T2)

“No, it is not enough. Some of the words are not available in Manually Coded Malay. Hence, I need to refer to the Malaysian Sign Language.” (T3)

There are some opinions which stated Malaysian Sign Language is the main language used among the deaf community in Malaysia in their daily life (Lim, 2006). Malaysian Sign Language is a common language spoken in most places in Malaysia and has many accents, varying between each state. The Disability Act 2008 stated the Malaysian Sign Language is the official language of the Deaf community in Malaysia. Malaysian Sign Language is a non-grammar language of the languages in the world. It differs from the English or Malay structures. Malaysian Sign Language has its own grammar that focuses more on what the deafs can see. It is agreed that Malaysian Sign Language is not suitable in the learning and teaching of either the English or Malay language. However, the Malaysian Sign Language is very useful for the deaf’s understanding.

According to Mohammed Sazali Shaari (2004), Malaysian Sign Language is a symbol of the identity of many deaf Malaysians who are rich in culture because their gestures are based on their way of life and are not influenced by any external elements. Based on a study conducted by Abdullah Yusoff dan Che Rabaiah Mohamed (2009), they said if this is certified by a recognizing body, Malaysian Sign Language will be the most useful medium of transition and receiving information for the deaf community especially in education. In fact, the use of the Malaysian Sign Language indirectly has the potential to provide a proper religious education to the deaf community, especially in teaching the Fardu Ain subject in schools (Mohd Huzairi Awang, 2010).

d. Total Communication

As been described previously, the first method of communication since Special Education was introduced in Malaysia, was oral. However, beginning in 1978, when the Total Communication was introduced (Abdullah 2001), it included speech, Manually Coded Malay, facial expressions, lip reading, body language and finger spelling

**Question:** What are the approaches used in teaching reading, remembering and understanding the Al-Quran?

“We will use our voice and sign language simultaneously.” (T2)

“We show the word using Total Communication including facial expressions.” (T3)

Special needs pupils with partial hearing loss and speech skills would be taught to read just like any other normal pupil. Since some of these pupils with partial hearing loss are unable to hear properly among themselves, teachers need to teach using the Total Communication approach which includes speech and gestures or hand codes. The use of Total Communication is encouraged in teaching these special needs pupils with hearing loss as stated by O2 in the Curriculum Development Sector, which states:

“In teaching, we emphasized on Total Communication. So, we need to stress simultaneously the sign language and pronunciations. We need to teach pronunciations and speech at the same time using sign language called the Total Communication.”

4. Discussion

One of the components in Islamic Education is learning the Al-Quran. Some special needs pupils with hearing disabilities have speech problems. So the teaching and learning of the Al-Quran is not easy for them. In this case, firstly pupils must be given speech therapy to enable them to be taught to recite the Al-Quran. Pupils with partially hearing loss can be taught to speak the speech components such as articulation, lip reading and auditory training using the amplification tools (Saadiah Ahmad, 1990:4), thus they will be taught to recite the Quran.

In addition, there are of course, several issues and challenges in communication when teaching the Al-Quran to these special needs pupils:

4.1. The Skills in Handwriting and Sign Language

According to Lourghan (2013) the sign language is used as the primary form of communication to convey something or teaching to the deaf community. Communication skills especially in the use of handwriting and gestures are important, especially to teach the Al-Quran to the special needs pupils with hearing impairment. The Al-Quran’s verses are in Arabic which is a foreign language and a second language in Al-Quran education.

**Question:** Are there any courses or training you have attended during your service in teaching special needs pupil with hearing impairment?

“There are no courses or training that I attended at the moment. I learned from the textbook. I also self-learned with the help of other teachers and pupils who have the knowledge.” (T2)

“I admit I am not an expert and still learning.” (T3)
“Not yet for training and courses for sign language.” (T4)
“Every Wednesday, it is compulsory for teachers and the management stuff to attend the sign language class, beginning at 1:00 p.m. until 1:30 p.m. It is organized by teachers who are experts in sign language.” (T5)

However, not all Islamic Education teachers are qualified to teach the Al-Quran to the special needs pupils with hearing disabilities. Despite mastering the Al-Quran, they have to know and master the teaching method of the manually coded or sign language which is one of the communication mediums in the teaching and learning of the deafs. This finding is supported with the interview with O1 from the Islamic and Moral Education Unit, Special Education Division.

Question: In your opinion, what are the characteristics, a teacher should have when teaching the Al-Quran to the special needs pupils with hearing disabilities?
“The basic knowledge they should have is the Manually Coded Malay. We use widely the Manually Coded Malay when communicating with special needs pupils with hearing disabilities.” (O1)
“Teachers who are experts in sign language would be able to teach pupils very well. However, it depends on the school’s management to train their teachers on the sign language.” (O1)
“Training the teachers are the vital process at the moment” (O1)

The same goes to the O2 who emphasized the teachers’ responsibility to strive and improve their skills in teaching the Al-Quran
“That will be the teacher’s responsibility even if Islamic Education is not their teaching subject.

They have to learn and master the skills in teaching special needs pupils.” (O2)

4.2. The differences between Manually Coded Malay and Malay Sign Language

Based on the result of this study, there is a difference between the Manually Coded Malay and the Malay Sign Language. All teachers who participated in the interview used the Manually Coded Malay and some of them used the Malay Sign Language as an additional method. Manually Coded Malay is the official language used in schools while the Malay Sign Language is used in daily communication. The Malaysian Federation of the Deaf (MFD) has requested to use the Malaysian Sign Language as a whole since it has been recognized as the official language for the deafs ((Disability Act 2008: 8).

Question: Can pupils understand the sign language used?
“There are a huge number of pupils from MFD in Malaysia. They are also questioning why there are different sign languages used in schools. We told them to use Manually Coded Malay while in school but use the Malay Sign Language when outside the school.” (T1)

4.3. Lack of Manually Coded Malay and Sign

Although the methods of communication in the Manually Coded Malay and the Malay Sign Language are used by some teachers to improve pupils’ learning the Al-Quran, there are still some words or terms that cannot be interpreted. This is because some of the words or terms are very new to the deafs especially for the special needs pupils with hearing impairment.

Question: What is the communication problem in teaching the Al-Quran to the special needs pupils with hearing impairment?
“There are insufficient codes in the Manually Coded Malay and the Malay Sign Language” (G1)
“Not enough codes. Some of the words are not available in the Manually Coded Malay book. I need to refer to the Malaysian Sign Language.” (T3)

As a result, the lack of proper codes or sign language in teaching the Al-Quran will impact the bad result for the special needs pupils with hearing disabilities. According to Mohd Huzairi Awang (2010), it was found that most deaf pupils were not interested, often avoiding in attending the Fardu Ain classes, and they had difficulty in understanding the abstract terms in Fardu Ain Basic Learning (PAFA). This finding was supported by Siti Muhibah’s opinion, a previous researcher. Siti Muhibah (2010) stated the difficulty in understanding the subject Fardu Ain was due to the lack of skills in the sign language among teachers, no relevant religious signs and no method that was suitable to teach Fardu Ain to deaf pupils.

Therefore, the problem faced by pupils with hearing disabilities in the PAFA learning process is certainly the same problem they faced in studying the Al-Quran. This is because most of the terms in both subjects are in Arabic. As explained earlier, one of the issues in delivering Islamic Education to this group is the lack of appropriate and easy-to-understand handwriting or sign language. If there is no proper use of sign language in teaching the Al-Quran, the special needs pupils with hearing impairment would be less interested in learning as they did not understand the content taught by the teachers (Cooper, Sherly, Jody, Cripps, & Joel, 2013).

4.4. Alternative Methods

Learning the Al-Quran requires a variety of communication methods and teachers should not follow a single method of teaching. This is based on the diverse background of the pupils with varying levels of ability and speech who are present in one classroom, especially in the Special Education Intergrated Programme (PPKI) and the Special Primary Schools (SKPK). Due to lack of codes and sign forms suitable for each word, the teachers are given the
choice to use any method that they feel suitable to ensure the vision and objective in teaching the Al-Quran are achieved through reading, fluency and understanding of the verses.

**Question: How do you teach if the codes or signs are not enough?**

“We will find similar words, use photos or spell the words for them.” (T1)
“We spell for them using signs if they cannot speak and recite.” (T1)
“The pupils who cannot speak are not forced with the implemented method. We will not force them if they can’t.”

(O1)
“We only use the Manually Coded Malay to help deaf pupils recognize alphabet.” (O1)
“We give flexibility to the teachers to identify any suitable method during lessons.” (O2)
“We are not specific, we have agreed and eligible to combine Manually Coded Malay and Malay Sign Language.” (O2)

To achieve the goals and learning objectives of the Al-Quran lessons among the special needs’ pupils with hearing disabilities, teachers can use any method of communication mentioned previously. Teachers are allowed to use any communication method such as finger spelling, hand writing or information technology since there is no specific method implemented at any one time.

**5. Conclusions**

Communication in teaching the Al-Quran to the special needs pupils with the hearing disabilities should not be taken lightly. The goals and learning objectives in teaching the Al-Quran would not be achieved without effective delivery by the teachers. Although the special needs pupils have a variety of hearing disabilities, they however do have the potential and the chance to master the Al-Quran as a Muslim. Teaching these pupils requires an appropriate system of communication and cautious planning by the teachers to ensure the Al-Quran learning outcomes are achieved. There are a variety of communication methods for the special needs’ pupils with hearing impairment, and therefore, there should not be an issue in determining which method is the most effective. Based on education regulations, the use of the Manually Coded Malay is the main method that should be prioritized in the ‘Special Education Integrated Programme’ (PPKI) and ‘Special Primary Schools’ (SKPK). The use of the Malaysian Sign Language allows for improvement in pupils’ understanding. For the pupils who managed to speak, teachers can use the oral method or speech therapy to ensure they can train themselves to read the Al-Quran better. Teachers are encouraged to use the Total Communication method in the class with deaf pupils as well as for those with partial hearing loss to ensure they can understand the Al-Quran. As a recommendation, by training the teachers and attending courses related to teaching special needs pupils with hearing disabilities, they can acquire effective communication needed in helping these pupils.

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Scaffolding Speaking Tasks Using Videoblog Portfolio in an ESL Classroom

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Abstract Video blogging (vlogging) was chosen in this study as a language learning tool. The idea of studying video blogging stems from Vygotsky’s socio-constructivism theory and Siemens’ theory of networking, connectivism. The theories underpinned the study and were applied in a project based on instruction, which gave emphasis on student-centred learning. Assuming the roles of instructional designers, the researchers initiated this project to address instructional needs by integrating technological media to facilitate learners’ speaking fluency development. This case study explored the network and collaborative traits that vlogging could bring in learning a second language. Data was collected from field observations, a qualitative document and a focus group interview. The researchers then analysed the qualitative data to identify the scaffolding techniques used by the participants of the study. The researchers coded and clustered the scaffolding techniques into themes based on two types of scaffoldings; (i) sensory scaffoldings, and (ii) interactive scaffoldings. The findings show that learners employed scaffolding techniques to facilitate learning amongst peers and knowledgeable others throughout the vlog portfolio project.

Keywords Video Blogging, Video-based Learning, Project Based Learning, Scaffolding, E-learning

1. Introduction

Today, the widespread use of smartphones and tablet computers with internet connectivity has enabled every individual to communicate via mobile gadgets, normalising interactions in the vast linguistically compelling realms of the internet and social network. Moreover, great numbers of innovations in the field of Information Communication Technology (ICT) have given rise to many social media applications.

Among the most preferred social networking sites of the internet are Facebook, Twitter, YouTube, MySpace, Whatsapp and others (Abdelraheem & Ahmed, 2018). Virtual platforms have become one of the most notable phenomena that have afforded seamless mass communication. Inadvertently, the use of e-portfolios has also become more increasingly apparent among digital natives today (Lim, 2013). Youths especially, have been taking part in global communication addressing myriad topics ranging from societal to global issues by video blogging (vlogging) their ideas and opinions. Unlike other media tools, video blog uniquely paves the opportunities for network and conversation between the video blogger (vlogger) or the author and the viewers. Viewers can comment on vlogs and vloggers can comment on each other’s profiles which lead to interactions (Jap, 2007).

The power of social networking is great due to the notion that over 1 billion people are now online worldwide. They are often referred to as ‘netizens’ or the ‘digital natives. Now, people are more open to share their lives across the Internet than ever before (Malita & Martin, 2010; Richardson, 2009).

1.1. Problem Statement

Although English is the official second language in Malaysia, surveys still show that common problems in communication among graduates include poor speaking skills, inability to comprehend questions, and lack of interaction skills (Shahariah Saleh & Murtaza, 2018; Alias, Sidhu, & Chan, 2013). Scholars suggested that communicating in English for a second language speaker be a challenging feat due to many factors attributed with to the fear of speaking English such as language anxiety, limited vocabulary, and lack of exposure to communicate in the language (Pertaub, Slater, & Barker, 2002; Tanveer, 2007). Darmi & Albion, (2013) and Hassan & Selamat (2002) argued that learners do not receive enough support for their learning especially in nurturing listening and
speaking to improve communication in the second language (L2), hence there is minimal exposure to practice with a meaningful communicative context. In order to reduce this problem, both educators and scholars need to explore the alternative approaches to improve teaching and learning especially for communication skills in ESL classrooms. Many studies have investigated the potentials of using Web 4.0 tools such as blogs and social media to enhance language learning. (Gromik, 2015; Hussain, Cakir, & Candeger, 2018; Insyirah et al., 2018; Kessler, 2018). Currently, studies on how 21st century learning tools could be utilised to maximise learning outcomes is mostly on teaching writing skills (e.g., Bakar & Ismail, 2007; Yunus, Nordin, Salehi, Embi, & Salehi, 2013) that outnumber speaking skills. Therefore, the researchers carried out a study to investigate how technological advancement could benefit learners’ spoken language.

Attempting to communicate a new language individually can be daunting for English Second Language (ESL) and English Foreign Language (EFL) learners. With the right amount of support and the appropriate assistive tools, learners could achieve better L2 performance. The concepts of scaffolding and connectivism underpinned the study.

1.2. Research Question

This paper sought to answer one research question; What are the scaffolding techniques employed by learners during peer reviewing of the vlog portfolio?

2. Literature Review

Studies have shown evidence that social network can provide people with many affordances when used in educational settings (Ferdig, Pytash, Kosko, Gandolfi, & Mathews, 2016, AbdelRaheem, 2015; Alqahtani & Mohammad, 2015). Scholars have investigated how convenient personalized and collaborative learning with mobile social network applications are besides increasing students’ motivation (Alvarez, Alarcon, & Nussbaum, 2011; Chiang, Yang & Hwang, 2014). However, there is a dearth of studies on the use of social media as a learning tool to teach speaking in the Malaysian context.

Sharples and Domingue (2016) argued that although it is possible to attend different courses and seminars on public speaking, opportunities to practice and receive feedback from tutors or peers under realistic conditions are limited. The study conducted by Gorkaltseva et al. (2015) also argued that oral fluency was severely hindered because of the learners' low motivation for verbal interaction, which is due to learners' lack of pragmatic competence and lack of linguistic competence. In a similar vein, Gromik (2015) and Chen (2006) found that while EFL learners do not have adequate opportunity to use the target language during class time.

2.1. Scaffolding in L2 Learning

Educators and researchers have used the concept of scaffolding as a metaphor to describe and explain the role of adults or more knowledgeable peers in guiding learning and development (Nguyen, 2013; Verenikina, 2008; Krause, Bochner & Duchesne 2003; Hammond 2002; Daniels 2001; Stone 1998). Vygotsky (1978) through the concept of the Zone of Proximal Development (ZPD) in the Socio-constructivism theory posited that mediation is not limited to that of only teachers or adults, but peer scaffolding is also important for internalisation of knowledge, development of skills and learning progress. It was further explained that when a child is in interaction with people and in cooperation with his peers, learning a series of internal developmental processes occurs. Fundamental communicative language skills such as listening and speaking would progress through social interaction.

Scaffolding emphasises on learner interaction to facilitate learning in a common social domain. The researchers designed a video-based project called the vlog portfolio using a social media to stimulate sensory scaffolding with the use of peer support and later prompt interactive scaffolding among learners and their peers. Scaffolding also acts as "the mediator adjusting the complexity and maturity of the teaching interaction to facilitate the child mastery of the task; providing support when necessary and providing encouragements and prompts to the child to move ahead when ready" (Ranjbar & Ghonsooly, 2017; Lidz 1991, p. 80). In a wider sense, scaffolding is “a form of support for the development and learning of children and young people" (Pishar., 2017; Verenikina, 2008; Rasmussen 2001:). Scaffolding in this research is operationalised as peer reviewing or peer scaffolding. As learners engage during peer reviewing they were expected to generate several types of feedback, which are regarded as different techniques of scaffolding. In short, scaffolding is giving the student a more active role in their learning as opposed to teacher-directed learning. Since the aim of scaffolding is to move learners through stages of other-regulation to self-regulation (Ranjbar & Ghonsooly, 2017) which can lead a way for learner's self-regulation and autonomy.

Wells (1999) stated that a teaching and learning event should enable learners to carry out tasks which they would not have been able to manage on their own. Next, it should bring the learners to a state of competence which will enable them eventually to complete such a task on their own. Finally it must be followed by evidence of the learners having achieved some greater level of independent competence as a result of the scaffolding experience (Verenikina, 2008; Wells 1999 pp 221).
Table 1. Forms of scaffolding cited from (Wells, 1999)

<table>
<thead>
<tr>
<th>Forms of Scaffolding</th>
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<tbody>
<tr>
<td>Sensory</td>
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<tr>
<td>Videos and films</td>
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<td>Models and figures</td>
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<tr>
<td>Demonstrations and modelling</td>
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<tr>
<td>Real-life objects</td>
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<tr>
<td>Interactive</td>
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<tr>
<td>Pairs</td>
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<tr>
<td>Small groups</td>
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<tr>
<td>Using cooperative structures</td>
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<tr>
<td>With coach or mentor</td>
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<tr>
<td>Discussions</td>
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<tr>
<td>Interviews</td>
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<tr>
<td>With the internet, app, or software program</td>
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<tr>
<td>Graphic</td>
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<tr>
<td>Infographics</td>
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<td>Graphic organizers</td>
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<tr>
<td>Charts</td>
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<td>Tables</td>
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<tr>
<td>Graphs</td>
</tr>
<tr>
<td>Timeline</td>
</tr>
<tr>
<td>Making connection between ideas,</td>
</tr>
<tr>
<td>Contextualising abstract ideas</td>
</tr>
<tr>
<td>through objects,</td>
</tr>
<tr>
<td>Acquiring new knowledge</td>
</tr>
<tr>
<td>Synthesising information</td>
</tr>
<tr>
<td>Planning action</td>
</tr>
<tr>
<td>Engaging in an on-going process</td>
</tr>
<tr>
<td>Acquiring knowledge through interaction</td>
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<tr>
<td>whether in-person or virtual</td>
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<tr>
<td>Acquiring knowledge through numerical data</td>
</tr>
<tr>
<td>Producing ideas in graphic organizers and interactive tables</td>
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<tr>
<td>Recognising trends and patterns</td>
</tr>
<tr>
<td>Seeing cause-effect relationships</td>
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Gordon Wells (1999) categorised scaffoldings into three types; sensory, interactive and graphic (Refer Table 1) and the researchers subscribed to his definitions. Thus, a qualitative document was designed for participants to record their feedback and peer reviewing sessions were carried out to observe interaction meaning to scaffold the learning process.

2.1.1. Sensory Scaffoldings
Sensory scaffoldings are stimulated by the senses such as audio visual stimulus. For this study, learners’ feedback was derived from observations of the peers’ video blog. Feedback was recorded using the qualitative document known as the speech-review-report (SRR). When filling up this form learners listened to and analysed the features of the utterances such as fillers, pronunciation, grammar, and vocabulary.

2.1.2. Interactive Scaffoldings
Interactive scaffolding is derived based on the moderated speech reviewing interviews. After filling up the report, feedback for the learners was given orally by their peers in an interactive discussion. During this recorded discussion, the researchers observed, monitored and took field notes of the discussion with minimal interruptions. Necessary prompts were given if they were required to further probe the respondents’ feedback.

2.2. Connectivism
Connectivism is a learning approach with the advancement of Information Communication Technology (ICT) that gives emphasis on networking and learning. Connectivism presents itself as a pedagogical approach that affords learners the ability to connect with each other via social networking or collaboration tools. It is believed that learning today has become so complex that “we need to rely on a network of people (and, increasingly technology) to store, access, and retrieve knowledge and motivate its use” (Siemens, 2008).

Learning is viewed as multi-faceted and particular tasks defining which approach to learning is most appropriate to the learner (Siemens, 2005). When learning is put in a technological sphere, more access is granted towards teaching and learning. Learning through any technological device and virtual environment such as social media and network is the main themes of Connectivism.

In this study, collaboration between learners is seen as a behavioural networking. Learners are supporting one another to achieve their goals through the peer-speech-report. When learners post their video blog speech, feedback can be given instantly in the form of comments, viewers’ feedback or even peer review. This is parallel with the concept of Connectivism where networking is established when learners interact with one another along with the teacher to build a positive learning community through technological media.

3. Methodology
A qualitative design was employed in the current study; the researchers used a single case study as the research framework (Cresswell, 2014; Gustafsson, 2017; Yin 2003). The researchers investigated the application of a video blog portfolio in higher education college involving 19 participants (5 males and 14 females) aged 18-20 years old for a period of 10 weeks.

3.1. The Participants
The participants were purposively sampled and the sample criteria are, participants must be students who only possess intermediate or advanced level of proficiency in English. This was determined through their MUET band scores (Bands 3-5). They were non-native speakers of English, which in this case, a majority of the students’ native languages are Chinese or Malay. The participants were all enrolled in the same English Second Language proficiency course, “Structure and Speaking”. The
coordinator of the course assisted the researchers to identify the participants. A module was developed to guide the participants to conduct the project. The module was aligned with the instructional needs with guidance and feedback from the course instructor and literature (Donnelly & Fitzmaurice, 2005; Remesh, 2017). It was treated as a manual to guide learners in completing their weekly video blog tasks, and as a supplementary instruction to their formal instruction in their “Structure and Speaking” class.

3.2. Data Collection Methods

Because the current study utilized a qualitative design, the data are primarily verbal responses derived from the qualitative document, field observations and focus group interview. The qualitative document and field observation were administered weekly throughout the duration of the study, whereas the focus group interview was carried out at the end of the study. The researchers became the main instrument of the study to collect and interpret the data.

3.3. Data Analysis

All verbal responses were recorded and transcribed verbatim. The researchers then analyzed the transcripts to encode and determine the themes revolving around scaffolding techniques that learners applied in the video blog project. The themes were co-constructed with data collection. Validity and reliability were achieved through peer reviewing from experts and practitioners. Collection of data and transcribing were concurrently done with data analysis.

3.4. Ethical Concerns

To address the ethical concerns of this study, participants’ identities and their educational institution are kept anonymous, hence the participants were given pseudonyms to protect their identities.

4. Findings and Discussions

First, the findings were derived from a qualitative document designed for learners to record their feedback and guide the peer reviewing discussions. The researchers observed, listened and made field notes of the participants’ review of their peers’ speech to evaluate the video blog. The second part of the findings involves data collected from the focus group interview at the end of the study.

4.1. Observations of Peer Reviewing Discussions

4.1.1. Sensory Scaffolding

Theme 1: Feedback on structures of language

I: Okay when you say something (referring to her claim about her partner’s language was incorrect) you have to support it with another idea (Give examples). Like why do you like it? … Any words maybe? Pronunciation maybe? Repeated words?

Felix: No, but some sentences I could not understand, she used past (Future?) and present together in one sentence, but I don’t know… it’s correct or not.

I: Can you read me the sentence?

Felix: People will envious when we saw people driving the…

I: So the error is in?

Felix: I think… let’s see, will look envious, it should be people WILL ENVY US when THEY SEE us…

The first form of scaffolding that was observed was an attempt to discuss about grammar or structure. Participants of this study are non-English majors. This discussion shows that a few learners may have adequate knowledge of the language to enable them to identify errors in speech and give feedback.

This is regarded as scaffolding because it involves a knowledgeable individual who could analyze and construct feedback to rectify a language error commonly done by teachers or experts of the field. For example, feedback on the errors committed in grammar with regards to the use of the modal ‘will’ followed by an adjective ‘envious’ was given by the participant. Secondly, the error is the use of the wrong pronoun, ‘we’ referring to 3rd person point of view, which should have been replaced with ‘they’.

Theme 2: Addressing pronunciation errors

I: How can she improve from her video?

Isolde: Maybe pronunciation… umm the /offerings/, /brands/… /creators/, and /import/. Overall she did okay.

Marry: She introduced about contact lens. And it’s the brand from Korea. And one with color and one is normal. Ahhh… which one is more /comfortable/. She didn’t say which one. She can improve pronunciation. Words like /uncomfortable/.

Scaffolding during this peer reviewing session is in the form of a simulated feedback. A participant reviewed the pronunciation mistakes of certain words that were wrongly pronounced in the video. The observation revealed that some learners exhibit a degree of phonetic awareness and are able to give useful feedback by demonstrating the correct way of pronouncing the words to their peers. This type of scaffolding is introspective and reflective to the learners as they learn through observation and self-reflection.

Theme 3: Rehearsed pronunciation feedback

I: What do you think she can improve in her video? Any words that wasn’t clear to you?

Ell: Maybe pronounce…For example, /than/, pronounce /then/ and Ringgit… she pronounced /3.55/….
Theme 4: Review on pronunciations

I: How did she pronounce it?
Ell: She said three-point-five—fifty five…
I: How should she pronounce it then?
Ell: "Tri: RINGGIT FIFTY fair sent!"

This discussion displays another type of scaffolding interaction between learners. One participant was the knowledgeable peer who managed to identify the pronunciation errors made by his/her peer and then the participant demonstrated the correct way of pronouncing figures in English with accuracy. At this point, it is also revealed that the purpose of the interaction was fulfilled when learners attempted to simulate and generate feedback that could benefit his/her peer. Although the feedback was just a simple notion, it showed that learners actively participated in learning by observing and reflecting.

Theme 4: Review on pronunciations

I: Any language part that she can improve? …..
Karen: Maybe on the pronunciation of psi, how to pronounce it / prikatik... psi … /
I: What are you trying to say here? …
Lee: /Psi-cha-tirk/, but I keep pronounce it wrong /Psichraa-tic/

I: Okay it’s actually like this, / psi.chai.tric / . Alright, good. You address the pronunciation part… aha anything else, what can she improve in her video in her speech?

Lee: Also like the pronunciation part some word like / vandalism/, /self-esteem/, /authorities/, / deliberate/ and / eradicated/. (Struggling in pronouncing some of the words)
I: okay can you say those words now Karen?
Karen: /Slef;istimee/, /Ortorities/, / deliberate/, / eradicated/…
I: *rehearse the words together with the learners*

During this observation, pronunciation errors committed in the video blog were addressed by the participant. However, there was a problem with rehearsing the correct pronunciation of the word ‘psychiatric’. Thus, in order to scaffold the accuracy of pronunciation, the researcher assisted with rehearsing the pronunciation so the learners could learn the accurate pronunciation. The presence of the researcher also helped to facilitate learners upon reviewing their speech. The next example of the peer reviewing sessions explained how learners interact with one another to scaffold learning.

4.1.2. Interactive Scaffolding

In this section of findings, the researcher found that learners interact to negotiate meaning. When meaning is concerned, vocabulary becomes the measure. Learners are already familiar with some vocabulary items while others need to be contextualized. When such gap exists, learners will interact and discuss with each other about what the intended meaning was and comprehension was achieved to close the gap. The discussions demonstrate how scaffolding took place in regards to vocabulary and meaning.

Theme 1: Negotiating for context or intended meaning

Glenn: Hannah is talked about social indifference.
I: Social indifference? Okay what’s that? What do you understand about that word? Did you ask?
Ss: … (long silence)
I: I still don’t understand what social indifference is. So what is it? Can you explain? Can you give one example? Maybe…Example between you and her. Just an example, what do you mean?
Ss: (talking in a Chinese dialect/Code Switching)
Glenn: Like for example, a grandmother (talking in a Chinese dialect to Hannah) fall down, then no people came to help. Another example is when people don’t want to give pregnant lady a seat in the LRT.

The reviewer explained that the vlogger used an unfamiliar word which is ‘social indifference’. This phrase is contextualised and the researcher probed by asking what the vocabulary means to the participants. The participants discussed through code switching in their mother tongue. They tried to come up with the best example to reflect their understanding of the phrase ‘social indifference’.

A participant came up with an example of this phrase used earlier during the discussion, which then helped clarify the intended meaning. At this point, it is worth noting that scaffolding took place in the form of semantic negotiation between learners. It was observed that learners sometimes code-switch and discuss the meaning to enable them to explain better with sufficient details using the target language. The researcher encouraged learner interaction and concluded that scaffolding techniques were employed.

I: And the fake news is about kidnapping?
Ell: Yea the fake news is about kidnapping.
I: Okay… and then 70 people died? How did they die? Can you explain? How did they die? Were you listening to the video?
Felix: Yea but don’t understand.
I: Okay Ell.. Can you?
Ell: The news is about “Don’t Let the Strangers Come into Your Village” and this one (news) will scared the villagers so the thing is can harm them whenever there are some, what we say, aha strangers or unfamiliar face came into their village, they try to attack them because they think the people are going to kidnap their child.
I: I see, so that’s how the fake news caused the death of the 70 people?
Felix: Yes!

At some point of the discussion, it was observed that there was a miscommunication and participants addressed the problem. This could only be achieved when learners give full attention to their peer’s speech. During the discussion about their video blog it was observed that a participant was asked to explain the actual intended
meaning. The participant then summarized the actual message to scaffold comprehension. This type of peer-scaffolding is vital to build up oral fluency not only to the speakers but also to the listeners because avoiding misunderstanding or miscommunication is key to an effective communication. A fluent speaker should be able to deliver messages effectively with clarity and minimum obstructions.

4.2. Scaffolding in Video Blog Project

The researchers interviewed the participants after 7 video blog projects to find out their views of the project. Some participants indicated that they prefer collaborating with their peers while others prefer working individually for various reasons.

Theme 1: Participants’ views of scaffolding

Probe: Do you prefer recording the video alone or together with your friends, why?

Aaron: I prefer recording a video with my friend because I have a friend that could help me out if there are mistakes and someone to be with. Talking to someone helps me with my communication because I could learn so much more from talking and I could realize the grammar mistakes I made and correct them.

Cindy: It will help us not to be shy because some of us do not usually talk in English. Also, it will improve our confidence for presenting something when talking English.

Felix: I think I prefer doing video recording with someone, because it is more interesting than doing by alone. Yes, talking to someone helps me improve my communication. Because when communicating with others, I can understand more about the different people’s thinking patterns.

Glenn: I think video recording with someone else is better than alone because it is better to talk and discuss with someone about something. It makes me more comfortable to have a companion.

The responses above show participants’ preferences when working on their video blog project. One of the tasks specifically required them to record a video conversing with a friend using the target language. The purpose of this task is to observe learners’ interaction and compare the outcome with their individual video blog tasks. This group of participants clearly demonstrated that they would rather work with peers than completing the task individually.

One of the participants indicated that working together has made them become more aware of their mistakes. Another participant described peer scaffolding as useful to assist in overcoming shyness due to the fact that the participants are non-native speakers of the language and exercising communication with peers helps them overcome their anxiety when using the target language.

Theme 2: Participants who do not prefer scaffolding

Probe: Which do you prefer? Recording alone or with a friend? State your reasons.

Betty: I always think about recording alone is better because I feel a little shy when having conversation with other people.

Isolde: I think video recording alone makes me feel more comfortable as compared to paired vlogging.

Penny: I prefer alone because if I’m talking with someone else I will get more nervous than recording alone but it is a good experience.

From another perspective, the group of participants explained that they do not prefer recording with their peers in the video blog project for several reasons. The first participant claimed to feel a little shy when conversing with others. Similarly, another peer explained to the researcher that recording alone makes her more comfortable as compared to paired vlogging.

Lastly, recording with someone has been linked to intensified nervousness by the last participant. The feedback gathered has helped the researcher to understand that some learners accept scaffolding in communication while others are not keen on the idea.

4.3. Focus Group Interview

A focus group interview was conducted with 7 randomly selected participants. A thematic analysis of the interview data was carried out. The following themes were identified;

Theme 1: Roles of peers in scaffolding second language acquisition

Aaron: I think my friend helps me improve my vocabularies when I discussed about the video, he correct my mistake. My friend also helps me improve my pronunciation in the speech when I discussed about the video, because he also teach me. He help me improve my grammar as I ask he want to use past tense or not before we start the video, and he also motivate me improve my language better.

Cindy: Yes, my friend did help me to improve my vocabularies by giving advice to me. My friend helps me a bit my pronunciation by telling me that my video is hard to listen. Yes, my friend also helps me to improve my grammar by direct telling me which word can or can’t use. My friend feedback did help me a lot on improve my language because it made me more confident to speak in English.

Daniel: Yes, my friend helps me improve my vocabularies when you discussed about the video. Yes, my friend helps me improve my pronunciation in the speech when I discussed about the video. She let me know the correct of the pronunciation. Yes, my friend helps me improve my grammar in the speech when I discussed about the video. She will help me to correct it my wrong grammar, if she found I’m doing wrong. Yes, my friend’s feedbacks
on video motivate me to improve my language better. Because I can from that to know myself better, it help me improve myself.

**Felix:** First of all, improve my vocabularies I think Mr X did a good job who list it out my error and mistake which should be noted down some minor or vocabulary that help me in the future. Next, compare to my partner, she also sometimes make some wrong pronunciation which I could figure out that I also used to make the same mistake. So I could let her know. Thirdly, among of these there’s no doubt that my grammar aren’t so good as speak or even writing because for me grammar sometimes is confusing stuff to make it understand so in this process I would rather list out the error of pronunciation and vocabulary. Lastly, of course, when taking the video till share both of us video, it help me to reflect and know what I also made the same mistake too sometimes.

The above feedback indicates that peer scaffolding has helped the participants improve their vocabulary through discussion and consultation (advice). This opinion was shared by three participants of the study and they also opined that peer scaffolding has helped them improve in terms of pronunciation and grammar. Feedback was generated through peer interaction practices such as discussing, negotiating and consulting.

It was made more apparent by the participants of the peer role in this project when they informed the researcher of how their peers have motivated them to improve, to be more confident when using the language especially in Speaking. However, it was not specified by the participants to what extent they were being motivated or how they were motivated to speak English. Participant in this group also expressed that video production and video reviewing helped them to reflect and to become aware of the errors committed in their respective videos. This finding shows that video blogging has the ability to encourage learners to self-assess and self-reflect on their performance, and peer collaboration further amplifies this through reviewing.

Theme 2: Limitations of peer roles to scaffold second language acquisition

**Glenn:** No, because we are amateur in grammar, so we can’t solve the problem by us, we ask Google. Yes, sometimes he use the vocabularies very well, it is benefit to me when I have presentation.

**Betty:** Not really, because we were listening the video and write it down separately didn’t have time to talk about that. Honestly, both of us are not good in grammar we are still learning. Yes it did not, they tell me to be more confidence when I talk.

**Ell:** No, my friend didn’t help me improve my vocabularies when I discussed about the video, because he is not so good at English. We just only discussed with some point. No, I think my friend didn’t help me improve my pronunciation in the speech when I discussed about the video. Because we practice separately. Yes, my friend helps me improve my grammar in the speech when I discussed the video. She will remind me when I don’t know about it. No, my friend’s didn’t feedback or video motivate me to improve my language better, because she didn’t say anything.

Some participants were not convinced of the role of peer scaffolding as it was deemed insufficient. One participant claimed that both she and her partner in the vlog project were not good in grammar. Therefore, they were not able to produce sufficient feedback to help each other learn. Relating back to the principle of scaffolding by Vygotsky, in order for learners to grow and learn what is beyond their present abilities, there must be sufficient scaffolding received by the learners to stimulate learning and enable the acquisition of new knowledge or skills. This feedback shows that when learners were not paired with someone who has the competency in language, they are not likely to find peer scaffolding as helpful as it was hoped for in the study. When such problem arose, learners resorted to other sources for help such as the internet to supply them with the information they needed.

Additionally, another participant also commented that they were not interacting much when completing the video blog task. This could be due to the clash in schedules or their preference to work individually. It was never explained by the participant to the researcher. The only indicator is they did not have time to sit down and discuss what went wrong or what should be improved in future tasks. Moreover, two participants shared the same view as they claimed to be incompetent in grammar. As a result, they were not able to generate useful feedback such as corrective feedback to improve on the language used.

Another participant concurred that peer scaffolding did not really help them improve in terms of language use such as vocabulary enrichment due to a similar factor, which is because both the participant and her peer were not proficient in the language. Thus, it is noted by the researcher that peer scaffolding was not successful because the pairing system of the participants was not well executed in the study. It was also found that the participant did not benefit from his/her peer in terms of language development such as pronunciation awareness because they were practicing separately. However, the participant claimed that he improved in grammar use during the discussion of the video during the peer-reviewing session. Lastly, the participant concluded that no form of motivation or encouragement was received from his/her peer.

4.4. Discussion

Sharples and Domingue (2016) posited that opportunities to practice and receive feedback from tutors or peers under realistic conditions are limited although it is possible to attend courses on public speaking. However, the findings in this study proved that learners can manage and generate feedback to facilitate learning through
blended and task based learning using a video blog project. The study conducted by Gorkaltseva et al. (2015) found that learners' low motivation for verbal interaction, which resulted from learners' lack of pragmatic competence and lack of linguistic competence, caused oral fluency to be severely hindered. Linguistic competence may be attainable through formal instruction. However, in the case of pragmatic competence, learners can develop their competency in communicating through various means with the aid of technology. Findings from this study revealed that motivation may not exactly be the main challenge for learners to interact verbally, but rather task designs that are appropriate and can stimulate interaction. Participants of this study actively participated in learning through creating the vlog portfolio, exercised their spoken English, assessed and reflected their performances. The design of the task gives heavy emphasis on learner accountability and autonomy in their own learning. Thus, self-directed learning can be achieved with suitable task designs that cater to different instructional needs.

Gromik (2015), Chen (2006) and Petraub et al. (2002) contended that EFL learners do not have adequate opportunity to use the language during non-contact class time. However, technology and blended pedagogy today have allowed learners and instructors to maximize interactivity in learning. Inadvertently, opportunities to use the language beyond the classroom have become feasible. The concepts of ZPD (Vygotsky, 1978) and connectivism (Siemen, 2008) that underpin this study support the need for scaffolding, connectivity and social networking to accelerate language learning. Teachers play an important role in bringing the language rich environment to the classroom, to achieve an optimal learning condition.

5. Conclusions

Peer support or scaffolding indeed holds a certain influencing factor to the participants. It was indicated that participants of this study felt comfortable from the support they received from their peers and reduced anxiety. Comparisons of participants' preferences showed that peer interaction has a positive outcome for learners. Therefore, conducting tasks with the presence of peers does play a role in learners' success of completing the project, besides topic familiarity and the video blog as a learning tool itself that encourages participants to continuously practice their English to form a behavioural pattern. This then resulted in progress in the ZPD through acquiring and learning new skill sets and linguistic knowledge. Strong presence of behavioural scaffolding using technology was found in this task. This resonates strongly with the concepts of ZPD and connectivity.

REFERENCES


Improving Undergraduate Engineering Students' Figural Spatial Ability through Digital Brain-Training Game

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Abstract

Undergraduate engineering students often struggle in mastering engineering course contents. Although introductory engineering courses were extensively taught, it was deemed not enough, especially in graphic expression since it requires high levels of spatial ability. Moreover, spatial ability is acquired beyond formal learning through leisure training and not explicitly taught. Thus, a digital brain training game i.e. Cubes Spatial Reasoning FREE (CSR) was used in this study in attempt to improve figural spatial ability. The purpose of this study was to evaluate the impact of the use of CSR on figural spatial ability of undergraduate engineering students in terms of mental rotation and spatial orientation. 30 undergraduate engineering students were selected using purposive sampling method. Mental Rotation Test (MRT) was used to measure mental rotation and Spatial Orientation Test (SOT) was used to measure spatial orientation. Findings indicated that CSR significantly improved figural spatial ability in terms of mental rotation and spatial orientation. In conclusion, as indicated in this preliminary study, CSR may be used as a training tool to potentially improve mental rotation and spatial orientation in undergraduate engineering students.

Keywords

Digital Brain Training Game, Figural Spatial Ability, Undergraduate Engineering Students

1. Introduction

Engineering students in universities have different levels of spatial ability among peers due to different factors such as sex, background of growth, living area and social environment. These factors were affecting level of spatial abilities with which they affect understanding in the contents of graphic expression. Engineering drawing needs high levels of visualization skills (National Science Foundation, 2006). Students must understand the basic concepts of engineering drawing in order to assist them in understanding the complexity of learning in other engineering subjects. However, students need to build basics of spatial visualization ability in order to master engineering drawing concepts (Ali & Hussin, 2016). The complexity of engineering drawing leads to cognitive overload for students with low spatial ability, while those with high spatial ability take advantage of this (Huk, 2006).

Some universities offer introductory engineering courses for engineering students in order to enhance students’ foundation knowledge on engineering. However, Martin Gutierrez el al. (2015) found that it was not enough in graphic expression study, since abilities were not taught but trained. Spatial ability can be trained overtime with tasks related to leisure, usually in the form of sports and digital games (Moreau et al., 2012; Feng et al., 2007). One way to improve spatial ability was through playing digital games (Spence et al., 2009; Feng et al., 2007; Uttal et al., 2012). In our current study, Cubes Spatial Reasoning FREE (CSR) was chosen to be the digital brain training game as it can be downloaded freely by Android users from Google Play.

According to Ventura et al. (2013), spatial ability refers to the ability to mentally manage the objects and their parts in a bi- and three- dimensional space. Spatial ability can be understood in environmental spatial ability, vista spatial ability and figural spatial ability. In this study, environmental spatial ability and figural spatial ability will be discussed. In figural spatial ability, the components include mental rotation, spatial visualization and spatial orientation. Only mental rotation and spatial orientation were discussed in this study.

1.1. Study Objectives

The objectives of this study were to:
i. determine the level of figural spatial ability of undergraduate engineering students in terms of mental rotation and spatial orientation.

ii. determine level of environmental spatial ability of undergraduate engineering students.

iii. determine the relationship between environmental spatial ability of undergraduate engineering students with their figural spatial ability in terms of mental rotation and spatial orientation.

iv. evaluate the impact of a digital brain training game (Cubes Spatial Reasoning FREE, CSR) on figural spatial ability among undergraduate engineering students.

1.2. Theoretical Framework

1.2.1. Piaget's Cognitive Learning Theory

There were two theories related to cognitive learning theory used as the basis of the study, namely Piaget’s and Vygotsky’s cognitive learning theories. In Piaget’s view, we gain knowledge from action (DeVries, 2008). He proposed an individual’s cognitive ability progresses through four distinct stages: sensorimotor stage, preoperational stage, concrete operational stage and formal operational stage. New abilities and flexibilities of processing information emerged in each stage. One could deal abstractly with hypothetical situations and reason logically in formal operational stage (age 11 to adulthood) (Slavin, 2011). In Piaget’s theory, there were two concepts: projective relations and Euclidean geometry. Projective relation is the ability to imagine the environment from different perspectives. Euclidean geometry refers to the ability to precisely specify the spatial relationships between locations.

1.2.2. Vygotsky’s Cognitive Learning Theory

Vygotsky’s theory stated that individual obtains intellectual development through experience in real world in historical and cultural context. In his view, he suggested cognitive development depend on the sign system that was the cultures created for people to think, communicate and solve problems. So, Vygotsky’s theory was closely related to our environmental spatial ability as it was about our experience in real space (Slavin, 2011).

1.2.3. Digital Game-based Learning

Digital game-based learning (DGBL) approach was used to train the figural spatial ability in terms of mental rotation and spatial orientation. Many educators had agreed that students who play education games improve in the quality of education (Clements & Mcmillen, 1996; Lin & Liu, 2009; Papastergiou, 2009). Digital games consisted of various sorts of digital elements, such as light, sound, animation and image, provide an immersion environment to increase students’ engagement. Hung et al. (2012) claimed that the computer games provide virtual and beneficial visuality as real models, which attract students in a new approach of cognitive learning experience.

We wanted to investigate the impact of Piaget’s theory and Vygotsky’s theory on figural spatial ability in terms of mental rotation and spatial orientation via DGBL using CSR. Theoretical framework of this study was showed in Figure 1.

![Figure 1. Theoretical framework of this study](image-url)
2. Methods

2.1. Participants

33 undergraduate engineering students from Universiti Putra Malaysia (UPM) and Universiti Tenaga National (UNITEN) participated in this study, of whom 22 males and 11 females. Quasi-experimental one group pretest-posttest design was chosen as we faced limitations to access classes of engineering students (Fraenkel et al., 2016). Participants were chosen when they participated in a social activity. Therefore, the samples were from two different classes of two universities, due to the amount of students that were limited. Purposive sampling was used to choose the samples.

2.2. Instruments

There were four parts in the instrument. The first part was 8 items on demographic data. The items were self-developed based on literature and researcher’s intention. The eight items were gender, age, and programme of study, current year of study, current CGPA, the frequency of playing digital games and frequency of exercise.

The second part was 15 items on Santa Barbara Sense of Direction Scale (SBSOD). SBSOD was adopted and used to measure environmental spatial ability of undergraduate engineering students. Participants judged their own environmental spatial abilities through the items stated. The instrument was adopted from Hegarty et al. (2002) as a self-report measure and had been proved to be a more promising approach to predict environmental spatial ability. Each item has Likert scale of seven points.

The third part was 24 items on Mental Rotation Test (MRT). It was used to measure mental rotation. MRT was composed of the figures provided by Shepard and Metzler (1971) and it was an Auto cad-re drawn version of the Vandenberg & Kuse (1978) MRT test. This version of instrument was redrawn by Michael Peters (1995). Every item was shown a model of a block in three-dimensional perspective and four figures of blocks with different rotations. There were two correct models in each question where they can be rotated from the model given. Meanwhile, another two figures cannot be rotated in any perspective.

The fourth part consisted of 12 items on Spatial Orientation Test (SOT) and it was used to measure spatial orientation. This version of SOT was adopted from Hegarty and Waller (2004) and was a revised version of the test used by Kozhevnikov and Hegarty (2001). A set of seven objects were presented on top of each question. A circle was drawn at the bottom and the direction of it was labelled. In each item, the user should imagine they were situated at the location of one of the objects of the set (which will be in the centre of the circle), looking at another one of them (which will be at the top of the circle as if it was 12 o'clock). The participants should draw an arrow from the central object indicating the direction towards a third object from the new orientation.

2.3. Procedure

Table 1. Demographic characteristic of the participants (n = 30)

<table>
<thead>
<tr>
<th>Demographic Data</th>
<th>Number (n=30)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>73.3</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>13.97</td>
</tr>
<tr>
<td><strong>University</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPM</td>
<td>11</td>
<td>36.7</td>
</tr>
<tr>
<td>UNITEN</td>
<td>19</td>
<td>63.3</td>
</tr>
<tr>
<td><strong>Age (years old)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>20</td>
<td>9</td>
<td>30.0</td>
</tr>
<tr>
<td>21</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>23</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>24</td>
<td>9</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>Programme of engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>9</td>
<td>30.0</td>
</tr>
<tr>
<td>Electrical and electronics</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>Computer and communication</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Electrical power</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>Civil</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td>Chemical</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Current year of study</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>Year 2</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>Year 3</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Year 4</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td><strong>CGPA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.76 – 4.00</td>
<td>16</td>
<td>53.3</td>
</tr>
<tr>
<td>3.51 - 3.50</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>3.26 – 3.50</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td><strong>Digital games play</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Once a month</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>Few times a month</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td>Few times a week</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Everyday &lt; 1 hour</td>
<td>14</td>
<td>46.6</td>
</tr>
<tr>
<td><strong>Exercise</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>Once a month</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>Few times a month</td>
<td>12</td>
<td>40.0</td>
</tr>
<tr>
<td>Few times a week</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td>Everyday</td>
<td>2</td>
<td>6.7</td>
</tr>
</tbody>
</table>
Before conducting the experiment, we obtained ethics approval from the related bodies concerning human subjects research. The experiment was conducted on week four to week seven of the semester, therefore the total experimental period was for a total of three weeks. 22 questionnaires were distributed to UNITEN undergraduate engineering students while 11 questionnaires were given to UPM undergraduate engineering students. The aim of the study and procedures were explained to the volunteers. Consent forms were given and they were informed that they can withdraw from the participation in any time. In first meeting for pre-test, the session took about 45 minutes. Students explained that a pre-test on spatial ability was given to them.

Then, they were instructed to install Cubes Spatial Reasoning FREE (CSR) from their Android system mobile apps. They were instructed to perform training of 15 minutes per day on anytime of the day for 21 days. The total training time will be 5 hours and 15 minutes. They were required to fill in a training log book for proving of training every day. After three weeks, there was a post test on same questionnaire for only part 3: MRT and part 4: SOT.

For post-test, as in pre-test, the students who attended weekly social activities came earlier for the test. Post-test took around 20 minutes as students understood the instruction from the previous session. 19 UNITEN students and all 11 UPM students attended. The total number was 30 and response rate was 90.91%. Some UNITEN students were absent as they were sitting for examination on the day.

Normality test was done on the data in order to determine the appropriate statistical approaches to be used for hypothesis testing, i.e. using either the parametric approach or nonparametric approach. Numerical methods can be further divided into two methods, which were statistic method and rule of thumb method.

The statistic method was using Shapiro-Wilk normality test, while the rule of thumb method was examining the skewness and kurtosis of the distribution. Thus, in order to compensate for the strengths and weaknesses for those methods, both methods were used in this study for normality test.

### 2.4. Data Analyses

All data were analyzed by using IBM SPSS version 25 for descriptive and basic inferential statistics. Data gathered for MRT and SOT were divided into two groups, which was pre-test and post-test. Data was analyzed by using descriptive statistics to obtain information on frequency for categorical data. Besides, the information on mean and standard deviation was retrieved for continuous data.

In this study, the internal reliability of the instruments has been tested with SPSS with indication from Cronbach’s alpha. Ideally, the Cronbach’s alpha coefficient of a scale should be above 0.7 (Pallant, 2005). Table 2 shows that all of the measurements had Cronbach’s alpha of more than 0.7.

<table>
<thead>
<tr>
<th>Table 2. Cronbach’s alpha coefficient for all the scales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurements</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>MRT (24 items)</td>
</tr>
<tr>
<td>SOT (12 items)</td>
</tr>
<tr>
<td>SBSOD (15 items)</td>
</tr>
</tbody>
</table>

Note: *normal distribution, with p > .05*

From numerical analysis (i.e. Shapiro-Wilk normality test) in Table 3, it was found that pre-test of SBSOD (p=0.945) and pre-test of MRT (p=0.237) were normally distributed while SOT scale (p=0.001) was not normally distributed. Referring to the table above, the scale’s significant value which was greater than 0.05 was considered normally distributed. The value with an asterisk (*) was greater than .05. In other words, only two scales were normally distributed while others were not. However, through the rule of thumb method, it says that in general, if kurtosis ad skewness were within -2 and +2, the data can be considered normally distributed, thus, according to the Table 4, all of the scales skewness and kurtosis were within -2 and +2, thus it can be said that all the scales were normally distributed.

Although the Shapiro-Wilk test shows some of the scales were not normally distributed, yet the rule of thumb method suggests that all the scales can be considered normal. Thus, to reduce the burden in analysis, the data was assumed as near to normal distribution in this study. There were other ways to deal with the normality problem of the distribution, such as trimming the data, etc. However, although discarding the outliers may be performed in order to enable the data distribution to be fairly consistent with normal distribution yet trimming the data leads to some complications in applying more advanced statistical analysis (Wilcoxon, 1998). Moreover, the data will be more prone to validity issues.

From the normality test, since the distributions were considered normal, parametric test, which was the paired sample t-test, or the dependent sample t-test was used to test the significant difference of MRT and SOT in relative to the pre-test and post-test result. Meanwhile, Pearson’s Product Moment Correlations was used to find the correlation between environmental spatial ability and
figural spatial ability. The relationship was indicated by correlation coefficient, \( r \), which ranges from -1 to +1.

Table 4. Skew and kurtosis for all the scales

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>skew</td>
<td>kurtosis</td>
</tr>
<tr>
<td>SBSOD</td>
<td>-0.180</td>
<td>-0.349</td>
</tr>
<tr>
<td>MRT</td>
<td>-0.216</td>
<td>-0.833</td>
</tr>
<tr>
<td>SOT</td>
<td>-0.773</td>
<td>-0.672</td>
</tr>
</tbody>
</table>

3. Findings

3.1. Descriptive Results

As shown in Table 5, the MRT pre-test and post-test mean scores were 13.97 (SD=6.094) and 17.50 (SD=5.576) respectively. This meant that there was an increment in mean scores of MRT from pre-test to post-test. Comparison of mean scores of MRT is illustrated in Figure 2.

Table 5. Mean and standard deviation of MRT in pre-test and post-test

<table>
<thead>
<tr>
<th>MRT</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>13.97</td>
<td>6.094</td>
</tr>
<tr>
<td>Post-test</td>
<td>17.50</td>
<td>5.576</td>
</tr>
</tbody>
</table>

In order to identify the level of mental rotation in category, the mean score and standard deviation were used with the following formula, since the result was normally distributed:

Level of MRT = mean ± 1 SD

By using this formula, a mean score of higher than upper value means high level. A mean score within the calculated value was moderate level while a mean score of lower than the calculated value was low level.

To calculate the level of MRT in pre-test, mean score of pre-test was used. Table 6 shows the level of MRT.

Level of MRT = mean ± 1 SD = 13.97 ± 6.094 = 7.876 – 20.064

Table 6. Pre-test and post-test result in MRT based on category

<table>
<thead>
<tr>
<th>Mean score</th>
<th>Level</th>
<th>Number, n = 30 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre-test</td>
</tr>
<tr>
<td>( \leq 7.875 )</td>
<td>Low</td>
<td>6 (20.0)</td>
</tr>
<tr>
<td>7.876 – 20.064</td>
<td>Medium</td>
<td>19 (63.3)</td>
</tr>
<tr>
<td>( \geq 20.065 )</td>
<td>High</td>
<td>5 (16.7)</td>
</tr>
</tbody>
</table>
Improving Undergraduate Engineering Students’ Figural Spatial Ability through Digital Brain-Training Game

Figure 3. Comparison of MRT level in pre-test and post-test in categories

Pre-test result in MRT presented at Table 6 shows that there were 6 students (20%) in low mental rotation level, 19 students (63.3%) in medium level of mental rotation while 5 students (16.7%) in high level of mental rotation. Post-test result in MRT (Table 6) showed that there was no student in low mental rotation level, 18 students (60%) in medium level of mental rotation while 12 students (40%) in high level of mental rotation. This meant that there was improvement in overall result in MRT. It was surprising that there were no students in the low mental rotation classification after three weeks of training with CSR. Figure 3 illustrates the comparison of MRT score in pre-test and post-test in categories.

Table 7. Mean and standard deviation of SOT in pre-test and post-test

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>9.27</td>
<td>2.612</td>
</tr>
<tr>
<td>Post-test</td>
<td>10.80</td>
<td>1.472</td>
</tr>
</tbody>
</table>

As shown in Table 7 above, the SOT pre-test and post-test mean scores were 9.27 (SD=2.612) and 10.80 (SD=1.472) respectively. This means that there was an increment in mean scores of SOT from pre-test to post-test. Comparison of mean scores of SOT is shown in Figure 4.

For spatial orientation, the mean scores were categorized into low, medium and high level using following formula:

\[
\text{Level of spatial orientation} = \frac{\text{number of items}}{\text{number of category required}} = \frac{12}{3} = 4
\]

The scores for category were used in Table 8 for pre-test and post-test result in SOT. Pre-test result in SOT (Table 8) shows that there were 2 students (6.7%) in low spatial orientation level, 8 students (26.7%) with medium level of spatial orientation while 20 students (66.6%) with high level of spatial orientation. There were no students in low spatial orientation level, there were 3 students (10.0%) with medium level of spatial orientation while there were 27 students (90.0%) with high levels of spatial orientation. This showed that there were improvements in overall scores for SOT. Similar to result of MRT, no more students were in low spatial orientation after three weeks of training with CSR. Figure 5 illustrates the comparison of SOT score in pre-test and post-test in category.

Figure 4. Comparison of pre-test mean score and post-test mean score in SOT
Table 8. Pre-test and post-test result in SOT based on category

<table>
<thead>
<tr>
<th>Score Level</th>
<th>Number, n=30 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
</tr>
<tr>
<td>0 – 4 Low</td>
<td>2 (6.7)</td>
</tr>
<tr>
<td>5 – 8 Medium</td>
<td>8 (26.7)</td>
</tr>
<tr>
<td>9 – 12 High</td>
<td>20 (66.6)</td>
</tr>
</tbody>
</table>

3.1.1. Level of Environmental Spatial Ability

From the analysis, the mean score of SBSOD was 4.08 (SD=0.776). In order to identify the level of environmental spatial ability of undergraduate engineering students, the scores of SBSOD were categorized into low, medium and high levels. Based on the instrument of SBSOD, 7-points Likert scale was used for the measurements. The scale was ranging from 1 to 7. The equal width interval was calculated by using the method as below:

(Highest score – Lowest score) / Number of category required = (7 – 1) / 3 = 2

Therefore, the interval between each category was 2. The category value is shown in Table 9. Results of SBSOD that is, measuring level of environmental spatial ability, are as follows: 4 students (13.3%) perceived themselves low in environmental spatial ability, 22 students (73.4%) reported that they have medium level of environmental spatial ability while there were also 4 students (13.3%) who said they had high levels of environmental spatial ability.

Table 9. Level of environmental spatial ability (n = 30)

<table>
<thead>
<tr>
<th>Mean Score</th>
<th>Environmental Spatial Ability level</th>
<th>Number (n=30)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 – 3.00</td>
<td>Low</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>3.01 – 5.00</td>
<td>Medium</td>
<td>22</td>
<td>73.4</td>
</tr>
<tr>
<td>5.01 – 7.00</td>
<td>High</td>
<td>4</td>
<td>13.3</td>
</tr>
</tbody>
</table>

3.2. Relationship between Environmental Spatial Ability and Figural Spatial Ability

From Table 10, it showed there was a significant relationship between SBSOD and post-test MRT (r= -0.430, p= 0.018). The direction of correlation was negative, which meant that students who were high in environmental spatial ability tended to have lower mental rotation ability. However, for pre-test of MRT (r= 0.096, p= 0.615), the relationship between SBSOD and MRT was not significant. On the other hand, there was no significant relationship between SBSOD and pre-test SOT (r= -0.326, p= 0.78). There was also no significant relationship between SBSOD with post-test SOT (r=0.025, p= 0.897).

3.3. Impact of CSR on Figural Spatial Ability

Hypothesis 1: Digital brain training game (Cubes Spatial Reasoning FREE, CSR) can significantly impact figural spatial ability of undergraduate engineering students in terms of mental rotation.

Table 11 displays the result of paired sample t-test in comparison with the mean score among pre-test and post-test in MRT. According to the table, the difference between the pre-test and post-test was 3.53, t-calculated was -4.285, and the significance p was 0.000 (<0.05). The t value was 0.000, <0.05. Hypothesis 10 was rejected at significance level of 0.05. So, there was a significant difference between mean scores in pre-test and post-test in MRT. The analysis showed that the mobile apps CSR can improve mental rotation of spatial ability. The students’ MRT scores improved in post-test compared to pre-test after 3 weeks of training.

Hypothesis 2: Digital brain training game (Cubes Spatial Reasoning FREE, CSR) can significantly impact figural spatial ability of undergraduate engineering students in terms of spatial orientation.

The result of paired sample t-test in comparison with the mean score among pre-test and post-test in SOT was also shown in Table 11. The difference between the pre-test and post-test was 1.53, t-calculated was -3.724, and the significance p was 0.001 (<0.05). The t value was 0.001, <0.05. Hypothesis 20 was rejected at significance level of 0.05. So, there was a significant difference between mean scores in pre-test and post-test in SOT. The analysis shows that the mobile apps CSR can improve mental rotation of spatial ability. The students’ SOT scores improved in post-test compared to pre-test after 3 weeks of training.
Table 11. Comparison t-test of mean score among pre-test and post-test in figural spatial ability

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>T</th>
<th>Df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>MRT</td>
<td>13.97</td>
<td>6.094</td>
<td>17.50</td>
<td>5.576</td>
<td>-4.285</td>
</tr>
<tr>
<td>SOT</td>
<td>9.27</td>
<td>2.612</td>
<td>10.80</td>
<td>1.472</td>
<td>-3.724</td>
</tr>
</tbody>
</table>

4. Discussion

4.1. Level of Figural Spatial Ability

From the result, the mean score of mental rotation improves from 13.97 (lower boundary of medium level) to 17.50 (higher boundary of medium level). As discussed earlier, it was carried out in consecutive 21 days for 15 minutes daily. As compared to a study done by Roca-González et al. (2017) in Spain, the pre-test and post-test scores for MRT were 15.22 and 17.20 respectively. So, the level of mental rotation of undergraduate engineering students in Malaysia was similar to the international level.

In terms of spatial orientation, the mean scores of pre-test and post-test were 9.27 and 10.80, which were in high category. When compared to the study done by Roca-González et al. (2017), the pre-test and post-test scores for SOT were 8.13 and 10.09 respectively. So, the result shows that the level of spatial orientation in undergraduate engineering students in Malaysia was similar to the international level.

4.2. Level of Environmental Spatial Ability

The mean score of environmental spatial ability was 4.08 (SD=0.776). When compared to Hegarty et al. (2002), they found that the mean score of undergraduate students for SBSOD test was 4.7 (SD=1.1). Thus, the level of environmental spatial ability in undergraduate engineering students in Malaysia was similar to the international level.

4.3. Relationship between Environmental Spatial Ability and Figural Spatial Ability

From the result (r = -0.43, p = 0.018), according to Guilford’s Rule of Thumb, the study showed significant but low correlation between environmental spatial ability and mental rotation. It was similar to study by (Hegarty et al., 2002) that the SBSOD has been found to correlate with tests of spatial knowledge that involves orienting oneself within real-life environments.

According to Guilford’s Rule of Thumb, the study showed negligible correlation between environmental spatial ability and mental rotation (r = -0.025, p = 0.897). Study by Ventura et al. (2013) found that correlation test between SBSOD and SOT was 0.17. Both of the studies showed that there was nearly no relationship between environmental spatial ability and spatial orientation.

4.4. Impact of CSR on Figural Spatial Ability

The current result showed significant improvement in the mental rotation after training with CSR for 5 hour and 15 minutes. These finding tally with a few of research before, which find that digital brain training games may improve mental rotation in engineering undergraduate students. For example, a study reported by Feng et al. (2007) showed significant improvement in mental rotation after 10 hours of training in digital games. Besides, digital brain training games have proven motivational impact on learning (Di Serio et al., 2013; Martin-Gutierrez & Meneses, 2014) and they play roles in student-centred learning (Di Serio et al., 2013).

The current result shows that there was significant improvement in the spatial orientation after CSR training. These finding tallied with a study before such as Lin et al (2014), where we found that digital brain training games may improve spatial orientation in engineering undergraduate students. The result was tallying with what was reported by Lin et al. besides, experiment by Lin & Chen (2016) showed that the digital brain training game significantly improved figural spatial abilities in terms of mental rotation and spatial orientation with one time 45-55 minutes of digital brain training game.

5. Conclusions

In conclusion, as a preliminary stage of study, the result shows that the design of the digital brain training game - CSR matched the theories discussed in the literature. Thus, it may be practical to be used as a training tool by the undergraduate engineering students’ instructors to improve students’ figural spatial ability in relative to mental rotation and spatial orientation. Students nowadays had grown in the era with various types of electronic devices. They sometimes were hardly engaged to paper-and-pencil based exercise. This study has given them a bright side of engaging in digital learning.

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REFERENCES


Exploring Learners' Perception on Improving Their Willingness to Communicate in English through Experiential Learning among Undergraduate Students

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Abstract The purpose of this study is to explore the expectations and goals of students when participating in language activities, and how they perceive their willingness to communicate. The language activities involved in this study are LAX activities which are compulsory for all undergraduate students within this institution. Throughout the LAX activities, the students go through a form of experiential learning where they will have to complete a task, reflect on their work, and apply what they have learned. The students are interviewed regarding their expectations and goals prior to doing the language activities and their willingness to communicate during and after having done the activities. The findings show that students did set up positive goals before participating in the language activities, but they had negative expectations of the experience. It was also found that the students perceive an improvement in their willingness to communicate after participating in the activities. In the future, experiential learning could be implemented in language learning for positive outcomes, and more studies can be done on the topic to improve second language learning.

Keywords Willingness to Communicate, Experiential Learning, Language Activities

1. Introduction

The Malaysia Education Blueprint 2013-2025 has highlighted the “six key attributes needed by students to be globally competitive; knowledge, thinking skills, leadership skills, bilingual proficiency, ethics and spirituality, and national identity” [1]. Most of these attributes emphasize on the need for students to be able to communicate with others effectively. Communication is seen as a vital aspect in making Malaysian learners globally competitive. The Common European Framework of Reference for languages, which currently acts as a guideline for language teaching and learning in Malaysia, also places emphasis on communicative competence because students should be learning language for the purpose of using it in communicative situations [2].

There is a constantly increasing demand for people worldwide to communicate effectively in English, therefore the responsibility of English language teachers significantly increases [3]. Teachers have to focus not only on providing linguistic knowledge, but also on how to use language appropriately. Providing a good balance of these two aspects of language in the classroom is proven to be quite difficult, as Yang and Rehner[4] found that language learning in the second language classroom does not provide much opportunity for the improvement of communicative competence, as the content is usually not representative of authentic interaction. Therefore, language learners need to be provided with an environment where they might be willing to communicate using authentic and meaningful language to improve their communicative competence.

Communicative competence is defined as competence which allows language users to express and understand language and to construct meanings with other interlocutors within a specific context [5]. Communicative competence does not merely refer to having linguistic competence, but also knowing when and how to communicate functionally and interactively. Michael Canale categorised the elements under communicative competence as grammatical competence, discourse competence, sociolinguistic competence, and strategic competence [6]. The first two components are related to the linguistic knowledge, while the latter refers to the functional aspect of communication.
According to Berns[7], textbooks claiming to comprise of language that is functional are often insufficient and misrepresent language used in real life interaction. Berns also mentioned the importance of context in giving meaning to form and function, especially because an understanding of function does not necessarily represent an understanding and application of the language in an authentic situation. There are certain ‘rules’ that govern conversations, which cannot be learnt from books and must be experienced by the learner in an authentic and meaningful way. These rules include attention getting, topic nomination, topic development, turn-taking, topic clarification, repair, shifting and avoidance, interruptions, and topic termination [8]. There are many other aspects of language that need to be taken into consideration, and cannot simply be taught with a textbook, such as pragmatics, genre, and discourse styles. These require the learner to experience communication with other parties.

It is therefore vital for the teaching and learning of English as a second language in Malaysia to focus on the aspect of communication. In order to achieve communicative competence, learners must have willingness to communicate (WTC). Willingness to communicate is the “underlying continuum representing the predisposition toward or away from communicating, given the choice” [9, p.538]. In other words, when given a choice, a language learner who has willingness to communicate will use the target language.

Sometimes teachers fail to provide a safe environment for learners and this could be because learners would distort their interaction to suit what they think the teacher wants to hear [10]. Experiential learning can provide students with a safe space to use the language in completing a task. It allows for instances where students participate in the learning through meaningful experiences rather than through the traditional approach [11].

In their study, Alqahtani[12] found that learners’ willingness to communicate in English is heavily influenced by their motivation, as well as social and cultural factors. Malaysian students are often unwilling to communicate due to fear of receiving a negative response [13]. A number of studies have been done on willingness to communicate, but limited studies have especially been done in relation to the implementation of experiential learning for language learning. It is vital for a study to be done to see how Malaysian students perceive their willingness to communicate in order to understand how to improve their language learning experience.

The purpose of this study is to explore the expectations and goals of students when participating in language activities, and how they perceive their willingness to communicate. The research questions to be answered with this study are listed below:

RQ1: What are students’ expectations and goals when participating in the language activities?
RQ2: How do students perceive their willingness to communicate (WTC) through participation of the language activities?

2. Review of Literature

Malaysian students are known to have issues with speaking, or any communicative activities in general when it comes to the English language. This relates to their willingness to communicate when faced with communicative activities in the classroom.

2.1. Willingness to Communicate (WTC)

Research has found that there are six layers of factors that have an influence on language learners’ willingness to communicate [14]. These factors can be divided into enduring influences, which are somewhat permanent to a person, and situational influences, which depend on the situation. The six layers are communication behaviour, behavioral intention, situation antecedents, motivational propensities, affective-cognitive context, and social and individual context [14]. Referring to the figure below, the top three layers are situational influences, while the three bottom layers are enduring influences, which have a more significant effect on a learners’ willingness to communicate.

Willingness to communicate has little to do with speaking abilities, rather it is more heavily influenced by affective factors such as motivation, personality, intergroup climate and self-confidence [9]. Self-confidence can refer to situational self-esteem and also L2 self-confidence, which does not depend on the situation [8]. Some language learners’ self-confidence could have been formed based on prior experience with language learning, due to communicative competence and lack of [14]. Some situational factors such as the number of participants, topic and formality of the conversation could also impact second language learners [15].
Syed and Kuzborska[16] found that numerous contextual, psychological, linguistic and physiological factors have an influence on learners’ willingness to communicate, with contextual factors having the biggest impact. A study on Malaysian learners found that they are unwilling to speak the target language because they lack familiarity with the vocabulary and lack of confidence due to low proficiency[13].

A study by Alikhani and Bagheridoust[17] found that having group activities in a language classroom improves learners’ willingness to communicate, as the activities sparked the learners’ interest and motivation. Vosburg[18] found that learners were unwilling to speak the target language when other group members lacked interest and motivation in learning and participating in the group activity. In a related study, interest, perceived effectiveness, groupmates’ commitment, social atmosphere, personal goal, self-confidence and marks were revealed to play a role in motivating English language learners in Macau to participate in group tasks[19].

2.2. Experiential Learning

This study refers to Kolb’s[20] model for experiential learning, where learning is seen as process, is grounded within experience, includes adapting to the world, needs a resolution or conflict, happens through interaction and is knowledge creation. People interact with the environment to grasp information and transform the information they acquired; concrete experience and abstract conceptualisation are the sources of information, while reflective observation and active experimentation are processes for transforming information. The cycle for experiential learning is shown in the figure below.

With the rise in experiential learning, Kisfalvi and Oliver[10] suggest that experiential learning can provide learners with a safe space which involves trust, respect, restriction of judgment, readiness to share and effective listening. Knutson[11] refers to experiential learning as an
investment in boosting motivation, self-perception and confidence, and practical skills unrelated to language learning.

Experiential learning can help students in following complex materials, retaining knowledge, practicing the skills that they have learned and understanding group work [21]. Within the context of language learning, experiential learning can provide meaning and purpose to lessons while making it interesting for the learners as well [22]. The study also found that learners could be more autonomous and creative with experiential learning. In another study, the learners felt that the experiential learning process helped with their anxiety, improved their self-confidence and improved their motivation in language learning [23].

3. Method

A qualitative research design has been chosen for this study as an activity such as this is the first of its kind in a local research university, therefore it is important for an exploratory study to be done in order to appropriately describe the perspectives of the language learners [24]. Limited studies have been done on the implementation of experiential learning to improve willingness to communicate that provides a strong basis for this study to explore the issue. Three undergraduate students were chosen using purposive sampling based on the informant criteria that were decided at the beginning of the study.

According to Allen[25], it is especially important for a list of criteria to be decided on before looking for informants as to decide who would be most appropriate for this study. The students needed to be undergraduate students who have completed their Language Activities or LAX requirements, as they would be able to provide an extensive and clear description of their experience and feelings with regards to their willingness to communicate.

The current study that employed in-depth interview was chosen for this study so as to provide the participants with a space to express their thoughts without being restricted by the presence of others and reveal the social, cultural and psychological factors influencing them [26]. Participants were asked questions on their personalities, trait-level characteristics and situation-based characteristics in relation to their willingness to communicate. A semi-structured interview guide was prepared prior to the first interview session, and improved after getting responses from the first participant and coding the transcription. Preliminary coding is done with each participant in order to document researchers’ thoughts and any extra remarks [27]. Participants were interviewed until a saturation point was reached. Coding was done using ATLAS.ti. The codes was formed into categories, then grouped into themes according to the research questions.

The language activities that will be addressed in this study are LAX activities that provide a safe environment for students to continuously engage with the language. LAX activities are divided into 6-point LAX and 12-point LAX, which differ based on the number of weeks in which students need to be engaged in the activities. There are a number of different activities that students can choose from which require them to interact and work in groups in order to complete specific tasks.

Students will first go through a discussion session for them to share ideas and make decisions, and a reflection session where they talk about what they have done well and what they could improve on. After that, they are usually given one or two opportunities to produce another product and improve based on the shortcomings they found in their first product. They go through the same process of discussion, execution and reflection.

This provides students a seemingly safe environment, where they are surrounded only by peers. Throughout the whole process, they engage with the language freely without much restriction, boosting their self-confidence and fluency. For ease of description and understanding, the LAX activities will be referred to as language activities throughout this paper.

4. Results & Discussion

The data are analysed and discussed based on the research questions.

4.1. RQ1: What Are Students' Expectations and Goals When Participating in the Language Activities?

It was found that the students mostly had negative expectations of the language activities before actually participating in them. One student expected that they would have difficulty with groupmates, while another student mentioned that they expected that the language activity would mean more work for them to do. Student C was scared to join the language activity due to lack of confidence in her proficiency. Student A and B expressed that they also had positive expectations of the language activities, especially in terms of improving their fluency. Student A stated “I expect from the LAX can make me fluent in English communication”.

When asked about their goals when participating in the language activities, two of them stated that they want to improve their English for the purpose of communicating with others. Student C mentioned that this goal is what helps motivate her to participate in the language activities, “Because I have goal to improve my English, sometime I will be motivated more”.

Student A also expressed his goal to make new friends, while student B stated that her only goal was to complete the LAX so that she could feel relieved.

The findings for the first research question show that these students mostly have negative expectations towards
the language activities, and this could be due to their past experiences. Negative past experiences especially with group work could influence their view on the activities [11]. The positive goals, namely those related to language learning can be interpreted as their desire to improve their willingness to communicate. These expectations and goals can have an impact on their willingness to communicate, as it could become a motivating or demotivating factor for them to communicate in the target language.

4.2. RQ2: How Do Students Perceive Their Willingness to Communicate (WTC) through Participation of the Language Activities?

The current study has revealed that all the students felt that their willingness to communicate outside the classroom had improved after participating in the language activities. Student C expressed her thoughts, “I think yes, because compare my English to when I was in first sem and now, I think now is just more better. Yeah, because when I was in my first sem, I was not confident at all to speak in English so now I feel I can talk little bit”.

This research question is discussed in relation to the contributors to students’ willingness to communicate, with reference to the pyramid model [9] as well as other previous studies on willingness to communicate and experiential learning.

4.2.1. Group Attitude

Throughout the three interviews, groupmates were seen to have a significant influence on the students’ perception of the language activity. When students are familiar with their groupmates or they get groupmates who are easy to work with, they tend to be more motivated to participate in the language activity. Student C stated her thoughts, “I enjoy the most with my groupmates ... because all of them are very sporting ... I can easily gather and discuss with them”.

Vice versa, having a negative experience with groupmates can also have an undesirable outcome on the students’ motivation. Student A mentioned his experience with some groupmates who cause issues due to time constraint, “I think they don’t want to go to meeting to discuss with the friend because they don’t have time to, they want arrange time to meet together”.

Aside from the issue with time, some students highlighted the issue with choosing a location to meet. This became a demotivating factor because these students from different faculties and living in different residential colleges had to decide on a location that would be easily accessible to all groupmates. Student B described her experience, “So their college is quite far from me ... and I am the one and only from Kolej Lembah, K5 at that time and I have difficult to meet them and I still remember I met them after maghrib at main library”.

A study on implementation of group activities in language learning found that students have a positive perception towards the atmosphere created [17]. This coincides with the findings of the current study, where all the students expressed that they were more motivated to do activities in their group, but only when the groupmates were easy to work with and within close proximity. Familiarity is seen as a vital aspect in another study as well, where Vosburg[18] found that when students feel interconnected with other groupmates, they are more willing to communicate in the target language. Similarly, uncommon interests can also cause students to be demotivated, as shown in the same study. Eddy-U[19] also found that the group members’ participation and motivation during the activity can have a huge impact on the motivation level of a student.

4.2.2. Personality during the Language Activities

Student B and C stated that they were relaxed during most of the language activities, except those which they had issues with groupmates, with student B mentioning that she is commonly talkative during the discussions. Student A mentioned that he is quite shy and does not speak much during the language activities. In comparison to their personality outside, student B claims that she is as talkative outside the language activity as she is in it.

As for student A and C, it depends on the situation and who they are around. All the students said that they are usually comfortable to speak using the target language even outside the language activity. Student A mentioned that this is because there is no form of supervision by an instructor or lecturer, and the communication is only with the other person. Student B also shared her thoughts, “... because foreigner student use simple words, so I’m also can understand them and I’m also use simple language for them”.

The responses from this study go against the research that found some students to be more willing to speak during group activities as opposed to when they are expected to produce the language individually [17]. In this study, personality is seen as a stable trait where learners maintain the same personality during language activities as they do in other situations. A study on Iranian students found that their outgoing personality even outside the classroom had caused them to have a higher willingness to communicate in activities [28], coinciding with the findings of the current study.

4.2.3. Self Confidence

The students had different perceptions of their self-confidence during the language activities, with Student B saying that she was not scared of making mistakes and simply expressed what she wanted to say, while Student A admitted that he was not confident because he was scared to make mistakes. However, student B added that she was “not 100 percent confident” due to lack of fluency. As for student C, she feels it depends on
the topic, “I’m feeling very confident if the topic that we are discuss, I know more information about that”.

Both student B and C expressed that the language activity did help in improving their confidence to speak in the target language. Student B also mentioned that the requirement of one of the activities, where the students need to interact with random people, had tremendously improved her self-confidence when talking to strangers. She also gave an example of a situation where this newfound confidence had helped her in communicating with bank personnel, “And I’m listening what the staff said and I can respond in English too, so I have confident, that confidence actually of course from LAX activities”.

These responses show that self-confidence can be a trait-level characteristic as shown by Student B, where she is confident to speak during the language activity because she is a generally confident person. This goes back to personality, which has been described in the prior section. However, there are also people like Student C, whose confidence varies depending on the topic which is discussed, which could point to her self-confidence being dependent on the situation. In relation to this, a study found that topic is the most influential contextual variable for learners’ production of a target language [16].

Similar to the situation with Student A whose confidence is affected by the fear of making mistakes, [19] found that the possibility of being ridiculed for mistakes could demotivate students from using the target language, namely in group activities.

4.2.4. Experiential Learning (The Process & Different Activities)

Seeing as this study is based on language activities which are based on the concept of experiential learning, the students had also been asked questions in relation to it. When asked about the whole process of the activity, which requires them to have a discussion, then execute the project, complete a reflection, then go through the cycle again, all three students had a generally positive perception of the process. They felt that it helped in providing opportunities for them to use and improve their language, which also opened spaces for sharing of ideas. Student C expressed her opinion, “Of course it makes me improve my English because when discussion we want to talk in English, so it improves our English communication”.

The only issue that they have with the whole process is that it is very tedious and takes up a lot of their time. Student A expressed his thoughts on this, “It very difficult because... sometime when we want to have discussion, execution and reflection, always we have meeting every week. So, for me, I don’t have time for discussion”.

Student B suggested that this issue be overcome if lecturers extended the duration of time given to complete each phase of the activity, “So, I think it’s more easy if the lecturer, gives more deadline, more days to complete our video. So I think it is good for us”.

Knutson[11] claims that experiential learning should provide students with a platform to develop the target language by using the language within a specific context as opposed to looking at the aspects of language separately. This can be reflected in the students’ responses in the current study. As for the time constraint, Singaporean students also found issues with submitting before the deadline, especially due to their lack in proficiency [22]. This could be improved by proper planning by the lecturer.

Experiential learning also provides students with the opportunity to learn through a variety of activities. The different types of language activities that students need to complete have an impact on their motivation, where some activities motivate them to participate and speak more, while others have the reverse effect. Student C had participated in an activity where they interviewed random students on campus, “In (this activity) we have to shoot about that video where we need to be a host. So it will train us to speak confidently”.

Student A mentioned that he was demotivated when doing a language activity related to poetry because he does not enjoy poetry, while Student B stated that she did not prefer activities that required her to sing, “To do the video, I’m not really enjoying because I want to speak. I don’t want to sing”.

When asked how he deals with topics he is unfamiliar with such poetry, Student A responded, “When this (activity), I just talk how to edit the video and then discuss, I just discuss about my problem in the edit video only”.

This is supported by another study, as different topics and types of tasks that students were asked to perform had a significant impact on their willingness to communicate in a study by Syed and Kuzborska[16]. In relation to the issue of unfamiliarity, another study suggested that students are commonly willing to communicate when given a familiar topic and task [29].

Generally, the findings show that students feel their willingness to communicate has improved after participating in the language activities.

5. Conclusions

Clearly, the students felt that their willingness to communicate had improved after joining the language activities. All of them perceive themselves to be affected by group attitude, their personality, self-confidence and the implementation of experiential learning. Groupmates’ attitude appears to have a significant influence on the students’ willingness to communicate, where group members who refuse to commit and lack motivation can demotivate and even prevent students from participating altogether. It also seems to be the case that factors such as an out-going personality and self-confidence can be a permanent trait that assists their willingness to communicate, or it could also be dependent on the
situation. The implementation of experiential learning can also have a positive or negative impact on the students’ willingness to communicate.

Identifying which activities motivate students may be a difficult task, as different students would enjoy different types of tasks. However, educators can play a role in providing students with a safe environment where they can express their difficulties in performing the task, which would allow them to openly talk and reflect on the situation. This is where experiential plays an important role, as students are not restricted to talk about a certain topic, but they are asked to perform a task which needs them to communicate in order to complete the task. Aside from the deadlines, the students enjoyed and gained a lot from the experiential learning process. As for the issues with group members, perhaps a better system could be developed to prevent motivated students from being demotivated and bogged down by students who are not committed to participating in the activities.

In the future, more studies could be done on the implementation of experiential learning in language learning. Perhaps students’ willingness to communicate could be studied along with their marketability and communication skills. Since quite a lot students see this learning experience as a platform for them to learn how to communicate during job interviews and for career development purposes, it would be relevant to see how this experience actually helps in achieving this.

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Dissecting Perceptions of New Graduates on Work Orientation and Self-Confidence in Employability Skills Training Program

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Abstract Work orientation and self-confidence are among key factors that lead to work performance of individual. Both factors are considered as among the predictors to influence productivity of new and experienced workers. This study is aimed to identify the level of work orientation and self-confidence among new graduates who participated in the work retention and skills enhancement program, Skim Latihan 1 Malaysia (SL1M). Also the study is intended to assess trainees’ perceptions on employability skills training program, SL1M. This is a quantitative study using descriptive design. A total of 108 respondents were randomly selected from new graduates who were involved in the SL1M training program. This study is a quantitative research by using questionnaire instrument. Descriptive data were analyzed by using IBM SPSS Statistics software. The findings indicate the level of work orientation and self-confidence was high among respondents. The SL1M trainees are prepared to change their method of work if necessary in order to fulfill work requirement and demand. The trainees also believe that they possess a quality to work in the industry and can be offered to employers.

Keywords Work Orientation, Self-Confidence, Skills Enhancement, Job Retention

1. Introduction

Malaysia is making its way into a developed country. In line with economic, political, and social progress it wants to achieve the education system in the country, which is also in the progress of transformation. The transformation involves of producing more knowledgeable, talented, and skilled graduates and people for the nation. With the pool of knowledgeable, talented, and skilled citizens, it is hoped that Malaysian workers can be more productive, creative, and resistant to future challenges, thus, propelling the country to be more prosperous and flourish. According to Graduate Detection Report 2017, Malaysia has successfully produced 299,635 new graduates through public and private colleges and universities all over the country (Ministry of Education Malaysia, 2019). This number has increased 13.4% since five years ago. However, the number of new graduates could be more meaningful if they can secure a job in the market. From the record, 19.8% of new graduates from all field of studies are unemployed. This issue is often raised when graduates are now seen as failing to meet the demands of the industrial market (Muhammad Hazrul Ismail, 2012).

Report from the Department of Statistics Malaysia (2019), depicts that the unemployment rate in Malaysia is at 3.3% with 520,000 people. The unemployment rate in Malaysia is seen to be dominated by youths aged 15 to 24 by 10.8%. This number is increasing every year and creates insecurity in the job market among new graduates. One of the problems of unemployment is because graduates possess qualifications that are not required by the job market and lack skills required in their field (Chang, 2004). According to Nurita, Shaharudin and Ainon (2004), comments from employers show that the new graduates possess relevant skills in the field of study. However, they are lacking soft skills. Employers today are more likely to hire graduates who are balanced in terms of academic knowledge and soft skills such as communication skills, problem solving skills, teamwork skills and critical thinking skills. The employability skills training programs are initiated in Malaysia starting in 2010 with the aim of reducing the unemployment problem that has plagued the country, especially among new graduates. The government has introduced employability skills training programs to enhance skills of graduates and match job demand with qualification of graduates. One of the programs introduced
in the 10th Malaysia Plan is the Graduate Employability Management Scheme that aimed at helping graduates get jobs (Mohd Hazwan Mohd Puad, 2018). The purpose of the program was to help graduates adapt to the work environment, equip graduates with the skills needed to work and assist in matching graduates with job opportunities.

In addition, the government has introduced the *Skim Latihan 1 Malaysia* (SL1M) in 2011 as part of the initiative to reduce unemployment in the country. The purpose of the program is to increase the marketability of new graduates through soft skills training and job training towards reducing the country's unemployment rate. The program targets unemployed graduates from low-income families in rural areas as well as graduates who are working with jobs that do not match with their qualifications (Economic Planning Unit, 2017). Participants in the program will undergo on-the-job training on soft skills with participating companies to enhance their self-confidence and work orientation in the real working environment. Through this program, graduates will be trained in not limited to five key employability skills including communication skills, creative thinking, workplace adaptation, professionalism and work ethic (Mastura et al., 2013). Today's work is seen as requiring not only high technical skills but also the need for mastery of related employability skills. Mastura et al (2013) conducted a study to look at unemployed graduates' perceptions of their communication skills in training program. The findings show that despite the success of the training program, the level of communication skills is at moderate level. They are not ready to adapt to the changing workplace. They show that their personal skills are among factors to contribute to the lack of skills of new graduates.

Research found that work orientation is strongly associated with employability skills (Van Dam, 2004). In addition, employees are seen as likely to improve their employability skills if given the opportunity to be in a new situation. Workers who have been in an organization for a long time are seen as having a high commitment but low in terms of improving their skills. Employees with a positive work orientation are more likely to see opportunities within an organization whether at work or beyond, and thus can plan steps that can be taken to further their employment (McQuaid and Lindsay, 2005). Meanwhile, work orientation has strong relationship with job satisfaction which in turn affects their career development and employability skills (Nauta, 2009). Today, graduates require positive work orientation to prepare themselves to develop their career potential.

One of the weaknesses spotted by industries among Malaysian graduates who fail to get a job is low confidence level (Ranjit, 2009). Self-confidence can determine work patterns indirectly by helping someone to make responsible decisions. Those who have high self-confidence are able to accept their own weaknesses while being prepared to have different views of the organization. This ability develops individuals as well as enables them to prepare for the environment (Saputro and Suseno, 2010). Supported by Nasrudin (2004), that personality plays an important role in enabling new graduates to get a job. Therefore, the objective of this study is to identify the level of work orientation and self-confidence among new graduates who participated in *Skim Latihan 1 Malaysia* (SL1M). The researchers also intended to assess employability skills training programs, *Skim Latihan 1 Malaysia* (SL1M), in terms of capabilities and effectiveness in enhancing skills based on graduates’ perceptions.

### 2. Work Retention and Self-Confidence in Influencing Employability Skills

Rapid technological change and the increasing demand for skilled labor have forced graduates to develop sufficient personal skills and be prepared to adapt to the changing workplace. In developing employability skills, one of the key factors is the work orientation. Individuals with positive thinking and skills are more likely to achieve more positive career outcomes such as work satisfaction and job suitability (Schien, 1990). Job suitability can be depicted by work orientation. Work orientation is the openness of employees to develop and adapt to changing job demands (Van Dam, 2004). In order to retain and enable employees to remain in an organization, workers need to be prepared to change the way they work, change the workplace, and be prepared to receive the training that their employer requires. Such changes are needed for employers to continue to ensure that their organization is ready to meet market demands. According to Schneider, Bief and Guzzo (1996), employers are willing to provide assistance to their employees by providing training to improve their work orientation so that employees are better prepared for organizational change.

Nauta et. al. (2009) conducted a study to look at employees’ work orientation. The study shows that affordability has a positive relationship with work orientation while work orientation has a negative relationship with employee turnover. This finding has been supported by studies (Bezuuijen, 2005; Parker, 2000; Van Dam, Oreg, da Schyns, 2008; Van Dam and Seijts, 2007) which also recommend that employability be closely related to work orientation. Nauta et al. (2009) also suggested that employers should concentrate on employability skills while ensuring they are always in line with current requirements. Neda and Jamaliah (2015) have examined the relationship between work orientation, leadership skills and self-efficacy among postgraduate students. The findings show that work orientation is strongly associated with leadership skills, which are one of the elements of employability skills that can help
graduates improve their work quality and further their career enhancement. Local educational institutions need to apply work-oriented skills which are very important in helping students determine their career path.

Work orientation is also found to be at a high level among employees under 40 years old. They tend to possess higher levels of work orientation compared to older workers (Rendy, 2013). Hamsiah (2016) states that graduates with high job awareness and work orientation make it easier for them to secure a position in the job market. New graduates with high and positive work orientations tend to have a clear career pathway.

Kriettner and Kinicki (2003) state that self-confidence is an individual's value to an organization's members to act within an organization. Self-confidence is closely related to one's willingness to enter the workforce. People who have high self-confidence are more likely to feel valued, important, and influential in their pursuit of work satisfaction within an organization. Afiatin and Martaniah (1998), graduates with high self-confidence, are certain in the decisions they make based on their skills and abilities. This enables one to do good work without the help of others. Individuals feel accepted by a group, allowing them to express their views more clearly and more responsibly to a group. Moreover, self-confidence is much needed for new graduates to understand themselves and determine what action to take in developing their potential for employment.

Self-confidence also plays a significant role in influencing employability skills. There is a significant relationship between self-confidence and employability skills. Students who are equipped with high self-confidence allow them to be more prepared to express themselves in the face of competition and to be more productive workers (Saputro & Susemo, 2010). Training and self-esteem also can be motivation factors for students to be ready for the world of work (Martini & Hartini, 2012). Supported by Patuhena (2008), Nazrifa (2012) and Yunita (2013), there is a positive relationship between self-confidence and work confidence as well as graduates' willingness to go to work.

Judge, Locke, Durham, and Kluger (1998) have proposed that self-confidence is one of the factors that affect an individual's level of work. People with high self-confidence perceive challenging task as an opportunity to be taken as advantage. Meanwhile, someone with low self-confidence may perceive it as an unwanted opportunity (Locke, McClear, and Knight, 1996). Korman (1970) also predicted that individuals with high self-confidence choose jobs that are consistent with their interests, leading to higher levels of job satisfaction.

### 3. Methodology and Findings

The design of this study is quantitative and descriptive by using a questionnaire instrument. Descriptive data were analyzed by using IBM SPSS Statistics software. The instrument is adapted from Mohd Hazwan Mohd Puad (2015) and Archer and Chetty (2013). The questionnaire comprises three sections; Part A is demographic information, Part B is graduate work orientation, Part C is graduate self-confidence. The questionnaire was validated by experts in the field of study from two different universities, Universiti Putra Malaysia and Universiti Pendidikan Sultan Idris. The population of the study consisted of new graduates who participated in the SL1M training program. They were enrolling to employability skills training program in Shah Alam, Selangor, Malaysia. The researchers selected the unemployed new graduates who participated in the SL1M program as the population based on the researcher's ability to obtain the information and data needed for the study. The training program companies were also willing to facilitate the researchers to conduct the study. A total of 108 respondents were selected from the SL1M program.

Pilot study was conducted before the actual data collection in order to examine whether the items in the questionnaire were compatible with the actual sample and to ensure the questionnaire contains clear meaning items and instructions. Pilot study on 30 graduates resulted alpha Cronbach 0.62 and it is acceptable to be used in research study. The researchers sent an application permission letter to conduct a study to companies who involved in the SL1M training program. Then, information on population was obtained from the companies. After obtaining the number of population, the minimum sample size of the study was calculated by using Cochran (1977) formula.

The findings of the study on demographic information are shown in Table 1. The majority of the respondents in the study were female with 52.8% (n = 57) while male respondents were 47.2% (n = 51). The age of the respondents in the study ranged from under 23 to 29 years. According to the analysis, survey respondents aged 24 to 26 were the most likely to answer this questionnaire by 68.50% (n = 74) and followed by the survey respondents aged 27 to 29 at 23.1% (n = 25). The respondents in the study were 23 years of age at 8.30% (n = 9). The majority of respondents in the study received training at a company which involved in employability skills training programs under SL1M, Talent Sdn. Bhd. with a percentage of 68.50% (n = 74) and followed by Irsyad Sdn. Bhd. with a percentage of 31.50% (n = 34).
Table 1. Demographic information (N=108)

<table>
<thead>
<tr>
<th>Demography</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>51</td>
<td>47.20</td>
</tr>
<tr>
<td>Female</td>
<td>57</td>
<td>52.80</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 23 years old</td>
<td>9</td>
<td>8.3</td>
</tr>
<tr>
<td>24 - 26 years old</td>
<td>74</td>
<td>68.5</td>
</tr>
<tr>
<td>27 - 29 years old</td>
<td>25</td>
<td>23.1</td>
</tr>
<tr>
<td>Training company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irsyad</td>
<td>34</td>
<td>31.50</td>
</tr>
<tr>
<td>Talent Suites</td>
<td>75</td>
<td>68.50</td>
</tr>
</tbody>
</table>

3.1. Work Orientation

Table 2 shows the distribution of graduate work orientation levels. The analysis shows that work orientation construct is at a high level. The item “If the organization asks me to do other work, I am willing to change my activities and ways of work” shows the highest mean (M = 2.81, SD = 0.40) while the item “If the organization gives me the opportunity, I am willing to accept new work experience” shows the lowest mean compared to the other items (M = 2.44, SD = 0.67).

3.2. Self-Confidence

Table 3 shows the distribution of self-confidence levels in response to the next objective. The analysis shows that the self-confidence construct is high. Based on the table, the item “Sometimes I think I am not good at something” showed the highest mean (M = 4.28, SD = 0.86) and was followed by the item “I think that I have some good qualities” (M = 4.07, SD = 0.87), and “I feel useless at some point” (M = 3.97, SD = 0.90). Furthermore, the item “I do not have much in myself to be proud of” showed the lowest mean compared to the other items (M = 3.30, SD = 1.17).
Dissecting Perceptions of New Graduates on Work Orientation and Self-Confidence in Employability Skills Training Program

Table 4. Graduates’ perceptions on employability skills training programs (N=108)

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employability skills training programs enhance graduates' ability to speak clearly</td>
<td>1.62</td>
<td>0.49</td>
</tr>
<tr>
<td>Employability skills training programs improve graduates’ listening skills</td>
<td>1.43</td>
<td>0.50</td>
</tr>
<tr>
<td>Employability skills training programs enhance graduates' ability to communicate in English</td>
<td>1.53</td>
<td>0.50</td>
</tr>
<tr>
<td>Employability skills training programs enhance graduates’ skills to work well in a group</td>
<td>1.68</td>
<td>0.47</td>
</tr>
<tr>
<td>Employability skills training programs enhance graduates' ability to understand their function within a group</td>
<td>1.39</td>
<td>0.49</td>
</tr>
<tr>
<td>Employability skills training programs enhance graduates’ skills to understand their role to be a leader</td>
<td>1.68</td>
<td>0.47</td>
</tr>
<tr>
<td>Employability skills training programs enable graduates to learn the needs of lifelong learning</td>
<td>1.67</td>
<td>0.47</td>
</tr>
<tr>
<td>Employability skills training programs enable graduates to acquire lifelong learning skills</td>
<td>1.42</td>
<td>0.50</td>
</tr>
<tr>
<td>Employability skills training programs are capable of training graduates to practice lifelong learning</td>
<td>1.56</td>
<td>0.50</td>
</tr>
<tr>
<td>Employability skills training programs are able to train graduates to understand human needs as well as social issues</td>
<td>1.74</td>
<td>0.44</td>
</tr>
<tr>
<td>Employability skills training programs enhance the degree of professionalism of graduates</td>
<td>1.66</td>
<td>0.48</td>
</tr>
<tr>
<td>Employability skills training programs are able to train graduates to take responsibility for their actions</td>
<td>1.74</td>
<td>0.44</td>
</tr>
<tr>
<td>Employability skills training programs enable graduates to identify problems in the workplace</td>
<td>1.63</td>
<td>0.49</td>
</tr>
<tr>
<td>Employability skills training programs are capable to train graduates to use experience to solve problems</td>
<td>1.31</td>
<td>0.46</td>
</tr>
<tr>
<td>Employability skills training programs are able to train graduates to apply the knowledge to solve problems</td>
<td>1.46</td>
<td>0.50</td>
</tr>
<tr>
<td>Total</td>
<td>1.57</td>
<td>0.23</td>
</tr>
</tbody>
</table>

3.2. Self-Confidence

Table 4 shows the role of employability skills training programs, Skim Latihan 1 Malaysia (SL1M), in terms of capabilities and effectiveness in enhancing skills based on graduates’ perceptions.

The analysis found that the mean values for the items “Employability skills training programs are able to train graduates to be responsible for their actions” and “Employability skills training programs are able to train graduates to understand human needs and social issues” were highest (M = 1.74, SD = 0.44) and followed by the items “Employability skills training programs enhance the skills of graduates to work well within a group” and “Employability skills training programs enhance graduates’ skills to understand their role to be a leader” (M = 1.68, SD = 0.47). The item “Employability skills training programs are able to train graduates to use experience to solve problems” is the item with the lowest mean value (M = 1.31, SD = 0.46).

It can be concluded that the self-confidence and work orientation factors are at a high level. Graduates are prepared to change the way they work when directed by their organization. Also, this indicates that new graduates possess a positive work orientation. Moreover, trainees in the SL1M training program are confident and possess the right attitude to be hired in the labor market. Meanwhile, most of the mean items in graduates’ perceptions on employability skills training programs are at low level.

4. Discussion and Conclusions

Through the results of work orientation and self-confidence level, new graduates are moderately prepared to change the way they work when directed by their organization. This indicates that new graduates produced have high levels of work orientation. Training centers, especially high schools and SL1M programs are seen to have developed a high degree of positive work orientation among new job seekers. Respondents from both companies of employability skills training programs appeared to be receiving additional training in order to be more self-sufficient and willing to accept more tasks. Supported by Van Dam (2004), employees are likely to improve their work orientation if given the opportunity to be in a new situation. Rendy (2013) stated that young workers generally under 40 years old tend to possess a higher level of work orientation than those who are older. However, most respondents indicated that they were more comfortable working with existing colleagues. Respondents are more interested in the work environment with existing colleagues than in the new workplace. Supported by Hamsiah (2016), graduates possess work orientation that helps them to determine their own career path.

In addition, the findings also depict that graduates possess a high degree of self-confidence. They believe that they have a good quality to be themselves and things can be proud of. However, respondents still acknowledged that they sometimes find themselves weak to do...
something especially something new in terms of job tasks, assignments. Saputro and Susemo (2010) stated that graduates always possess confidence to work and that confidence is related to their employability skills.

Graduates who are seeking a job position have a high awareness of the issues of employability skills and competition that exist in the job market. They are aware of the role of employability skills training programs such as SL1M program in enhancing skills and reducing unemployment among university and college graduates. However, the results show their perception at a low level with a mean value of 2.442 and a standard deviation of 0.229. They perceived that the SL1M training program was not effective in fulfilling its role in preparing unemployed graduates before entering the workforce. This finding is aligned with previous studies by Mohd Hazwan Mohd Puad (2018) that shows the training centers are unable to fulfill their role to effectively train graduates with much needed employability skills by employers.

5. Recommendation

For the recommendation, further research should be conducted on other factors or constructs such as motivation, interest in identifying the strongest variables that influence graduates’ employability skills. Moreover, future researchers could also conduct interviews with the respondents involved the training programs in order to obtain the whole picture in conducting the qualitative study. To be balanced in terms of perceptions, future researchers should also add inputs by from employers and training center providers as survey respondents.

REFERENCES

A Qualitative Case Study into Exploring the Learning Styles and Learning Strategies of Non English Major Vietnamese College Students

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Abstract Learning styles and learning strategies have long been studied because they can influence learners’ success and promote learners’ autonomy, particularly in language learning. However, most studies in this area are carried out in international contexts rather than locally. Thus, many false assumptions have been made about Asian learning styles in general and Vietnamese learners in particular, i.e. they are passive and group-oriented learners, and they tend to learn by rote and memorising knowledge. The case study represents an attempt to find out if first-year non-English majored collegiate learners in Vietnam are passive or active. The significant findings from semi-structured interviews with two first-year non-English-majored Vietnamese college students indicate that Vietnamese college students are not passive and rote learners and the reasons for their reticence in class relate to their learning styles and the nature of the questions asked by their teacher. Furthermore, whether Vietnamese college students are group-oriented or not is not clearly proven from the finding. It may also depend on the students’ personality and how they view learning in a group. For that reason, further research is necessary. As regards learning strategies, it is not always the rote learning approach that the students employ. They only resort to it for fear of having lower marks in the exam. They learn with understanding and use other strategies to help them memorise the knowledge.

Keywords Passive Learners, Active Learners, Style, Strategies

1. Introduction

The past fifty years have witnessed a considerable number of methodologies springing up and claiming to be effective practices to boost students’ second language learning capabilities. These methods and approaches are mostly determined by educators and teachers, which can lead to the fact that what students acquire is a far cry from what they are taught. For that reason, a more learner-centred approach will likely bring in expected results. However, how can teachers understand their students well enough in addition to knowing their needs? To deploy suitable classroom activities effectively, it is vital to examine students’ learning styles and strategies. Unfortunately, sometimes, teachers can have misconceptions or overgeneralizations about their students’ styles and strategies due to being susceptible to what they read and misjudging what they see. In other words, a conscientious teacher should be not only sensitive to dissimilarities among their students but also able to avoid stereotyping them. It is evident that the majority of second language learning research about Asian learners is carried out in the English-speaking countries and thus an inaccurate picture of Asian learners in general and Vietnamese learners, in particular, can be generated (Hong-Nam & Leavell, 2006; Park, 1997, 2002; Young, 2018).

In Vietnam, most students start to learn English at lower secondary schools, and English has become an obligatory subject throughout a learner’s educational journey. When students enroll in university, they also continue to make great efforts to achieve a satisfactory English level required of them to graduate. They can choose to sit for TOEIC, TOEFL or IELTS to obtain an English certificate, which can prove whether they have attained the expected English proficiency level. In recent years, the Vietnamese government has encouraged tertiary institutions to teach major subjects in English in advanced programs. Van Van (2010) mentioned that one of the most challenging issues in
Vietnamese higher education lies in the English teaching contents. It is because, unlike general education, where the teaching contents, as well as training and educational goals, are consistently imposed by the Government, the question is of how the English curriculum is designed in the hands of each institution.

Despite the introduction of the Communicative Language Teaching method since the beginning of the 2000s, most of the language programs in junior high schools in Vietnam focus on grammar and vocabulary and explicit grammar teaching is the most popular because the primary mission centres on helping students pass the exam. Most Vietnamese students learn English officially from Grade 6 to Grade 12 and then take an English university entrance exam, which includes only three parts: grammar, vocabulary, and reading. Only when students further their studies at university for those who choose English to be their major, will they have more chances to study and practice speaking in class. Nevertheless, most of them tend to struggle in the first semester with their English. Although most Vietnamese students spent seven years studying English during their secondary education, their English entrance exam scores are very low. For example, the average English test score at the national level in 2016 was 3.5 over 10 (Duong, 2017). This could be explained by the fact that most Vietnamese students lack learning strategies when they learn English.

In Vietnam, the issue of learning styles and strategies is not widely and duly realised. Some widely known assumptions have been made about Vietnamese learners, i.e. they are passive and group-oriented learners and they tend to learn by rote and memorising knowledge. In fact, there has been little research on Vietnamese learning styles and, if any, there is no research carried out from the Vietnamese learners’ perspectives, asking students to reflect on their learning styles and learning strategies via semi-structured interviews rather than via a questionnaire. If teachers know the answer to the above-stated questions, they will be better equipped to understand their students’ needs, and to know how to help them improve and tackle the problem of second language learning. They will also be able to adapt their teaching styles to match their students’ learning styles. For this myth to be unravelled, I have conducted this pilot study.

This study uses a semi-structured interview to explore learning-styles and learning strategies among first-year non-English collegiate Vietnamese students and examine the following research questions:
1. What are the roots of the assumed styles and strategies (i.e. passive, cooperative and rote learners) among Vietnamese learners?
2. What is the genuine picture of Vietnamese learners’ learning styles and learning strategies?

2. Literature Review

2.1. Research on Asian Learning Styles and Learning Strategies

There has been a lot of research into Asian students’ learning styles and strategies both in those Asian countries themselves and “alien” countries where Asian students study. Overall, learners in each Asian country will expose different tendencies toward particular styles. For example, Chinese, Korean and Indonesian students choose auditory learning as their major learning style while Thai, Malay and Japanese students as minor learning style (Saracho, 1997, p. 18). Although not all Asian learners have similar learning styles, a few assumptions can be found.

Firstly, Asian learners tend to be more cooperative (Scarcella, 1990, p. 123). However, it is in doubt whether this learning style is culturally or contextually affected. It could be because some Asian countries such as China, Japan, Korea, Singapore, and Vietnam are influenced by Confucian heritage culture and ideologies, so they share some characteristics of a collectivist society. Nevertheless, cultural factors may not be the only determinant to account for the use of a specific learning style as individual personality traits may explain the presence of such a style (Ibrahimogluglu, Unaldi, Samanciogluglu, & Baglibel, 2013). In this sense, not all Asian learners are cooperative or prefer cooperative learning. A study conducted by Park (2002) on 857 high school students of mixed originality in the United States concluded that Vietnamese, Mexican and Hmong learners preferred group learning while Armenian and Korean students did not. Besides, some studies have shown that Asian learners who studied English for more than three years in the States tend to favor group learning less than those who spent short periods studying English there (Reid, 1987, pp. 95-96).

Another learning style is passive learning. It is thought that Asian learners are inclined to adopt passive learning styles because they tend to keep quiet in the classroom. Also, people have preconceptions that Asian learners really want to listen and obey. However, according to some research, students do not want to adopt that role, i.e. obedient listeners in class. They “do not want to sit in class passively receiving knowledge [but] want to explore the knowledge themselves” (Littlewood, 2000, pp.33-34).

Furthermore, it is claimed that those who support those prejudiced ideas do not take into account the cultural factors, cultural clashes and students’ expectations (Chalmers & Volet, 1997, pp. 90-91). This is to say that these students are not passive in thinking and that they have different views about the suitability of speaking out in classroom.
Asian learners tend to resort to rote learning strategy, or surface approach, which means learning something via repetition so that knowledge can be repeated from memory (Watkins & Biggs, 1996). This learning approach contrasts with deep learning approach, which is a combination of understanding and memorising (Marton, 1996). Many people have that assumption because Asian learners spend a great deal of time memorizing. However, some research indicates that they understand better through memorisation (Marton, 1996) and “rely less on rote learning to simply reproduce information” (Chalmers & Volet, 1997, p. 90).

2.2. Research on Vietnamese Learning Styles and Learning Strategies

As a member of the Asian continent, Vietnam, to some extent, has its culture akin to that of other countries in the region and similar statements were made to describe Vietnamese students’ learning styles and strategies. It is noticeable that regarding history, Vietnam was dominated by the Chinese for nearly one thousand years. Vietnamese people value harmony, family, achievement and hierarchy (Triandis, 1995) because China’s Confucian ideologies are deeply ingrained in Vietnamese culture, which focuses on virtue, respect, obedience and the relationship between ruler and subject, father and son, older brother and younger brother, husband and wife, seniors and juniors (Doan, 2005; Nguyen, Terlouw, & Pilot, 2005).

In Vietnamese culture, self-respect and respectful attitudes are very important. This is expressed through politeness and obedience. Besides, Vietnamese people tend not to reveal their feelings and avoid conflict for fear that they will hurt others’ feelings. Thus, in the classroom, Vietnamese students tend to keep quiet and instead of volunteering, they wait until they are called on to answer the question posed by their teacher. They even also avoid eye contact with the teacher and tend to copy down everything on the board. This is due to the belief that being quiet in class means showing respect towards the teacher and they do not raise questions because they may think it is enough to receive knowledge transferred from their teachers (Huong, 2008). However, this behaviour is often “misunderstood as a passive or non-cooperative attitude” (Nguyen, 2002). However, Truong (2017) states that Vietnamese students are not passive at all and the reasons why they appear passive are related to their shyness and face-saving attitudes.

Furthermore, in line with the common stereotypes of Asian learners, Vietnamese learners employ more frequently “repetitive learning strategies” (Helmke & Tuyet, 1999), but “repetition appears to have a different psychological meaning” (Helmke & Tuyet, 1999) for them. This is to say that the stereotype of being rote learners is not applied to Vietnamese learners. Nevertheless, more research is needed to understand Vietnamese students with a full understanding of Vietnamese culture and appropriate interpretation of the learning strategies commonly used by Vietnamese students. Since the introduction of Communicative Language Teaching (CLT) method to Vietnam in the 1990s, the learning and teaching practice has changed to a certain extent. Departing from the traditional way of learning, students are relatively more active thanks to classroom communicative activities. Nevertheless, from my teaching and learning experience, teachers sometimes complain that some of their students remain quiet although they try to encourage them to talk and put them in a group so that they will feel more secure. It can be partly because of the students’ personality or of the fact that they are still influenced by how they were used to be taught. Therefore, to better understand those assumptions, teachers should conduct a study in their teaching context though there has been little research on Vietnamese learning styles and strategies.

3. Methodology

3.1. Setting

The educational institution that I am affiliated with is Van Lang University, Faculty of Foreign Languages in Vietnam where I have been working as a full-time English lecturer for eight years. I have been away from my teaching for five months because I am currently enrolled in a PhD program in TESOL at University Putra Malaysia. Last semester, I was in charge of teaching first-year non-English major students (e.g. students of Computer Science, Architecture, Engineering and Biotechnology) in Vietnam and the participants who volunteered to take part in this pilot study were my students. As mentioned in the literature, although students spend many years learning English during their secondary education, most of the non-English major students still struggle with their English during the first year at university and for most of those students, their English is at an elementary level. Since their focused subjects at high school to pass the university entrance exam were Mathematics, Chemistry and Physics, their English was not given due attention at high school. Thus, it is stated in the policy of my university that all of the students belong to the non-English major group will be assisted to review and improve their English language from elementary level. Accordingly, one of the important missions of the English Department is to produce qualified students able to communicate with foreigners in English and develop both their proficiency and their knowledge about the socio-cultural background of English-speaking people.

3.2. Participants

The convenient sampling strategy was used to locate non-English major collegiate students at Van Lang University who were willing to share information about
their learning English experiences as students. The participants include two first-year students from Van Lang University, i.e. a male student from the Department of Biology and a female student from the Department of Architecture who were invited to take part in this pilot study. Their mother tongue is Vietnamese and their English is at pre-intermediate level. They have spent over seven years studying English and have not taken any extra English course outside the school program. The sample was recruited through invitation posted on personal communication website with the students. Detailed demographic information for participants is shown in Table 1.

### Table 1. Demographic information for the participants. F, Female, M, Male

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Faculty</th>
<th>Years of learning English</th>
<th>English level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophie</td>
<td>F</td>
<td>Architecture</td>
<td>7.5</td>
<td>Pre-intermediate</td>
</tr>
<tr>
<td>Ben</td>
<td>M</td>
<td>Biology</td>
<td>10</td>
<td>Pre-intermediate</td>
</tr>
</tbody>
</table>

#### 3.3. Data Collection Method

The two students completed the background questionnaires which are intended to elicit demographic background information such as sex, age, and self-rated English proficiency. Face-to-face virtual interviews between the researcher and the students via Skype were recorded, with the permission of the students being interviewed. Interviews were conducted in English. Each participant was interviewed for about 30 minutes or more, depending on the course of the conversation. The interview was mostly based on an open-ended format, allowing the interviewees to control the content in response to questioning.

Questions raised were intended to uncover whether Vietnamese students are passive, group-oriented learners, who use rote learning as the principal strategy or not. Besides general questioning, strategy-related questions, based on Wang & Bai’s (2017) validated Questionnaire of Self-Regulated Learning Strategies were employed to find out if Vietnamese college students use any other strategies. Gathered data from each interview was organized and transcribed, including details on dates, pseudonyms, and any other notes that were taken during and after the interviews. Although the researcher had some pre-determined interview questions, she allowed for the conversation to emerge naturally and asked follow-up questions when appropriate. After the interviews, the recordings were transcribed into computer files with the students’ names replaced by two pseudonyms, i.e. Sophie and Ben.

#### 3.4. Data Analysis Method

The conversation transcripts were read by the researcher and used grounded theory approach to data analysis. The strategy is to identify themes and make a detailed inspection of tape recordings and transcriptions of participants’ responses during interviews to find out their learning styles and learning strategies.

#### 3.5. Transcribing

The audiotaped data were transcribed in as much detail as possible. No attempt was made to temper the transcripts, for instance, by excluding incomplete utterances or restoring what was said into grammatical form. However, the transcripts do not include detailed descriptions of supra-segmental features (e.g. intonation, rhythm and prosody) or body movements (e.g. gaze and gesture) because their inclusion in the transcripts and their analysis were beyond the scope of this study. The database consists of 28 semi-structured questions.

#### 3.6. Coding

Coding categories were made based on the research questions. There were nine codes emerging from the data: passive, active, rote-learning, cooperative learning, individual learning, autonomous learning, memorising and understanding, indirect strategies, direct strategies. The researcher first started with a start list for deductive coding (Miles, Huberman, & Saldana, 2014) based on this study’s interview protocol. The researcher then searched for broad categories and then developed themes that emerged from the participants’ experiences, which were labelled by identifying phrases that related to our themes. After concluding the first cycle coding, the researcher moved on to second cycle coding as a way to refine themes. The researcher organized the first cycle codes by clustering them under common themes or patterns that emerged from the interviews. The researcher conducted second cycle coding, which included rearranging and reorganizing the codes. The researcher continuously refined and reworked the pattern codes until the researcher felt the final codes were representative of the participants’ experiences. It was through this process that the findings related to this current study emerged.

#### 3.7. Trustworthiness and Reliability

I have been able to collect rich data and a thick description, which has increased the trustworthiness of the data collected (Glesne, 2015). My findings are based on the raw data that was collected and the exact quotes from my study participants. I employed reliability procedures (Creswell, 2007), including conducting multiple reviews of transcripts to reduce mistakes in participants’ narratives of their experiences. Finally, I conferred with an international higher education scholar regarding my study topic, the nature of our study, and the process by which I collected
my data. We have also shared my preliminary findings with my peers proficient in qualitative research, and as a result, I was able to confirm that my ‘tentative interpretations’ (Merriam & Grenier, 2002, p. 31) were appropriate and congruent with the themes that I identified from my findings.

3.8. Researcher Reflexivity

Reliability often lies within the researcher who is the primary instrument for data collection; thus, my positionality was used as a form of reliability (Merriam & Tisdell, 2015). As the researcher, I was aware that reflexivity affected how I made meaning of participants’ worldviews. As the author, I identified myself as an EFL (English as a Foreign Language) lecturer whose primary language is Vietnamese and second language is English. I have been teaching English in Vietnam for eight years, and I recognised the privileges and benefits of my Vietnamese citizenship when conducting this mini research project. My position as a full-time English lecturer at Van Lang University provided access and acceptance by my participants and the research site. I benefitted from the outsider status as an Asian scholar, and at the same time, also benefitted as an insider who had prior experience in Vietnam. Very few challenges or tense moments arose in the researcher and participant interactions, as all participants were vocal about their admiration for my teaching experience and its education institutions which definitely benefitted me as the first author. The only barrier at times would be related to language, as participants would sometimes struggle to choose the correct wording and/or phrasing to represent their experiences. These situations were mediated by the researcher recalling all of her qualitative interview training and holding back her natural inclination to provide or correct words for the participants.

4. Results and Discussion

4.1. Results

A summary of findings and discussion based on the interviews with the two students is given. In some places, verbatim quotes are taken from the transcripts while in other places, comments and interpretations based on the interviews are offered to provide a readable narrative about their features of learning. Six major issues emerged.

4.2. Passive Learners or Active Learners

Generally speaking, Ben exudes a clear aura of confidence and being an active learner because he raises his hand “most of the time” in class, except when the posed questions are very easy. Moreover, whenever his teacher raises a question, his mind is always active since he said: “I will think about it and most of the time, I raise my hand to let my teacher know my answer”. Also, though believing what the teacher says, Ben affirmed that he would usually challenge his teacher with difficult questions and ask him or her if he does not comprehend or doubt any point in the lesson. Surprisingly, it is contrary to the deeply-held belief that students should not challenge their teachers if they are to be polite.

Meanwhile, Sophie seems to be passive in the classroom because she “rarely” volunteers to answer the questions; but is she truly a passive learner? Although she does not like raising her hand in class, she does consider her teachers’ questions:

I try to find out the answer and keep it there in my head. I don’t raise my hands or shout out the answer like my friends. I will wait for my teacher to give the answer and then I compare my answer with hers to see if I am correct.

Not raising hands does not mean that Sophie is a passive learner because her mind is active and she’s not afraid of making mistakes. Besides, she does challenge her teacher sometimes with difficult questions although it depends on how her teacher is. In fact, she discloses that she prefers “listening to others more than speaking [her] ideas”.

4.3. Group Learning or Individual Learning

Unlike Ben, who enjoys working in groups, seeing the positive sides of completing work with his friends, i.e. to learn many things from friends and save time, Sophie prefers working alone. This is not to say that Sophie is reserved or reticent because she may have an unpleasant experience from working in a disorganised group where opinions differ:

I prefer working alone because I feel tired when working in groups. Sometimes, everyone doesn’t agree with each other and does what he or she likes and they are sometimes not on time for group meetings.

4.4. Autonomous Learning

To the two freshmen’s minds, knowledge is not always something that is transferred directly from their teacher. It is evidenced by their independent learning outside the classroom. When they query and the answer are given by their teacher, they will google it. Ben says: “I will figure out the answer myself and I will check the information on the internet when I go home” and Sophie, “I will check the answer on Google”. Moreover, on being questioned about their choice between the the deductive and inductive way of learning grammar, Sophie chooses the second way and adds that she likes discovering things herself.

4.5. Rote-Learning (Surface Approach) or Memorizing and Understanding (Deep Approach)

Both Ben and Sophie have the same opinions in that they hate rote learning and it is very tiring and boring to learn by
heart. While Ben admits that he only remembers the lesson after his teacher explains it and he does exercises to practice, Sophie prefers learning visually: “I like learning through pictures and something that interests me”. For example, when being asked how to memorise vocabulary, Sophie gives a surprising answer that she does not record any new words in her book but still remembers them exactly:

In class, my teacher usually writes the new words on the board or presents them in powerpoint and I look at them, and I remember them. I don’t know how I can remember them, but when I finish the lesson, I take the bus to go home and on the bus, the new vocabularies appear in my mind.

On the contrary, Ben is more organised; he writes down new vocabulary in a notebook together with not only their meanings but also illustrating examples so that it will be easier for him to review later. However, have they ever resorted to rote learning? Interestingly, both of them agree that they will not take risks at the expense of their scores. It means that they do not refuse to learn by heart for the exam even though they do not comprehend.

4.6. Indirect Strategies: Metacognitive, Affective and Social

Regarding metacognitive strategies, both students employ organisational skills when listening. They clarify the objectives of the listening task. Specifically, before listening, they read the questions carefully first. Nevertheless, this organisational skill is more clearly seen in the way Ben learns vocabulary because he records new words in a notebook for later review.

Additionally, both Sophie and Ben know how to evaluate their progress in listening. Ben says “I compare it with my listening performance many months ago” while Sophie has a different way to know how much better her listening is:

Well, I usually practice listening on the Internet. There is a very good website like Randall lab and there are many different levels for you to choose. When I choose the upper intermediate level more than the level I think I am at and I can listen about 70%, I am very happy because I think I am making progress.

Concerning affective strategies, while Sophie can maintain a positive attitude toward difficult questions, Ben feels angry. However, he knows how to build positive emotion again. He says: “I will stop thinking about the task and I listen to music or watch TV or go to sleep and I will complete it after that.”

Regarding socio-interactional strategies, both pose questions whenever they cannot find out the answers themselves. In addition, when watching films, Sophie wonders a lot about some social behaviours or sayings by which she is bewildered and searches for them online later: “I tend to wonder a lot about things, and I usually go online and find out the information.”

4.7. Direct Strategies: Cognitive Strategies

On approaching a difficult question in a listening or reading task, both utilise guessing and inferring techniques, matching the information against their own experience. Ben says: “I will guess the answer from what I know through books or real life”. Likewise, Sophie states: “I tend to make a guess and try to finish all the answers”, adding that “if a familiar topic talks about something strange or different, I usually compare it with what I know”. Furthermore, that Ben and Sophie can identify main ideas from the detail ideas to understand what a reading passage talks about indicates that they know how to synthesise information. Finally, when copying down a new vocabulary item, Ben also marks the stressed syllable on it, which means that he analyses what he studies, i.e. break a multi-syllabic word into parts.

5. Discussion

Discussing emerging issues will involve collaborating and contrasting findings on learning styles and learning strategies among both Asian and Vietnamese learners. Contrary to what is stated about Vietnamese learners (Doan, 2005; Nguyen, 2002), the two participants’ responses reveal that they are not passive learners at all. Even when they do not raise their hands in class or think their ideas out loud, their minds are also active because they still think about the response to their teacher’s questions and try to figure out the answers and when they do not comprehend something, they will ask their teacher. That they do not appear to be active is partly due to their learning styles or partly because questions are easy.

Moreover, the findings show a sharp contrast to the widely-held belief about the reason why Vietnamese learners are passive (Doan, 2005; Nguyen, 2005), i.e., they want to be polite to teachers, and they see knowledge as something their teachers transfer to them. From the findings, it is clear that respecting the teacher does not mean they cannot challenge them and that the students are very autonomous. Furthermore, whether Vietnamese students are group-oriented or not is not proven from the findings. It may also depend on the students’ personality and how they view learning in a group. For that reason, further research is necessary. As regards learning strategies, it is not always the rote learning approach that the students employ. They only resort to it for fear of having lower marks in the exam. In fact, they learn with understanding and employ other strategies to help them memorise the knowledge.

5.1. Teaching Implications

Concerning learning styles:

Though there is evidence suggesting that “culture, as
learned by the child from family, community, and school, has a strong influence on learning style” (Hedge, 2001, p. 19) and that a child’s learning style depends on the “type of society, and the way [he] is reared” (Brown, 2000, p. 115), teachers should avoid stereotyping. It is because even in the same culture, there is still a wide variety and there are serious and unfathomable dangers if teachers misidentify learning styles. If that was the case, the teacher might provide wrong instructional practices, which can lead to students’ academic failure.

Moreover, though learning styles appear stable, they are changeable; otherwise students will not be able to surpass drawbacks or restraints of their own style. In fact, they will exert a certain style appropriate to the context. Being informed of learners’ own styles can be a great boon to teachers. However, not many learners can identify their own styles. For those learners, teachers should provide them with opportunities to discover their styles through letting them face certain challenging tasks and encouraging them to experience themselves in different learning styles since students who employ multiple learning styles can enjoy “greater classroom success” (Reid, 1987, p. 101).

Finally, no style should be favored more than others. They are equally important. Therefore, teachers need to be lenient with some types of learners. For instance, they should be more patient with reflective learners who need more time to consider their responses and more tolerant of errors made by impulsive learners. Furthermore, teachers should be aware of the importance of learning styles because if teachers consider styles, they can “help improve both instruction and assessment [and] can show sensitivity to cultural and individual diversity that is so often absent in the classroom” (Zhang & Sternberg, 2001, p. VIII)

5.2. Concerning Learning Strategies

Since the Cognitive Approach was introduced in 1970, language learners were thought to be “more actively responsible for their own learning” (Larsen-Freeman, 2000, p. 159). Therefore, they themselves try to employ possible techniques to achieve second language learning success. Recognising and understanding those strategies, teachers can realise what makes learners successful so that they can set up a favourable classroom setting to facilitate their students and choose suitable activities for different learners. However, it is still not sufficient because not all learners are good learners; therefore, they “need training in learning strategies” (Larsen-Freeman, 2000, p. 159). To realise this, teachers should make students “aware of their own style preferences and the strategies that are derived from those styles” (Thompson & Rubin, as cited in Brown, 2000, p. 131). This can be done through interviews, checklists, tests or techniques.

Moreover, teachers can “embed strategy awareness and practice into their pedagogy” (Ellis, as cited in Brown, 2000, p. 131). In other words, learner strategies can be practiced through language lessons such as communicative or error recognition exercises or games. Finally, learners should be provided with textbooks including strategies (O’Malley & Kupper, as cited in Brown, 2000, p. 131). However, it does not mean that learners’ success can be ensured because learner training usually takes a long time and we are not certain whether learners will be able to apply learning strategies effectively due to external factors such as religion, culture, previous learning experience or independent learning outside the classroom which can contribute to learning success. Hence, what teachers can do is to offer learners a great diversity of strategies so that they will opt for the ones that suit their learning styles as well as help them know what, when and how of employing appropriate learning approaches.

Given that certain learning strategies are attributed to external factors such as personality, language proficiency, and culture, further research is necessary to discover the significance of that associated relationship. This will not only help researchers see how each of these factors is related to learning strategies but also enable teachers to consider appropriate factors in learner training.

No matter in what ways strategies are used, teachers should also pay attention to the conditions that determine the usefulness of a strategy. In other words, a helpful strategy must fulfill the following three conditions: relating to available L2 task, fitting a particular student’s learning style preference, being employed effectively in conjunction with other relevant strategies (Oxford, 1990, p. 8). Also, teachers should look at what good learners do to acquire knowledge so that they can help other learners to better their language learning. For example, good learners tend to make and try out guesses and have a strong desire to communicate and will do many things to make their ideas understood. Furthermore, it should be noted that an important aim for most curricula is self-regulation by learners (Zimmerman & Schunk, 2012) and developing confidence and independent-thinking in learners in school is important for both schools and society as well.

6. Conclusions

To sum up, this exploratory study is set out to pave the way for future research that is intended to discover Vietnamese students’ learning styles and strategies. The interviews with the two students mentioned above reveal that Vietnamese students are not passive and not rote learners at all. Although there are no fixed styles and strategies, it is worth the effort to increase learners’ awareness of their styles and strategies because “the burden on the learner is to invoke the appropriate style for the context, and the burden on the teacher is to understand the preferred styles of each learner and to sow the seeds for flexibility” (Brown, 2000, p. 118). Besides, the biggest challenge for the teachers is to find ways to promote
learners’ autonomy according to their background and their characteristics. Therefore, teachers should also make appropriate judgments about individual learners and provide them with optimal opportunities for learning. It is also interesting to investigate if there is any distinction between each gender’s learning styles and learning strategies regarding such factors as age, gender, major and personality. Therefore, future research should look into those factors and include students with those variants into the qualitative study.

Appendix

Transcript of Interviews

Sophie
Researcher: Hi, Sophie. How are you?
Sophie: Hi Miss, I am fine and you?
Researcher: Very well, thanks Sophie. As I explained to you the purpose of today’s interview yesterday. So, now we are meeting online to record my interview with you about your English learning experience. So are you ready, Sophie?
Sophie: Yes, Miss. I am very happy to share.
Researcher: Ok, Sophie, the first question is, can you tell me how often you raise your hands in class?
Sophie: Um, I think sometimes. But I don’t like raising hands
Researcher: Can you tell me why?
Sophie: Well, I like listening to others than speaking my ideas.
Researcher: If you don’t understand something, what will you do?
Sophie: I will ask my teacher
Researcher: When your teacher raises a question, if you are not sure of the answer, but really want others know what you think, will you raise your hand?
Sophie: I think I will.
Researcher: When your teacher poses a question in front of the class, what will you do?
Sophie: I try to find out the answer and keep it there in my head. I don’t raise my hands or shout out the answer like my friends. I will wait for my teacher to give the answer and then I compare mine with hers to see if I am correct
Researcher: Are you afraid of making mistakes or giving incorrect answers?
Sophie: No
Researcher: Do you believe in what your teacher says?
Sophie: Of course, yes
Researcher: If you think that your teacher’s answer may not be correct, what will you do?
Sophie: I will ask her again and I will check that answer on Google
Researcher: Do you challenge your teacher by asking him or her difficult questions?
Sophie: Yes, but it depends on each teacher. If my teacher is easy-going, I will ask her.
Researcher: When you encounter a difficult task, how will you feel?
Sophie: I feel ok and I will try my best to solve it
Researcher: How often do you give comments to your friends’ postings on forums on the blackboard or their group presentations?
Sophie: Rarely
Researcher: Do you like working in groups or alone?
Sophie: I prefer working alone because I feel tired when working in groups. Sometimes, everyone doesn’t agree with each other and does what he or she likes and they are sometimes not on time for group meetings.
Researcher: Do you like learning English in a funny way, let’s say learning English with games?
Sophie: I don’t think so. I like learning in a serious classroom setting
Researcher: Do you tend to learn lessons by heart, Sophie?
Sophie: No, I hate learning by heart. I like learning through pictures and something that interests me.
Researcher: But, supposing you don’t understand the lessons but your teacher asks you to review them for the exam, will you do what he or she tells?
Sophie: Certainly yes, because I don’t want to have lower marks
Researcher: When you watch films, there are some social behaviors and sayings that you don’t understand, what will you do?
Sophie: I tend to wonder a lot about things, and I usually go online and find out the information
Researcher: When you are given a listening task, let’s say you have to listen to a conversation between Mary and Peter, and then you have to answer several multiple choice questions, can you tell me the steps that you complete the task?
Sophie: I will read the questions first and then I listen and answer the questions.
Researcher: Do you take notes or write down key words when you are listening?
Sophie: No. I remember what I have to listen for and try to find the answer in what I listen.
Researcher: Do you imagine the conversation in your head or predict the answers from your own experience before you listen?
Sophie: Generally, I don’t. I just remember what I have to listen for.
Researcher: How do you know that you are making progress in your listening skill?
Sophie: Well, I usually practice listening on the Internet. There is a very good website like randall lab and there are many different levels for you to choose. When I choose the upper intermediate level more than the level I think I am at and I can listen about 70%, I am very happy because I think
Researcher: When you cannot understand some details or a word in the listening recording, what will you do? 
Sophie: I tend to make a guess and try to finish all the answers.
Researcher: Now, can you tell me the steps that you finish a reading task? 
Sophie: First, I will read the questions, and then I read the passage.
Researcher: How do you distinguish main ideas from detailed ideas of a paragraph? 
Sophie: The main idea is usually at the beginning of the paragraph.
Researcher: If the content of the reading is about a familiar topic, let’s say going shopping, do you connect or infer from what you already know with what you are reading? 
Sophie: Sure, if a familiar topic talks about something strange or different, I usually compare it with what I know. 
Researcher: Ok, do you usually read the text again at home? 
Sophie: No, unless it is for the exam.
Researcher: Ok, now can you tell me how you memorize the vocabulary that is taught in class? 
Sophie: In class, my teacher usually writes the new words on the board or presents them in power point and I look at them and I remember them.
Researcher: So, you don’t take notes or write new words in your notebook? 
Sophie: No, I don’t write any words in my notebook. 
Researcher: But, how can you remember all of the new words and their meanings if there are about 20 new words in a lesson? 
Sophie: I don’t know how I can remember them but when I finish the lesson, I take the bus to go home and on the bus, the new vocabularies appear in my mind.
Researcher: So, how about studying grammar, do you like your teacher telling you a grammar rule and then you do the exercises or you want to figure out the rule yourself? 
Sophie: I like discovering things myself, so I like the second choice more.

Ben: 
Researcher: Hi, Ben. How are you? 
Sophie: I am fine, Miss. Thanks Miss. How about you? 
Researcher: Very well, thanks Ben. As I explained to you yesterday the purpose of today’s interview, so, now we are meeting online to record my interview with you about your English learning experience. So are you ready, Ben? 
Researcher: OK, so the first question is, in class, when your teacher raises a question, what will you usually do? 
Ben: I will think about it and most of the time, I raise my hand to let my teacher know my answer. 
Researcher: If you don’t understand something, what will you do, Ben? 
Ben: I will figure it out myself first and then if I still can’t understand, I will ask my teacher.
Researcher: Do you believe in what your teacher says? 
Ben: Absolutely.

Researcher: Do you usually ask your teacher difficult questions? 
Ben: Yes, of course. 
Researcher: So, when you doubt something that your teacher says, do you argue? 
Ben: Well, I will tell my teacher what I think and then I will check the information on the internet when I go home.
Researcher: Are you afraid of making mistakes, for example, a grammar mistake? 
Ben: Before I was, but not now.
Researcher: Can you tell me why, Ben? 
Ben: Yes. When I got the answer, but others didn’t, my teacher praised me and I felt very happy.
So, I usually raise my hand in class.
Researcher: When your friends make a presentation or post something onto the forum, how often do you give comments? 
Ben: Most of the time, I will tell them what I think.
Researcher: Now, can you tell me how you remember a grammar rule? 
Ben: My teacher explains it and I do exercises to practice that rule and then I will remember it.
Researcher: Do you like learning by heart? 
Ben: No, I don’t. I think it is very boring to learn by heart and I will feel very tired. I only remember when I understand.
Researcher: But when your teacher asks you to review the lessons that you don’t understand for the exam, will you follow what she or he tells? 
Ben: Absolutely, yes, because I don’t want to have lower marks.
Researcher: How do you expect the English classroom atmosphere should be? 
Ben: Well, I want the classroom to be funny. I like games and I don’t like sitting at a place and listening. I like guessing for the games.
Researcher: Ok, now another question for you is that do you like working in groups or alone? And why? 
Ben: I like working in groups because I can learn many things from my friends. Besides, working in group can save time and when I am not sure about something, I can discuss with my friends.
Researcher: When you encounter a difficult task, for example, a writing task, how will you feel? 
Ben: I will feel very angry.
Researcher: Will you do something to calm you? 
Ben: I will stop thinking about the task and I listen to music or watch TV or go to sleep and I will complete it after that.
Researcher: When your teacher asks you a very easy question, will you raise your hand? 
Ben: Generally, no, I like my teacher asking me difficult questions.
Researcher: When you are given a listening task, asking you to answer multiple choice questions about the conversation between two people, what will be the steps for you to complete the task?

Ben: I will read the questions first and then I will listen and answer the questions

Researcher: Do you take notes when you are listening?

Ben: No, I usually close my eyes when I listen.

Researcher: Do you predict the answer before you listen?

Ben: Usually, not. I just read the questions and I remember what I have to listen for.

Researcher: If the topic of the conversation is familiar to you, but you cannot find the answer to a question, what will you do?

Ben: I will guess the answer from what I know through books or real life

Researcher: Do you think that you are making progress in your listening performance?

Ben: Yes, I feel better now

Researcher: How do you know that you are making progress in your listening performance?

Ben: I compare with my listening performance many months ago.

Researcher: When you are given a reading task, can you tell me how you finish it?

Ben: I will read the main ideas first to understand what the passage is about and then I read the questions and try to find the answer

Researcher: Do you read the passage again at home?

Ben: If the passage interests me, I will read it again

Researcher: How do you know that you are making progress in your listening performance?

Ben: I write new words in a notebook together with their meanings and example sentences so that I can review them whenever I want

Researcher: Do you make notes how to pronounce a new word?

Ben: I don’t write the transcription like in the dictionary. I just put a mark on the stressed syllable

Researcher: How do you like studying grammar? Do you like being presented a grammar point and then doing exercises or you like the teacher letting you discover the rules yourself?

Ben: I prefer my teacher presenting it and we will do exercise to practice.

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Peer Assessment Experiences in the Lower Primary ESL Classrooms in: Teachers' Perspectives

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Abstract Peer assessment is increasingly being emphasized as part of formative assessment due to its rich nature in developing independent and autonomous learners. However, in Malaysia, the practice of peer assessment is still limited. While past studies have indicated that conceptions predict classroom practices, and studying teachers’ conception on peer assessment are important especially now that the transformation of assessment practice is a major item in the national educational agenda. Hence, this study aims to explore peer assessment experiences in the lower primary ESL classroom among teachers in the state of Selangor. The study adopted the qualitative research method, with three primary ESL teachers who were purposefully selected as the participants of the study. Data were collected through in-depth interviews and were analyzed for emerging themes. The findings revealed that participating teachers in this study viewed peer assessment as an interpersonal, intrapersonal and active, cognitive process. In implementing peer assessment, teachers generally engaged in several processes before and while implementing the activity. In the planning stage, the teachers decided on the activity and strategy, presented success criteria and specified feedback forms to be used by the students and while during the activity, teacher oriented the task clearly and facilitated the process through monitoring. This study contributed to a better understanding of teachers’ perspectives on implementing peer assessment in the lower primary ESL classrooms in Malaysia.

Keywords Formative Assessment, Peer Assessment, English as a Second Language (ESL)

1. Introduction

Assessment is an important component in learning. Over the last thirty years, there has been growing evidence on the ability of assessment to improve student learning (William, 2017). From a process designed and implemented solely by the teacher, the assessment focus has now shifted to a more flexible process designed for student engagement and empowerment (Boud & Falchikov, 2007). Unlike summative assessment which concerns itself with collecting information on how much learning has taken place, formative assessment encompasses “all those activities undertaken by teachers, and/or by their students, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged” (Black & William, 1998, p. 140). Rather than focusing on grading and conducting on a one-off basis, formative assessment emphasizes on the learning process and is usually conducted in each lesson.

Like many other countries which are now making a shift to put more emphasis on formative assessment, Malaysia is also not excluded. In the Malaysian English Language Education Reform or what is commonly referred to as “The Roadmap 2015-2025”, the assessment aspect has become a focus of transformation, alongside with the curriculum and the teaching and learning process, in the effort to produce quality student outcomes in English learning by 2025 (Ministry of Education, 2015). The implementation of formative assessment, which includes self-assessment and peer assessment, is strongly emphasized in the new curriculum. This type of assessment, when being planned instantaneously with the teaching and learning, serves as a connecting bridge that can accelerate learning (William, 2017).

Black and William (1998) and Falchikov (2005) consider peer assessment to be a strategy that places students at the center of formative assessment by encouraging them to evaluate and assess the quality of a piece of work produced by their peers using some form of success criteria. In peer assessment, students would not only be informed of their destination – where are we going? current location – where are we now?, and strategies – how do we get there?, but also participate in contribution – how
can we help others in their learning? and reflection – “how can we be involved in making judgment about our own learning?”. Peer assessment is therefore important in formative assessment due to its rich nature in developing independent and autonomous learners (Falchikov, 2013).

As key agents of educational assessment, teachers’ role in the implementation of good assessment practices is significant (Veloo, Raml i & Khalid, 2016; Black & William, 1998). In facilitating students’ learning and enhancing the quality of the teaching and learning process, teachers need to be able to create and implement valid and reliable assessments (Mellati & Khademi, 2018). Without good assessment practices, teachers may not be able to help advance students’ learning (Fook & Sidhu, 2015). Nonetheless, previous studies in Malaysia revealed limited evidence of peer assessment in the primary ESL classroom (Sidhu, Kaur & Chi, 2016; Sardaneh, 2018) and teachers’ inadequate knowledge and skills in implementing such type of assessment are cited as one of the contributing factors for the lack of peer assessment occurring in Malaysian classrooms (Sardaneh, 2018, Mohamad Uri & Abd. Aziz, 2018, Veloo et al., 2016).

Relating these findings to the theory of planned behavior (Ajzen, 2005) suggests that one’s behavior is shaped by his or her personal belief, it seems important to view this issue from the teacher’s conception and how it is translated to their practice. Past studies indicate that conceptions predict the practices that occur in the classrooms (Panadero & Brown, 2017; Rubie-Davies, Flint & McDonald, 2012). However, in Malaysia, previous studies on teachers’ perception were mostly conducted within the secondary school or higher education context using self-reported questionnaires (Veloo et al, 2016, Majid, 2011). Research which focuses on teachers’ conception and experience in implementing peer assessment in lower primary ESL context is scarce. Hence, this study aims to bridge the gap by exploring the issue within primary ESL context using qualitative methods. Studying teachers’ conception on peer assessment is important now that the transformation of assessment practice is part of the educational agenda (Brown & Harris, 2016).

This study aimed to explore peer assessment experiences in the lower primary ESL classroom among teachers in the state of Selangor. Two research questions that guided the study are: (1) what is the ESL teachers’ understanding of the meaning of peer assessment in ESL context? and (2) how do ESL teachers implement peer assessment in the lower primary ESL classroom?

2. Literature Review

2.1. Peer Assessment

Peer assessment is a type of ‘Assessment for Learning’ (Black & William, 1998) which actively involves students in the assessment process by having them to evaluate the quality of work produced by a peer (Falchikov, 1995; Topping, 2009). It is a process where students consider and specify the level and value of a product or performance of other equal-status learners. (Topping, 2009, p.20). In peer assessment, students reflect, discuss and collaborate with their peers in order to make a quantitative and/or qualitative judgment of their peer’s work (Strijbos & Sluijsmans, 2010) in a variety of learning products such as essays, writing portfolios, test performance, oral presentations and other skilled behaviors (Topping, 2009).

Previous literature summarizes important planning issues related to peer assessment (Topping, 2003; Smith, Cooper & Lancaster, 2002; Topping & Ehly, 2001; Webb & Farivar, 1994) which are listed as follows:

1. State the aim for the activity – whether the aims would lead to gains in cognition, attitudes, social or emotional aspects. In this regard, the nature of the learning products to be assessed also should also be specified.
2. Involve participants in developing and clarifying assessment criteria in order to create a sense of ownership. Ideas relevant to the activity should be discussed with the students early and periodically throughout the activity in order to obtain feedback and acceptance of the activity or scheme. Ideally, small group discussions of draft criteria proposed by the teacher should lead to a small degree of suggested change after such discussions,
3. Match participants and arrange for contact. If possible, participants should be matched with others who share the same abilities,
4. Provide training, examples and practice. Quality training can have a noticeable difference,
5. Provide tangible forms of scaffolding such as guidelines and checklists. “A clearer view of ‘what you have to do to be right’ is likely to improve assessed performance, especially when the criteria for assessment have been discussed or negotiated with all participants” (Topping & Ehly, 2001, p. 118),
6. Specify activities and timescale,
7. Monitor and coach. In peer assessment among students in the classroom, the teacher should keep a low profile and observe the students, giving feedback and coaching when required,
8. Examine the quality of peer feedback,
9. Moderate the reliability and validity of feedback,
10. Evaluate the peer-assessment activity and provide feedback to the participants.

Past studies have also revealed substantial evidence that peer assessment can result in better quality of learning (Topping, 2009). Feedback during peer assessment, given either in confirmatory, suggestive or corrective forms, is able to reduce errors and has positive effects on learning when being accepted thoughtfully and positively (Topping, 2009). This process is also important in the development and execution of self-regulatory skills (Butler & Winne,
The benefits of peer assessment from various perspectives are discussed in the following sub-sections.

2.2. Cognitive Gains

Peer assessment benefits not only the assessors but also those being assessed. In order for students to evaluate their classmates’ performances and accept the feedback given in the peer assessment process, they engage in high level cognitive and discursive processes that include questioning, negotiating and the articulation of their thoughts (Kollar & Fischer, 2010). Peer assessment enables students to identify and analyze previous errors committed and misconceptions held which eventually lead them to self-discover the current knowledge gaps in their learning (Topping, 2009). They have to be actively engaged in the learning process as they compare the work of others in relation to specified criteria (Harris & Brown, 2016; Panadero & Brown, 2017; Topping, 2010).

In addition, long-term engagement in peer assessment will require teachers to ensure that students are involved in high quality tasks as well as develop “passionate positive feelings about these tasks” (Munn & Woodward, 2006, p.197). Previous studies revealed that students’ engagement in this activity impacts positively on their cognitive development and enjoyment of learning (Fredricks, Blumenfeld & Paris, 2004).

2.3. Social Gains

Peer assessment can be considered as a social process in which Vygotsky’s social constructivist theory functions as the underlying theoretical rationale (Falchikov & Goldfinch, 2000). In a social constructivist framework, the teacher plays the role of a guide and the peer assessor as “little teacher”, and together work to make peer assessment a student-centered activity that involves interactional learning (Rotsaert, Panadero & Schellens, 2018). Peer assessment is fundamentally an interpersonal process as it allows students to participate in collaborative appraisal through the use of multiple perspectives gained through the incorporation of peer opinions and viewpoints (Panadero, 2016) which at the same time can develop collaborative and teamwork skills (Riley, 1995).

However, researchers also argue that friendship bonds have been identified as a source of potential feedback bias in peer assessment (Rotsaert et al., 2018; Raes, Banderhovem & Scjelens, 2013). Students generally have strong feelings and needs to feel comfortable with the person giving feedback and they are more likely to accept feedback when the focus is on positive aspects of their work (Dorrington & van Nieuwerburgh, 2015). Nevertheless, pressure because of friendship with peers might result in peer assessment that is unfair or a refusal to participate in the assessment (Raes et al., 2013).

2.4. Personal Gains

Peer assessment allows students to play an active role in managing their learning. This is an important element of self-regulated learning in which students monitor their work through feedback they receive from external sources such as from peers given during collaborative group meetings (Butler & Winne, 1995).

According to Gipps (1999, p.383), ‘passing responsibility for assessment to the student’ is crucial as it helps ‘to develop’ them ‘as self-monitoring learners’. Not only peer assessment helps students gain confidence in evaluation and commentary (Chen, 2006), but it also prepares them for life-long learning process (Dekain-Crick et al., 2005).

3. Methodology

The study utilized qualitative research methods in exploring peer assessment experiences among teachers in the primary ESL classroom. Three primary ESL teachers were purposefully selected to be the participants of the study. They were chosen because they met the following criteria:

(a) they are English teachers in a Malaysian public primary school in Selangor,
(b) they teach English in a lower primary classroom (Year 1, Year 2, Year 3),
(c) they implement peer assessment in their lessons,
(d) they have a minimum of three years of teaching experience,
(e) they hold at least a Bachelor’s degree in Teaching English as a Second Language (TESL),
(f) they are “interested in understanding the nature and meanings of peer assessment and willing to participate in a lengthy interview (perhaps a follow-up interview)”, (Moustakas, 1994, p.107) and
(g) they agree for the interview to be recorded.

Data were gathered through an in-depth interview in order to examine the teachers’ perceptions towards their experience with peer assessment. The interview method was used as thoughts, feelings and intentions that cannot be directly observed (Patton, 2015). These individual interview sessions were conducted face-to-face at a time and place agreed upon by the respondents. Each session took between twenty to thirty minutes with a follow-up interview to obtain additional information and clarification, and upon the respondents’ approval. The semi-structured interview model was adopted as it was considered the most appropriate method for the researcher to explore the central issues that are raised by the research questions.

The interviews were recorded using a voice recorder after obtaining the approval of the participants and were then subsequently transcribed for analysis. During the interview, the researcher also engaged in “memoing”...
(Miles & Huberman, 1994, p. 72) to allow for reflection to take place within the context of the interviews and for the collection of non-standard and extra-linguistic data such as gestures, facial, as well as other non-verbal forms of expression (Creswell, 2011).

In this study, data analysis began after the first interview was conducted. Once the interview was transcribed, the researcher read through the transcription in order to obtain a general sense of the interviewees’ responses and to subsequently engage in the coding process. This process began with open coding and axial coding (Corbin & Strauss, 2015) before themes that addressed the research questions of the study were identified.

To ensure the internal validity and credibility of the study, the analysis went through a member checks process in which the participants were invited to review the initial coding done by the researcher and were asked to comment on the accuracy of the coding. Discussion and further interviews were conducted if coding was found to be misleading or ambiguous, or if further explanation was provided by the participants. In terms of reliability of the study, an audit trail was used to retrace the process used by the researcher to arrive at the findings.

Several measures were taken in order to ensure ethical concerns were properly dealt with. Firstly, before data collection began, approval was obtained from the participants. Participants were informed that their participation in this study was voluntary and that they were free to withdraw from the study whenever they felt they wanted to. The participants also ensured of the confidentiality of all their personal information as well as their responses during the interviews. They were assured that pseudonyms would be used in reporting the findings and only the researcher would have access to the data.

4. Results

4.1. Informant Profile

This study involved three informants. All the informants are primary school English teachers from various districts in Selangor. They are between 26 to 32 years old, and their teaching experience ranges from three to nine years. They all graduated from different campuses of a teacher training institute and are currently teaching lower primary classes. The table below summarizes the informants’ background profile:

<table>
<thead>
<tr>
<th>Informant (Pseudonym)</th>
<th>Age</th>
<th>Years of Teaching Experience</th>
<th>Classes Taught</th>
<th>Location of School</th>
<th>Student’s Level of English Proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erna</td>
<td>29</td>
<td>6</td>
<td>Year 1 &amp; 2</td>
<td>Sepang</td>
<td>Mixed – high, medium, low (English as medium of instruction)</td>
</tr>
<tr>
<td>Hawa</td>
<td>32</td>
<td>9</td>
<td>Year 1</td>
<td>Kuala Langat</td>
<td>Mixed – medium, low (English &amp; Malay as medium of instruction)</td>
</tr>
<tr>
<td>Kamila</td>
<td>26</td>
<td>3</td>
<td>Year 1 &amp; 2</td>
<td>Klang</td>
<td>Mixed – medium, low (English and Malay as medium of instruction)</td>
</tr>
</tbody>
</table>
The first informant, Erna, who has six years of teaching experience, is currently teaching in one of the schools in Sepang district. The school is listed under the Trust School Programme, which is regarded as a comprehensive and sustainable school transformation programme that is intended to improve student outcomes and revitalize school culture and in which formative assessment is one of the core elements in the lesson planning format. The students come from various socio-economic backgrounds (SEB), but mostly are of medium to high SEB. Although the students have mixed-ability in English, most of the students can understand English which enables classroom instructions to be given in English.

The second informant, Hawa, has nine years of teaching experience. She is an English teacher in one of the schools in Kuala Langat district, a suburban area in Selangor. The students in this school come from various SEB, ranging from low to medium SEB. The students are of low to medium levels of English proficiency which require lessons and classroom instructions to be delivered bilingually – Malay and English.

The last informant, Kamila, is the youngest participants in this study. She is a new teacher with three years of teaching experience. She teaches in one of the schools in Klang district. Although Klang is located near to Kuala Lumpur and can be considered as an urban area, most of the students come from low to medium SEB. Similar to Hawa, her students have low to medium levels of English proficiency and thus requiring her to deliver the lessons in both Malay and English in order for the students to understand.

Research Question 1: What is the ESL Teachers’ Understanding of the Meaning of Peer Assessment in ESL Context?

Based on the interviews conducted, it was found that teachers’ understanding of the meaning of peer assessment can be discussed under three themes namely:

i. Peer assessment as an active cognitive process
ii. Peer assessment as an interpersonal process
iii. Peer assessment as intrapersonal process

4.2. Peer Assessment as an Active Cognitive Process

The interviews with the informants revealed that the teachers viewed peer assessment as an active cognitive process. Peer assessment, which requires students to evaluate the work of their peers, gets students to engage in various thinking processes such as comparing and contrasting, identifying similarities and differences, as well as identifying strength and weaknesses. The processes make students become attentive of the learning process. This was admitted by Hawa who claimed that peer assessment makes students “…become aware. They are active. They engage in the process…”. The same views were shared by Erna who asserted that peer assessment enables students to “…compare their work with their friend’s work. It is easier for them to notice any mistakes or errors committed when checking other’s work as they get to see the similarities and differences between their work and their friend’s work…”. As pointed out by Nicol, Thomson and Breslin (2014), in peer assessment, students spend time thinking, comparing, contrasting and communicating which locate them in deep cognitive learning. This activity thus requires them to be active participants in their own learning.

4.3. Peer Assessment as an Interpersonal Process

Based on the interviews with the informants, it was found that the teachers perceived peer assessment as an interpersonal process. Considering the age of the students who are still developing their interpersonal relationship with their peers in the classroom, peer assessment was seen as an opportunity for students to participate in the socialization process. As shared by Erna, “…students share and exchange their work with a partner or group member…they discuss their answers or ideas together…”. This experience was similar to Hawa who stated that “…students swap their books…they talk to each other about the answers…” These show the potential role of peer assessment as a socialization platform which promotes interaction among peers.

Moreover, peer assessment could also be regarded as a platform to mark friendship among the classmates. As described by Kamila, “…In my class, there’s a few who are best friends. They are excited to mark each other’s work. But if they are not in very good terms with each other, they were like, “hey, you did not know this one?” From this activity, we can discover that this person likes that person and that person does not like that person. From there, we learn that perhaps next time we could change their partners…”

Hawa related her experience as follows: “There are cases when they are good friends…they ask their peer to correct their initial answer. They erase their friend’s answer and write the right answer. “I will correct yours and you will correct mine.” They wanted to avoid having to do correction afterwards”.

These scenarios provide us with evidences on how peer assessment is a platform for the interpersonal process. This is consistent with the views of Panadero (2016) which highlighted peer assessment as an interpersonal process as it generates thoughts, actions, motivational outcomes, and emotions for both assesses and assesses. Therefore, it is important for teachers to consider the effect of friendship bonds on the outcomes of peer assessment activity so as to be able to provide adequate social-affective support (Murdock, Stephen & Grotewiel, 2016).

4.4. Peer Assessment as an Intrapersonal Process

The interviews also indicated that the informants
considered peer assessment as an intrapersonal process. In the process of assessing and evaluating the work of their peers, students did not only engage in negotiation and clarification, but also monitored their own work. This is admitted by Hawa who claimed that,

“…sometimes, there are students who not only mark their own work, but they keep checking on their work that is being assessed by their friend…They will actually check if they do it right or wrong. Actually, at the back of their mind, they are very aware of what they did. So, when they correct their friend’s mistake, they are actually learning.”

The same views were expressed by Erna who stated that: “…by checking one’s work, students not only learn to evaluate their friends but also themselves…by identifying their own weaknesses and learning to correct their friends’ work, students can know what and how they can do better. This would help them to improve their learning”

Assessing others’ work during peer assessment enables students to generate internal feedback that they could use to inform their own work (Nicol, Thomson & Breslin, 2014). This would eventually lead them to monitor their own learning and thus take full ownership of their learning process (Butler & Winne, 1995).

Peer assessment also boosted students’ self-esteem. Assessing other people’s work makes students become more confident in their ability. As pointed out by Kamilla, “…peer assessment is important because it gives a sense of confidence to the students that they know what is right and what is wrong…”. Similarly, Erna also stated that “…they like it so much especially when we give them permission to mark with whatever color pencil that they like. They feel like a teacher. They feel confident…” The findings are similar with the views of Hung (2018) who asserts that scoring others, which empowered students as “little teachers” in classrooms in which teachers maintain sole authority, gave the students enjoyment and eventually led them to gain confidence in their ability to assess the work of their peers.

**Research Question 2: How do ESL Teacher Implement Peer Assessment in the Lower Primary ESL Classroom?**

Based on the interviews conducted, it was found that the ways teachers implement peer assessment can be discussed under two themes namely:

i. Planning stage
ii. Implementation stage

**4.5. Planning Stage**

The results from the interview revealed that teachers generally engaged in a few processes in the planning stage of peer assessment. First, teachers made decisions on activities or students’ products that need to be peer reviewed. The three informants generally use peer assessment in activities like ‘spelling’, ‘writing sentences or short essays’ and ‘poster or drawing’ presentation. As pointed out by Topping (2009), in peer assessment, a wide variety of student products or outputs can be peer assessed, including essays, portfolios, oral presentations and other forms of skilled behaviours.

Then, they would decide on the strategies for conducting peer assessment. The most common strategies used are exchanging work with a peer next to the student or working in groups. As shared by Kamilla, “…sometimes, I asked the students to work in groups and evaluated the work of other groups…some other time, I just get them to swap their work with the person sitting next to them…”

Another process involved in the planning stage is to prepare the success criteria. The success criteria normally used by the informants were guidelines, checklists or just a list of right or wrong answers. As pointed out by Erna, “…sometimes, I give them checklist. The most common one is writing checklist. For example, when they write sentences, they need to have capitalization, full stop, correct spelling…”. Using checklist is important as it helps students produce comments that are relevant and justified (Boon, 2016).

Once the success criteria have been presented, the teachers specified the forms of feedback that the students will use when evaluating the friends’ work. The forms of feedback commonly used by the students in the informants’ classrooms were either in word form like phrases, numerical form like marks or grades or, visual form like stars, stickers or smiley face. For example, Hawa in relating her experience conducting peer assessment mentioned that “…but the response in non-words. They give stickers. If they like, they give stars. If they don’t like, they don’t give stars. Or they draw likes, they draw smiley faces.” A similar experience was shared by Erna who said that “…they can use simple way such as drawing smiley faces or stars, using stickers and writing a simple word…”. In this respect, it is interesting to note research by Crews and Wilkinson (2010) on students’ perception that indicated a preference for visual and auditory feedback and that visual, auditory and e-handwritten feedback was able to help the students understand the types of errors they were making and the reasons as to why the errors were incorrect.

**4.6. Implementation Stage**

The results also indicated that during the implementation stage, it is important for teachers to give clear orientation of the task to the students. The teachers first explained the task to the students. This is a crucial step because students’ inability to understand the task would make them unable to perform the task as expected. As expressed by Erna, “…we need to brainstorm the task with the student…or else the students did not know what to write…”.
with the previous findings which suggest that teachers state the aim for the activity and specify the nature of the learning products to be assessed at the early stage of the process (Topping, 2003; Webb & Farivar, 1994).

The teachers also discussed the success criteria with the students and gave them opportunities to contribute to the development of the success criteria. As pointed out by Erna, “…students have the right to be given the chance to do things on their own…I ask for their ideas. I ask them to add other words. For high achieving students for example, they can suggest more advanced words to be used as feedback…”.

The findings also revealed that teachers generally played a role in facilitating the process of peer assessment. One of the examples was to assist low achieving students to be assessors. As explained by Kamila, “…for low achieving students, we can give suggest them words to use…we can monitor how they are doing…”. The teachers also reminded the students that they should be using constructive feedback in commenting. As expressed by Hawa, “…sometimes they give negative feedback…so we should remind them to give constructive feedback…”. Constructive feedback is a key element in the successful implementation of assessment for learning (Kollar & Fischer, 2010). Hence, it is essential for teachers to model appropriate comments to be given in peer assessment and to assist students in learning how they should give and take comments in an appropriate and positive manner (Hung, 2018).

5. Conclusions

This study explored peer assessment experiences among ESL lower primary teachers in Selangor. It found that the participating teachers viewed peer assessment as an active, cognitive process, as well as an interpersonal and intrapersonal process. The teachers in this study responded positively to peer assessment and regarded it as a rich and meaningful learning experience for the students. In implementing peer assessment, the teachers generally engaged in several processes before and while implementing the activity. In the planning stage, the teachers decided on the activity and strategy, presented success criteria and specified feedback forms to be used by the students while during the activity, teacher oriented the task clearly and facilitated the process through monitoring.

Based on their responses in the interview, this study has demonstrated that teachers in lower primary classrooms implemented peer assessment activities. A better picture of how the implementation process takes place may have been better described through observation, which, because it was not used is a limitation of this study.

REFERENCES


High School Agriculture Teachers' Career Satisfaction and Reasons They Stay in Teaching Profession

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Abstract The purpose of the study was to evaluate the reasons why high school agriculture teachers remain in teaching. A descriptive census study was implemented on agriculture teachers (N=252) utilizing an online validated questionnaire in Iowa. A total of 119 agriculture teachers completed the questionnaire with a response rate of 47%. A four-point Likert-type scale from 1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree was used to measure reasons why teachers stay in the teaching. Mean and standard deviation was 2.88(.32) for overall reasons to stay in teaching demonstrating these reasons influenced teachers to remain in teaching. Findings shows more than half teachers (f=54, 45.4%) plan to remain in teaching for 11 or more years. Further crosstabulates analysis on years of teaching experience variable with three different plans to stay shows that substantial number of late-career teachers plan to stay in short time (50%), 33.7% mid-career teachers plan to stay for 11 or more years, and newly teachers plan to stay for less than 10 years (42.9%). Findings are consistent with literature that reported years of teaching experience which was a predictor for teacher retention.

Keywords Agriculture Teachers, Intentions to Continue Teaching

1. Introduction

Teacher retention crisis has been widely reported in the United States with the issues of shortage of enough qualified teachers. Retaining qualified teachers is very difficult (Hughes, 2012; Ingersoll, 2001). Thus, the teaching profession has a higher turnover rate than other careers. Data from teacher follow-up study reported that every year there is approximately 3.5 million teacher turnover rates (National Commission on Teaching and America’s Future, 2003; Ingersoll, 2001; National Center for Educational Statistics, 2001). Due to this issue, amount of money has been allocated to reduce the shortage by recruiting, hiring, and training new teachers (Borman & Dowling, 2006).

National Agricultural Education Supply and Demand (2016) also reported 66 full-time agriculture teacher positions were needed to fulfill the demand for School-Based Agriculture Education (SBAE) in the United States. Losing of qualified and talented agriculture teachers at school will eventually affects students’ success (Mishel, Alegretto, & Corcoran, 2008; Allen, 2005; Ingersoll, 2001).

This study examines high school agriculture teachers’ career satisfaction in teaching in Iowa. Until now, there is no research determined the career satisfaction of high school agriculture teachers in Iowa. Understanding agriculture teachers’ career satisfaction in the teaching profession will contribute to the increase in retention rate. This study supports one of the priorities from National Association for Agricultural Educator’s (NAAE) national research agenda, which aims to produce enough agricultural educators to address the challenges in the 21st century (Roberts & Brashears, 2016).

2. Literature Review

2.1. Teacher Characteristics and Teacher Retention

Numerous studies and literature have been published regarding teacher retention (Borman & Dowling, 2006; Guarino et al. 2006; Inman & Marlow, 2004; Henke, Zahn, & Carroll, 2001; Ingersoll, 2001). Previous research found that teacher characteristics such as gender, age, years of teaching experience, academic background, and ethnicity affect the retention (Hughes, 2012; Hanushek, Kain, & Rivkin, 2004; Ingersoll, 2001).

Several researchers have identified age and years of experience as significant predictors that contribute to teacher retention (Hughes, 2012; Hanushek, Kain, & Rivkin, 2004).
In previous studies on novice teachers, it was found that younger teachers left teaching because of lower job satisfaction, family, and stress problems. While the older teachers left the profession when retired. This phenomenon of attrition is illustrated by U-shaped age and attrition plot (Watson, Harper, Ratliff & Singleton, 2010; Hanushek & Rivkin, 2007; Guarino et al., 2006). Previous findings also showed a positive relationship between age and years of experience with teacher retention (Hughes, 2012). Nevertheless, this finding is contrary to the theory proposed by Grissmer and Kirby’s (1991) who found that years of teaching experience is a more accurate predictor for teacher retention than age.

2.2. Reasons Why Agriculture Teachers Remain in Teaching

The National Association of Agricultural Educators (NAAE) categorized agriculture teachers’ life cycles into three different significant phases: early-career, mid-career, and late-career, where each phase has its own unique characteristic professional life cycles. At the early-career stage, teachers are in survival mode and carrying out teaching task to impact their students. Mid-career is referring to stabilization and experimentation where teachers have some confidence, expect patterns of teaching, experiment with their education through new activities and approaches, and have more experiences that will reflect their career. The late-career stage is referred as serenity period. Teachers with many years of teaching experience take them feel confident and comfortable with their classrooms and work (White, 2008).

Several studies have reported that school characteristics such as school administrator support, colleague support, and work factors as the main reasons for teacher retention (Ingersoll & Smith 2003; U.S Department of Education, 1999). School administrators are reported to have enormous effects on teacher retention (Kucla – Acevedo, 2009; Wynn et al., 2007; Borman & Dowling, 2006). Wynn et al. (2007) studied on new novice teachers and found out that 43% of teachers agreed school administrative support is the reason for them to stop their career. Likewise, Ingersoll & Smith (2003) mentioned that poor administrative support is a significant reason for beginning teachers to leave teaching profession. Teachers would like to have more autonomy, better administrative support, and effective communications as reasons for them to stay (Hughes, 2012).

In addition, few studies have cited social aspect, such as colleague support as important influencers for teacher retention. Hasselquist, Herndon & Kitchel (2017) found that colleague support was associated with new agriculture teachers’ self-efficacy. In US, Colleague support seems very helpful for agriculture teachers who are involved in communities. Similarly, the social aspects of teaching such as collegial collaboration will contribute to teachers’ decisions to keep on teaching (Hargreaves, 2001). Collaboration among agriculture teachers is about working together to develop lessons, managing the national FFA organisation and SAE’s as well as having learning opportunities (Greiman et al. 2005; Wenger 2000). Positive school culture and a high level of support would retain teachers more extended (Blackburn & Robinson, 2008).

2.3. Career Satisfaction of Agriculture Teachers

Work factors such as working conditions, salary, fringe benefits, occupational commitment, and work-life balance influence educators’ career satisfaction to stay in teaching. Brownell et al. (1994, 1995) stated that workplace conditions influence teachers’ decision to stay. Poor working condition is determined as one of the problems faced by agriculture teachers (Boone, 2007, 2009). Furthermore, salary is one of the critical motivations for teachers to teach (Crutchfield, 2013). In a survey conducted by Blackburn and Robinson (2008), 50% of experienced teachers identified salary as the main reason to keep teaching. Ingersoll and Smith (2003) found the main reason for teachers to stay or leave teaching is due to working conditions. Overwhelming workloads and excessive paperwork will affect the teachers to neglect education (Brill & Mc Cartney, 2008; Kersaint et al., 2007). Even further, the work-life balance will influence teachers’ decisions to remain in the classroom. Crutchfield (2013) studied agricultural educators and found that work engagement was positively associated with their professional life phases. Educators who have balance career and personal lives will have occupational commitment.

Many studies on agriculture teachers’ job satisfaction in the United States have been carried out (Sorenson & McKim, 2014; Tippens, Ricketts, Morgan, Navarro & Flanders, 2013; Kitchel, Smith, Henry, Robinson, Lawver, Park & Schell, 2012; Blackburn et al., 2008; Roca & Washburn, 2006). Agriculture teachers reported they were satisfied with their teaching jobs (Kitchel et al., 2012). Hughes (2012) indicates that teachers have high satisfaction to teach. Salary, administrative support, and working conditions are factors that lead to teachers’ satisfaction in teaching. Tippens et al. (2013) found that job satisfaction and gender were significantly different. Meanwhile, job satisfaction and agricultural education level of self-efficacy showed a positive relationship (Blackburn and Robinson, 2008). Easterly and Myers (2018) found years of teaching experience served as a predictor of career satisfaction.

Agriculture teachers’ decisions to continue on teaching have been influenced by self-efficacy. Self-efficacy is an important characteristic that develops teachers’ confidence and influences them to stay (Darling-Hammond et al., 2002). Study on agriculture teachers showed that job satisfaction and level of self-efficacy has a positive relationship (Blackburn et al., 2008). Whittington and Knobloch (2006) studied the efficacy of agricultural novice teachers in Ohio and found that teachers who express their positive feelings will influence the decision to make teaching as a long-term
career. Meanwhile, Roca and Washburn (2006) found a low association between self-efficacy and years of teaching experience. Together, the literature suggests a teacher and school characteristics, work factors, job satisfaction, and self-efficacy are important factors in determining teachers’ long-term commitment to teaching. Studies about engagement are worthwhile in education because the outcome is useful to predict how likely teachers will remain in their career (Mowday, Porter, & Steers, 1982).

2.4. Conceptual Framework

The conceptual framework is based on Chapman model (1983) of teacher retention or attrition (Figure 1). The Chapman model is grounded in social learning theory. This model explained and expanded social learning theory from Krumboltz and Holland’s career choice theory.

Many studies have applied the model to explain predictors that influence teacher retention (Buckley, Schneider, Shang, 2004; Ruhland, 2001; Shen, 1997; Billingsley, 1993; Odell & Ferraro, 1992). The model was used to predict teacher retention by several variables; personal teacher characteristics, educational preparation, initial teaching commitment, quality of first-year teaching experience, career satisfaction, social and professional integration into teaching, and external influences (Chapman, 1984). This model serves as direction to school administrators and teacher education programs to deal with issues in teacher retention (Ruhland, 2001).

This model is appropriate and relevant to investigate agriculture teacher retention by using personal characteristic components (e.g., age, gender, teaching experience), teacher-training component (e.g., teachers’ educational achievement), professional and social integration into teaching components (teachers’ involvement in career), and career satisfaction. Career satisfaction variable was an important factor that explained teachers’ decision to stay or leave the teaching career (Chapman, 1984).

2.5. Purpose and Objectives

Objectives of the study were as follows:
1. Describe agriculture teachers’ demographics such as gender, age, years of teaching experience, educational levels, ethnicities, and marital status.
2. Describe the career satisfaction of high school agriculture teachers.
3. Describe the relationship between overall career satisfaction in teaching and years of teaching experience.

3. Methodology

The present research used descriptive census study conducted on a target population of high school agriculture teachers (N=252) in Iowa. The accessible population of agriculture teachers was determined in the year 2017. The name list of the teachers was obtained from the Iowa FFA association.

3.1. Instrument

In the present study, a questionnaire that includes four parts of the questionnaire was developed using the Qualtrics web-based system. Only Part 3 and Part 4 were used in this study. The survey instrument was adopted and adapted from Faith Nyambura Muturia’s (2007) study on teachers’ perceptions toward retention. The 16 Likert-type items in Part 3 asked the participants to indicate their agreement that the item is a reason for them to stay in teaching. The four-point Likert-type scale ranged from 1= Strongly Disagree, 2= Disagree, 3= Agree, and 4= Strongly Agree. Part 4 of the online survey asked the demographic questions.

3.2. Validity

Three panels of experts helped to determine the instrument’s face, content, and construct validity, and all three of the panels agreed the instrument face, content, and construct were valid. The instrument was pilot tested on 10 high school agriculture teachers from Iowa. The reliability of the pilot testing analysis resulted in a Cronbach’s alpha of .89, representing a good value of internal consistency.

3.3. Data Collection

Dillman’s (2009) tailored design method was used in this study. The tailored design method include a pre-notification e-mail to 252 agriculture teachers, after three days an email containing a link to the Qualtrics survey, a first reminder to non-respondents after 10 days, and a second reminder to ask for help from the non-response participants after a week. A postcard containing the URL link was sent via US Mail as a final contact. After one week of the final contact, the online survey was closed. Completed questionnaires of 119 from the 252 teachers result in a 47% response rate. Given the number of responses, analysis of early to late respondent comparison was conducted to determine the results represented by the target population (Lindner, Murphy, and Briers, 2001).

3.4. Data Analysis

Data were gathered from Qualtrics, and Statistical Packages for Social Science (SPSS) version 23.0 is used to analyze the data. The Cronbach alpha value for reasons of agriculture teachers decide to stay in teaching was calculated, and the reliability coefficient was = .73.

The researcher acknowledges some questions could be raised about whether inferential statistics were appropriate. Only 119 agriculture teachers completed the questionnaire, which ended up as a sample from a population of 252 teachers. It is customary to use inferential statistics in similar situations.

Descriptive statistics (frequency, mean, standard deviation and percentages) were used for the first and second objectives. Pearson correlation coefficient was used for the third objective.

4. Analysis and Findings

4.1. Descriptive Analysis

**Objective 1:**

*Describe agriculture teachers’ demographics such as gender, age, years of teaching experience, educational levels, ethnicities, and marital status.*

As shown in Table 1, 119 agriculture teachers were responded. There were 63 female and 56 male agriculture teachers.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>38.15</td>
<td>13.12</td>
</tr>
<tr>
<td>Years of teaching experience</td>
<td>14.11</td>
<td>12.49</td>
</tr>
<tr>
<td>Gender: Male</td>
<td>56</td>
<td>47.1</td>
</tr>
<tr>
<td>:Female</td>
<td>63</td>
<td>52.9</td>
</tr>
<tr>
<td>Current Marital Status</td>
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<td></td>
</tr>
<tr>
<td>Single</td>
<td>36</td>
<td>30.3</td>
</tr>
<tr>
<td>Married</td>
<td>78</td>
<td>65.5</td>
</tr>
<tr>
<td>Divorced</td>
<td>4</td>
<td>3.4</td>
</tr>
<tr>
<td>Not answered</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Ethnicity: White</td>
<td>119</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Highest Academic Attainment**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors</td>
<td>75</td>
<td>63.0</td>
</tr>
<tr>
<td>Masters</td>
<td>44</td>
<td>37.0</td>
</tr>
</tbody>
</table>

**Teachers’ Plans to Remain in Teaching**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 years</td>
<td>42</td>
<td>35.3</td>
</tr>
<tr>
<td>6-10 years</td>
<td>21</td>
<td>17.6</td>
</tr>
<tr>
<td>11 or more years</td>
<td>54</td>
<td>45.4</td>
</tr>
</tbody>
</table>
The average age was 38.15, with a standard deviation of 13.12. Sixty-five per cent of agriculture teachers were married, and all of them were white. Table 1 also reports the highest academic attainment for the respondents. A majority (f=75, 63%) of the respondents had bachelor’s degree, and the rest (f=44, 37%) held a master’s degree. Teachers had an average of 14.11 years of teaching experience with a standard deviation of 12.49. A majority (f=54, 45.4%) of the teachers plan to be in teaching for 11 or more years, whereas 35.3%, (f=42) of agriculture teachers prepare to teach for one to five years. A smaller number (f=21, 17.6%) of agriculture teachers plan to remain to teach for six to ten years.

**Objective 2:**

**Describe the career satisfaction of high school agriculture teachers.**

Four satisfactions from 16 items in teaching questions were worded negatively and reverse coded. A decision rule was created to interpret the score values (Table 2).

<table>
<thead>
<tr>
<th>Table 2. Decision Rule to Interpret the Mean Scores for the Likert-type Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Likert-type categories</strong></td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

**Table 3. Reasons that Influence Teachers’ Career Satisfaction in the Teaching Profession**

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching agricultural education has provided me with challenges.</td>
<td>3.33</td>
<td>.51</td>
<td>Positive</td>
</tr>
<tr>
<td>I have opportunities to attend professional development meetings.</td>
<td>3.15</td>
<td>.67</td>
<td>Positive</td>
</tr>
<tr>
<td>My job lets me entirely use my skills and abilities.</td>
<td>3.12</td>
<td>.59</td>
<td>Positive</td>
</tr>
<tr>
<td>I have a reasonable number of students in my classes.</td>
<td>3.10</td>
<td>.53</td>
<td>Positive</td>
</tr>
<tr>
<td>I look forward to continuing to teach.</td>
<td>3.03</td>
<td>.59</td>
<td>Positive</td>
</tr>
<tr>
<td>I feel satisfied with my job as a teacher.</td>
<td>3.02</td>
<td>.57</td>
<td>Positive</td>
</tr>
<tr>
<td>I feel satisfied with the opportunity to develop my skills and abilities.</td>
<td>2.99</td>
<td>.46</td>
<td>Positive</td>
</tr>
<tr>
<td>*I feel strained from working with people all day.</td>
<td>2.94</td>
<td>.46</td>
<td>Positive</td>
</tr>
<tr>
<td>I have participated in making important decisions at school.</td>
<td>2.80</td>
<td>.74</td>
<td>Positive</td>
</tr>
<tr>
<td>I have clear guidelines regarding my job responsibilities.</td>
<td>2.80</td>
<td>.67</td>
<td>Positive</td>
</tr>
<tr>
<td>I think the duties of the job are reasonable.</td>
<td>2.78</td>
<td>.63</td>
<td>Positive</td>
</tr>
<tr>
<td>*I feel burned out from my work.</td>
<td>2.73</td>
<td>.74</td>
<td>Positive</td>
</tr>
<tr>
<td>*I feel emotionally drained from my work.</td>
<td>2.66</td>
<td>.78</td>
<td>Positive</td>
</tr>
<tr>
<td>*I feel used up at the end of the workday.</td>
<td>2.63</td>
<td>.81</td>
<td>Positive</td>
</tr>
<tr>
<td>Adequate mentoring has been provided to new agriculture science teachers.</td>
<td>2.58</td>
<td>.75</td>
<td>Positive</td>
</tr>
<tr>
<td>I feel satisfied with the amount of income I receive.</td>
<td>2.46</td>
<td>.77</td>
<td>Negative</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2.88</td>
<td>.32</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Note: Based on a scale: 1=Strongly Disagree, 2= Disagree, 3= Agree, 4= Strongly Agree, (*) Item was reverse coded

Table 3 shows the descriptive statistics for reasons that influence teachers’ career satisfaction in the teaching profession. The overall mean score for the items was 2.88, with a standard deviation of 0.32. This shows that these items positively influenced teachers’ career satisfaction in the teaching profession. For the individual subject, agriculture teachers provided the highest mean score for “Teaching agricultural education has provided me with challenges” (M = 3.33, SD = .51). It was followed by “I have opportunities to attend professional development meetings” (M = 3.15, SD = .67). Teachers provided the lowest mean for “I feel satisfied with the amount of income I receive” (M = 2.46, SD = .77).

**Objective 3:**

**Describe the relationship between overall career satisfaction in teaching and years of teaching experience.**

Table 4 shows the correlation between two variables: overall satisfaction in teaching and years of teaching experience. The whole career satisfaction was the average score for 16 Likert-type items used to measure the pleasure in teaching construct. These composite variables approximately met the normality and linearity assumptions. Table 4 investigates the correlations between two variables: overall satisfaction in teaching and years of teaching experience. The variables met the normality and linearity assumptions; therefore, Pearson product-moment
correlations coefficient was calculated. The result shows that the variables were significantly correlated at 0.01 level of significance. The correlation was $r(118) = .24, p < .01$ which was low positive correlations. This indicated that high school agriculture teachers who had high satisfaction in teaching were more likely to have many years of teaching experience from this study. However, the effect size was small (Cohen, 1998).

Table 4. Correlations of Overall Career Satisfaction in Teaching and Years of Teaching Experience of High School Agriculture Teachers

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall satisfaction in teaching (1)</td>
<td>-</td>
<td>.24**</td>
<td>2.88</td>
<td>0.32</td>
</tr>
<tr>
<td>Years of teaching experience (2)</td>
<td>-</td>
<td>-</td>
<td>14.11</td>
<td>12.49</td>
</tr>
</tbody>
</table>

Notes: **.Correlation is significant at the 0.01 level (2-tailed), N = 119, df = 118

5. Conclusion, Implications, and Recommendations

The demographic variables were used to provide a description of the population of agriculture teachers in Iowa. Results that arose from this study regarding the teachers who currently remain in teaching suggested that female agriculture teachers formed greater proportions than males and whites as dominance agriculture teachers in Iowa. This data supported the trend of a substantial increase in the number of female agriculture teachers in the US (Castillo & Cano, 1999). More white teachers turn out to teach due to a higher population of White ethnics in Iowa. However, this research finding cannot be extrapolate that one gender has a higher retention rate than the other. It is therefore recommended that further research should be done to determine retention rate between genders for agriculture teachers. Similarly, Hughes (2012) who studied on teacher retention, found that 83.5% of teachers plan to continue their career until retire. Furthermore, the present data could give a projected number of agriculture teachers that will permanently teach in Iowa after ten years and above.

Objective two sought to describe the career satisfaction of high school agriculture teachers. The results indicate that Iowa agriculture teachers feel teaching agricultural education is challenging, yet it provides them job satisfaction that makes them remain in teaching. This finding supported previous studies which mentioned agriculture teachers have various teaching responsibilities such as teaching subject matter, designing lesson and instruction, reviewing the curriculum, communicating with parents, conducting community work, and conducting Supervised Agricultural Experience (SAE) programs as well as the National FFA Organization (Delnero and Montgomery; 2001 & Phipps & Osborne; 1998). Besides, the current study found that teachers view the opportunities for professional development as an essential reason that influenced teacher satisfaction in teaching. Smalley and Smith (2017) and Steffy and Wolfe (2001) also mentioned professional development is a need for agriculture teachers, and it is associated with teacher retention. This can be explained by the fact that agriculture teachers want to have networking, reenergizing, and stress management as part of their professional development opportunities to engage with their careers (Smalley & Smith, 2017). It is recommended that the professional development program should be ongoing to teachers’ wishes, and fulfill teachers’ specific needs.

There was a significant positive relationship between overall career satisfaction in teaching and years of teaching experience. This finding is consistent with studies that found teaching experience has a positive relationship with job satisfaction (Cano, 1999; Grady 1985 & Castillo). However, it is contrasted with Cano and Miller (1992) and Gillman (2012) who found no significant relationship between overall job satisfaction and agriculture teachers’ years of teaching experience in Ohio and Georgia respectively. This study provided a possible explanation of inconsistency regarding agriculture teachers’ job satisfaction with years of teaching experience in different states. Clark, Kelsey and Brown (2014) found experienced mid-career teachers view teaching as a sustainable career. The perception of sustainability as teachers will cause them to be more satisfied when teaching and they will remain longer. Thus, further research should be conducted, and more attention should be given to years of teaching experience as to how it associates with agriculture teachers’ satisfaction in teaching.

Findings of this study supported the Chapman Model (1984) where teaching experience was a significant predictor for teacher retention. It also proved Grissmer and Kirby’s theory (1991) which years of teaching experience were a better predictor for teacher retention than age. The implication for future practice is to improve teachers’ working environments which can help them to enjoy educational adventures more. Overall, agriculture teachers’ satisfaction likely increases based on years of teaching experience. Those who are responsible for hiring agriculture teachers should look for teachers who have more experience in teaching and prioritize them.

In agricultural education, research related to career satisfaction of high school agriculture teachers is vital as it is believed to predict teacher retention and commitment in teaching. Involvement to teaching cannot exist in isolation. Therefore, it is necessary to address any factors or reasons that contribute to teacher retention. Commitment in teaching usually associated with leadership support, teaching experience, career satisfaction and job stress (Billingsley, 2004).
6. Recommendations for Future Research

Further longitudinal studies about the reasons that influence agriculture teachers stay in the profession, and follow up yearly surveys to trace the trends of retention at school in Iowa. Replicate the research in other states to determine the similarities or difference. The stable model of Iowa agriculture teacher retention in the profession would help to increase teacher retention rates.

Continue the NAAE professional development program that cater agriculture teachers needs from three different categories: early-career, mid-career, and late-career teachers. The professional development program should also focus to increase teacher satisfaction in teaching in attempt to provide teachers with new knowledge and fulfill their needs.

The mentoring program between new teachers and experienced teacher would help teacher to collaborate in working together. This is important to seek teachers’ input that would help understand their needs. The professional development program must have an objective to provide new knowledge and to cater to the existing wishes.

School administrators should continue to provide their support to agriculture teachers physically and emotionally in order to make them feel happier in teaching. School administrators should also encourage creating positive school environments culture that would open up more space for teachers to express their thought, and include them in the decision-making process. Finally, this provides opportunities for teachers to learn.

REFERENCES

High School Agriculture Teachers' Career Satisfaction and Reasons They Stay in Teaching Profession


Relationship between Learning Environment and Teamwork Skills among Final Year Students of Vocational Colleges

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Abstract Teamwork skills are one of the soft skills prioritised by employers when recruiting employees. In fact, lack of teamwork skills among new graduates will affect hiring for job. This article is intended to study the influence of the learning environment based on the perception of the relationship among students and the relationship between student and teacher on the teamwork skills among final year students in vocational college in Malaysia. The correlational design was utilized for this study which involved 241 final year students as respondents. All respondents were randomly selected from six vocational colleges in the State of Selangor, Malaysia. Questionnaires were used to collect research data. Finding shows that the respondents’ level of teamwork skills is high. Finding also reveals that respondents’ perception on the relationship among students and the relationship between student and teacher shows a positive learning environment. Furthermore, finding also shows the learning environment based on the relationship among students and the relationship between student and teacher that are able to provide a positive relationship that contributes to the increase of teamwork skills among students at vocational colleges.

Keywords Technical and Vocational Education and Training, Malaysian Vocational Diploma, Vocational College Curriculum Standard, Relationship among Students, Relationship between Students and Teachers

1. Introduction

Employers emphasized teamwork skills are a must possessed by employees and have become the main criteria viewed by employers in selecting new employees (National Association of College and Employers, 2017; National Association of College and Employers, 2018). The Job Outlook Survey 2016 report shows that teamwork skills are listed as among the top three employability skills given attention by employers in choosing new employees (National Association of College and Employers, 2016). Among benefits to employers is helping strengthen the company towards achieving its goals through maximising the skills and talent of each member of the team (Zulhamri, Mohammad Shattar, Samir, Paramsivam, Aidy & Azali, 2010). Deal and Kennedy (2000) found out that there is significant difference on size of company in organization culture, such as attitude and behavior in the workplace. A finding from Saari and Rashid (2013a) shows that a program is called the National Dual Training System where the apprentices attached with industries multinational company are more likely to have better teamwork skills compared to their colleagues attached with government link companies as well as small and medium size companies. Multinational companies and government link companies have better learning environment compared to small and medium companies. A multinational company provides systematic training method, curriculum content, excellent tools and equipment and high-quality supervision (Saari & Rashid, 2013b). In addition, multinational companies also create environment that flourishes team work in the workplace. However, the result shows that the type of company can correctly estimate about 46 percent of graduates who would get a job offer.

Fraser (1998) defines learning environment as context of social, psychological and pedagogy where learning takes place that affects the student’s attitude and achievement. Meanwhile, Fraser, Anderson and Walberg (1982) explained that the learning environment encompasses special characteristics of class group profiles that can be measured. Those characteristics are relationship among students, relationship between student and teacher,
relationship between student and the subject being studied and the learning method and finally relate to the characteristics of the class structure. Hence the learning environment is not merely a physical space, but in fact contains various sources of information and materials, involves interactions, relationships between and among students and teachers as well as expectations and rules for learning and behaviour (Aladejana & Aderibigbe, 2007).

1.1. Teamwork Skills and Learning Environment

A teamwork skill is an important set of skills that can be developed in each student. It is a skill set that is used by every individual in a team towards group achievement or success (Richard & Steven, 2011) and is identified as a transferable skill (Aifaa Husna, 2016). A teamwork skill is required for every new employee to ensure that they can work together in a team, share ideas and skills towards achieving the goals of the organisation. Therefore, it is not too obvious to state that a teamwork skill will influence the success of an organisation since each organisation comprises different individuals who have different characters and skills which contribute to the diversity of ideas in a team.

According to Kelchner (2013), maximising diversity in a team is important to enable different skills and ideas to be consolidated towards obtaining the best solution to achieve group objective. As such, apart from having academic qualifications and good technical skills, graduates must possess teamwork skills before stepping into the world of work. Good academic qualifications as well as stable technical skills do not guarantee a bright employment opportunity if the graduate does not have good teamwork skills. This is because teamwork skills are very much prioritised by employers nowadays when selecting their employees (Rosima, Mohd Izham & Nora, 2013; Zafir, Ishak & Abd. Hair, 2015). Having this skill in the employees, the talent and skills of the members of the organisation can be maximised, helping to strengthen the organisation (Zulhamri et al., 2010) as well as smoothen the management of the organisation (Mohd Yusof et al., 2013).

On the other hand, research shows that learning environment has an impact on the development of the student in physical, intellectual, emotional and social aspects which would then contribute to the productivity and hone teamwork skills. Rabiner, Godwin and Dodge (2016) state that an individual’s social skills are among the predictors of academic achievement. Good social skills can build effective interaction between student, teacher and study contents and subsequently be able to influence the student’s educational achievement. Effective interaction that exists among students would then be able to contribute to teamwork skills.

It is a necessity for every educational institution to ensure that the learning environment is managed properly. This is to ensure that students are able to determine their personal goal, are active in collecting and managing the information required, controlling and assessing self-learning and are subsequently able to provide feedback on personal experience in various environments and contexts of teaching and learning. Dunkin and Biddle (1974) suggested the role of environment in learning can influence student behaviour in the classroom and therefore their achievement in studies. The environment such as family, friends, community, technological facilities, the institutional environment and teachers are elements identified as influencing an individual’s development.

1.2. Relationship among Students

Interactions between student and a learning community whether through communication and cooperation in the daily learning process can create a close relationship between them. Smith and Bath (2006) defines learning community as a group of students in the context of learning that emphasises social interaction and cooperation among students. Social interaction and cooperation among students must be emphasised by the teachers through the teaching approach used. Learning that is student-centred can further improve social interaction and cooperation among them, as individuals will understand the learning materials and generate better behaviour when they are involved in an active learning environment. According to Virtanen, Tynjala and Etelapeltto (2014), close cooperation among students can generate a more effective learning process as individuals will understand the learning materials and generate better behaviour when they are involved in a learning environment which is active. Whereas Fraser et al., (1982) states that the dimension of relationship among students is the relationship that encompasses the aspect of cooperation and disputes among classmates. This means that a good relationship can be obtained through good cooperation among the students and vice versa.

Hence the peer factor in the learning community is very important in the student learning process and in influencing student demeanour. Friends are the individuals that they often meet and communicate with in daily activities during the school session. All the joys and sorrows throughout the schooling session are shared together. Therefore, peers are the individuals who are very close among students apart from family members. Past research has shown that peers can improve the positive or negative behaviour among students (Cook, Deng, & Morgano, 2007; Janosz, Archambault, Morizot, & Pagani, 2008; Nelson & De Backer, 2008; Simons Morton & Chen, 2009; Saedah, Farazila, Mohd Ridhuan, Zaharah, Nurulrabiah, Ahmad Ariffin & Azmi, 2016). According to Robert, Bridget and Joseph (2012), a good friendship among peers especially classmates can provide motivation towards developing the spirit of close cooperation among students in school.
Furthermore, Nursuhaili (2010) stated that apart from developing abilities and social skills, peers also influence an individual’s attitude and behaviour.

1.3. Relationship between Student and Teacher

The relationship between student and teacher refers to the extent of the demeanour that the student displays to the teacher. A close relationship between the two can be seen when the teacher and the student accept one another, are friendly, respect one another, cooperate, understand and considerate to one another or otherwise. According to Fraser et al., (1982) the relationship between student and teacher includes the extent to which the student’s demeanour towards the teacher is guided by formal regulations such as the democracy factor, informalities and partisanship. The student’s positive demeanour towards teacher is driven by a good relationship between the teacher and the student. The study carried out by Warwas and Helm (2017) found that, there exists a positive relationship between the characteristics of teaching executed by the teacher and the enjoyment of learning among the students. The positive relationship created by a teacher and his students is the most important aspect in encouraging positive development of the student and which will then be able to create a social environment which is more friendly and caring (Robert et al., 2012). Mikkonen, Pylväs, Rintala, Nokelainen and Postareff (2017) state that proper guidance given by the learning community such as teachers especially can encourage positive attitudes among the students such as being responsible and eager for the opportunity to advance further in studies.

Therefore, teachers must build a close relationship with their students as this relationship also influences the student to adapt in class, perform learning activities well and also to interact and cooperate with other students. Karner and Kogler (2016) state that a student’s emotions and motivation for learning are influenced by the learning situation in class where the teaching encompasses learning methods used and involves teacher-student interaction. According to Norzanah (2012), a close relationship between the teacher and student can influence the student’s cognitive and social emotions and henceforth student achievement. Through this close relationship the student is motivated to be actively involved in learning and therefore drive positive demeanour towards the teacher. Wentzel (2009) states that a good quality relationship between teacher and student is able to support the emotional development of a student well, build positive attitude, and motivate to achieve academic results and also to obtain true social skills. Whereas Klem and Connell (2004) state that when a teacher tries to make the learning process more interesting, encouraging communication among students, honest and treating them fairly are concerned. The student will respond by showing behaviour that is more positive in the classroom.

Research carried out in Malaysia has proven that the teacher factor is significant in influencing the academic performance and shaping the personality of the student (How, 2007; Rodiah, 2008; Rohani, Hazri & Nordin, 2010; Che Nidzam, Saidatul Ainoor & Asmayati, 2016). This means that the demeanour shown by the student indirectly is a result of the characteristic of teacher quality. Teachers must have the expertise in the field that is being taught, wise in diversifying lessons, and also have a personality that can be an example to the students. The practice of interesting learning covers creativity during the teaching process so that the students do not lose focus and involve themselves in learning (Muhnad Zaki, Razali, Azman & Mohd As’ed, 2013). Siti Mstima and Efendi (2010) states that an approachable teacher, able to diversify the activities in class, provides clear explanation and is fair in assessing and is able to change student behaviour.

2. Methodology

This study mainly aims at investigating relationship between the learning environment and teamwork skills among final year students in diploma program at vocational colleges. Specifically, the formulate research questions are as follows:

1. Is there a significant relationship between the learning environment based on the perception of the relationship among students with the teamwork skills?
2. Is there a significant relationship between the learning environment based on the perception of relationship between teacher and student with the teamwork skills?

This study employed a correlational research design using a set of self-reported questionnaires which consisted of two parts. The first part of the questionnaire contained 30 items which were assessed on a four-point Likert scale ranging from strongly disagree (1) to strongly agree (4), where the respondents rated their learning environment. These items were adapted and translated to fit the Malaysian context of learning environment based on the Learning Environment Inventory developed by Fraser et al. (1982). It also contained open-ended items to provide respondents with flexibility in adding their perceptions for data enrichment. The second part of the questionnaire contained 30 items which were also assessed on a four-point Likert scale ranging from strongly disagree (1) to strongly agree (4), where the respondents rated their teamwork skills. These items were developed by the researchers based on Soft Skills Module for Malaysian Higher Education Institution (2006).

The instrument was validated by an expert in the area and pilot test that was conducted to ensure the instrument construction was clear and appropriate to assess the
variables in this study. All of the information derived was then utilized to establish the validity while Cronbach Alpha reliability statistic was used to assess internal consistency of the instrument. The obtained Cronbach Alpha for reliability coefficient of .87 was later used to collect data from selected respondents.

This study used two stages sampling procedure to select respondents. Firstly, the researchers randomly selected 6 out of 8 vocational colleges in the state of Selangor. The total of samples is 285 respondents who were randomly selected from 1,100 final years’ students of selected vocational colleges.

The response rate is 85% from 285 distributed questionnaires. The data obtained was analyzed with descriptive statistics (frequency, percentage and mean) and inferential statistics (Pearson correlation) using IBM SPSS software program at significant level of $p = .05$.

3. Findings and Discussion

3.1. Self-Reported Teamwork Skills

The finding shows that the respondent reported their teamwork skills as likely high with a mean score of 3.30 and a standard deviation of 0.31. Respondents agreed that they are able to build good relationships, interact with others and work effectively with them to achieve the same objective. Respondents were found to be encouraging and built good relationships with various ethnicities in achieving the group objective. Respondents also suggested that diverse religions and races among them were not as an obstruction for them to work together to achieve the group goal. This is one of the most important characteristics of teamwork. Every individual in the group has to be positive in ensuring that the goal of an organisation can be successfully achieved. Zulhamri et al. (2010) stated that there are four major characteristics of teamwork which are collective effort, cooperation, positive and complementing one another. A positive characteristic can be explained when every member of the organisation must view teamwork as an opportunity to achieve goals, fulfill living requirements and provide support during a time of crisis.

The finding then shows that the respondents are able to understand and take turns in assuming the role as the leader of the group and as a member of the group. Respondents were found to be confident to become a leader if given the opportunity and show tolerance among group members when choosing the best leader from among them. Understanding each other’s roles and functions is a collective effort that is one of the main characteristics of teamwork. According to Zulhamri et al., (2010) the collective effort characteristic is when members of the organisation must understand one another and share their views on the direction and goal that the members of the group want to achieve. Every member must also realise their own role and function as this attitude can provide motivation for each member to take part in every plan and action that has been decided.

The research findings also show that the final year students have the ability to identify and respect attitude, behaviour and belief of others. Respondents were found to be concerned over colleagues’ behaviour and did not have negative preconception on different attitudes of colleagues. Trust is an important requirement in teamwork as without trust the possibility of conflict increases. This will cause the individuals involved not to build good relationships and to be unable to work effectively as a team. Therefore, trust is the key to maintaining a good working relationship among members of the group. According to Tuckman’s theory (1965) consensus and respect for one another is at level three which is norming in the process of forming teamwork. At this level members of the team are clear on their own roles and responsibilities and begin to respect one another and would always have a consensus towards the decisions made by the group. It is also at this level that trust between one another begins to form.

3.2. Learning Environment Based on the Perception of Relationship among Students

Overall, the mean score and standard deviation of the learning environment based on the perception of relationship among students is $M = 3.12, S.D = 0.30$. The highest mean is for the item “I enjoy working with friends regardless of race” where 2(0.8%) students answered “Strongly disagree”, 10 (4.1%) answered “Disagree”, 114(47.3%) answered “Agree” and 115(47.7%) answered “Strongly agree”. This finding explains that final year students are flexible to work with anyone even though of different gender” where only 9.9% of students did not support the item and also through the item statement “I am flexible to work with friends regardless of race”. This finding is supported by the item statement “I look at my friends and their friends while studying” where overall 95% of the students enjoyed working with friends regardless of race. In addition, it was found that 96.3% of the respondents agreed that they were mindful about the aspect of maintaining communication relationship among friends. This can be seen through the item statement “I do not like to be disturbed by classmates during learning sessions” where 110(45.6%) respondents answered “Strongly disagree”, 21(8.7%) answered “Agree” and 200(75.7%) answered “Strongly agree”. This finding shows that there exists a very close relationship from the aspect of cooperation and tolerance among the final year students of the Vocational College where almost all of the students, which is 90.4%
who do not support the item. This finding is supported by the item statement “I assist classmates who are facing difficulties/problems while doing practical” and item “I actively discuss with friends during the learning activity in class/workshop” where 89.7% of the respondents supported those items.

The learning environment based on the perception of relationship among students shows that there exists a close relationship in the aspects of cooperation, communication and tolerance among the final year students of the Diploma programme. The researcher observed that there existed a situation where there is closeness in terms of cooperation, communication and tolerance among the final year students of the Diploma programme due to the learning environment which involved active involvement of the students.

Learning which is centred on the student involves the active involvement of students. Teachers have the role as a facilitator to help students develop understanding, build self-motivation, concept and knowledge (Holt & Kysilka, 2006). One of the learning that is student-centred is through cooperative learning. Cooperative learning requires the students to work in small groups to complete a project or assignment together. Hence students will work together as a team not only to learn but also to help one another to achieve the same objective. According to Johnson and Johnson (1999), cooperative learning will not happen if only one person cares and does the task in a discussion group whereas the other members act only as a passenger. Therefore, cooperative learning requires the active involvement of the student. According to Bruner (1986), through an active learning environment, students will complement each other in achieving the objective through the spirit of cooperation and social interaction between one another. Students are given the freedom to discuss, question, work together in the learning process whereas the role of the teacher is if more as a facilitator, mentor, coach, moderator and enabler towards the learning process (Eggen & Kauchak, 2012).

Final year students are also found to be flexible in working with anyone even though of different gender and different race. The researcher also noticed this would happen through the implementation of cooperative learning. According to Kagan (1992) among the benefits of cooperative learning for students is that the members of different groups can work together towards achieving the same goal and creating a positive interdependency. Hence the difference in gender or race is not an obstruction in achieving the group goal. Apart from that, the differences in opinions presented by members of a heterogeneous group can provide realisation to members of the group that there are opinions which are different from their own.

3.3. Learning Environment Based on the Perception of Relationship between Student and Teacher

Overall, the mean score and standard deviation is \( M = 3.32, S.D = 0.36 \) for the item “I do not delay the assignment given by the teacher” where 4(1.7%) students answered “strongly disagree”, 29(12.0%) answered “Disagree”, 143(59.3%) answered “Agree” and 65(27.0%) answered “strongly agree”. This finding shows that the majority of students follow the teacher’s instructions to complete the task given within the time period set. The highest mean is \( M = 3.52, S.D = 0.53 \) for the item “I use the appropriate intonation of voice when communicating with the teacher” where 1(0.4%) students answered “strongly disagree”, 1(0.4%) answered “disagree”, 110(45.6%) answered “Agree” and 129(53.5%) answered “strongly agree”. This finding explains that the final year students protect their relationship with their teacher through a positive demeanour especially when communicating. This finding is supported by the item statement “I look at my teacher when I communicate with him” which is the second highest mean \( M = 3.46, S.D = 0.55 \) where only 2.1% respondents did not support that item. The analysis also shows that the final year students have the attitude of respecting their teacher. This can be seen through the item statement “I request permission from the teacher to use the facilities in the workshop” which is the third highest mean \( M = 3.44, S.D = 0.59 \) where 95.9% respondents supported the item. In addition 90.5% respondents agree that they would shake hands with the teacher once the learning session ends.

Finding shows that the final year students of the diploma program protect their relationship with their teachers by positive demeanours shown especially when communicating. Respondents are found to use the appropriate voice intonation when communicating with their teachers and look at the teacher when communicating. Good communication between the student and teacher can create a learning environment which is conducive that will then encourage the student to be more committed to learn. Respondents were also found to request permission from the teacher to use the facilities in the workshop, assist the teacher to tidy up the workshop after practical work, acknowledge teacher when they meet and are excited to leam knowledge and new skills from teacher. Positive demeanours shown by students reflect a learning environment that is positive from the perception of relationship between student and teacher. Teachers play an important role in creating a positive learning environment based on the perception of relationship between student and teacher. According to Klem and Connell (2004), when the teacher works hard to make the learning process more interesting, encourages communication among students, treats them fairly as well, and is concerned, honest students will then respond by showing more positive behaviours.

The findings of the research also found that the majority of the final year students of the Diploma programme give good cooperation and commitment to complete the tasks assigned by teacher. Respondents were found not to delay the tasks given by teacher. The researcher also observed
that this situation happens as a result of the quality of teachers of the Vocational College itself. Mikkonen et al., (2017) states that good guidance given by the learning community such as teachers specifically can encourage a positive attitude among the students such as being responsible and eager for the opportunity to advance in learning. A high level of concern by the teacher is able to encourage the students to be actively involved in the learning activity (Patricia & Tak, 2011), pay attention to teacher’s instructions and be more respectful towards teacher (Rohani et al., 2010).

The student’s active involvement in the learning activity can hone social skills such as teamwork skills. Norzannah (2012) stated that a close relationship between teacher and student can influence cognitive, social and emotions of the student as well as student involvement in the learning process. Findings of past research have also shown that there exists a positive relationship between the characteristic of the quality of teachers studied with the learning commitment of students. This means that the quality characteristic found in teachers influences the student commitment to learn (Good & Brophy, 2008; Rohani et al., 2010). In addition, Fatimah (2010) states that the teacher’s behaviour when in the presence of students can improve student involvement in the learning activity.

3.4. Relationship between Learning Environment and Teamwork Skills

Referring to Table 1, there is a significant positive association between the relationship among students and teamwork skills ($r = 0.526$, $p < 0.01$) and relationship between the student and teacher with teamwork skills ($r = 0.571$, $p < 0.01$). All these association are strong (Cohen, 1988). These show that the learning environment based on the perception of relationship among final year students and relationship between student and teacher has a strong positive relationship with the student’s teamwork skills.

| Table 1. Pearson Correlation for Relationship of Learning Environment with Teamwork Skills |
|----------------------------------|------------------|---|
| Relationship among Students      | 0.526            |   |
| Relationship between Students and Teachers | 0.571 |   |

Findings show that there exists a strong positive relationship between the learning environment based on the perception of relationship among students and teamwork skills. This means that a positive learning environment based on the perception of relationship among students is able to provide a positive implication in contributing to the level of teamwork skills among the final year students of the Vocational College Diploma. Respondents in this research overall have shown that a positive learning environment is based on the perception of relationship among students where the finding reflects that there exists a close relationship from the aspects of cooperation, communication and tolerance among students. This positive relationship can hone and improve the level of teamwork skills among students. A learning environment where there is a positive relationship among peers is able to provide positive influence which drives towards improving the level of teamwork skills among students. According to Virtanen et al., (2014), close cooperation among students can generate a more effective learning process as the individual will understand the learning materials and generate much better behaviour when they are involved in a learning environment which is active. Meanwhile, Nursuhaili (2010) states that besides increasing abilities and social skills, peers also influence the attitude and behaviour of an individual.

Finding shows that there exists a positive relationship which is strong between the learning environment based on the perception of relationship between student and teacher with teamwork skills. This means a positive learning environment based on the perception of the relationship between student and teacher is able to have a positive influence to improve the level of teamwork skills among the final year students of the Vocational College Diploma programme. Respondents in this research overall have shown a positive learning environment based on the perception of relationship between student and teacher where the finding shows that there exists a good relationship from the aspects of cooperation, communication and tolerance between students and teachers. Respondents were found to cooperate with teachers when completing a task within the period set by the teacher and help teachers to tidy up the workshop after the practical learning session ends. They also look after the communication aspect by looking at the teacher when communicating with him and using the appropriate voice intonation when communicating with teacher and acknowledge teacher when they meet. Apart from that, respondents also respect the teacher by not asking questions before the teacher has finished explaining and asking for permission from the teacher before using the facilities in the workshop. Therefore, through these positive relationships, social skills can be obtained and refined which would then have a positive effect in improving teamwork skill. A good quality relationship between teacher and student can support the emotional development of a student well, build positive attitude, provide motivation in achieving academic results and also obtain true social skills. (Wentzel, 2009; Saari & Mat Rashid, 2013; Karner & Kogler, 2016).

4. Conclusions

Final year students of the Vocational Diploma programme, Vocational College have a high level of
teamwork skills. Respondents were found to be capable of building good relationships, interacting with others and working effectively with them to achieve the same objective, have the ability to understand and to take turns assuming the role of group leader and member of group and be able to identify and respect attitude, behaviour and belief of others. A learning environment based on the perception of relationship among students and student relationship with teacher found that there exists a positive environment which means that there exists a good relationship among students in the aspects of cooperation, communication and tolerance among students and students show a positive demeanour towards teachers. There is also a strong positive relationship between the learning environment based on the perception of relationship among students and relationship between student and teacher with the teamwork skills of the students. This finding implies that through a learning environment that is positive based on the perception of relationship among students and relationship between student and teacher it is able to have a positive influence in improving teamwork skills.

REFERENCES


keterhubungan, kebolehsediaan dan komunikasi guru dengan ketrampilan pelajar aliran kemahiran, Tesis master, Universiti Putra Malaysia.


High School Agriculture Teachers' Intentions to Continue Teaching

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Abstract A descriptive survey study was used to examine factors that influence high school agriculture teachers’ intentions to continue teaching in Iowa. The online questionnaire was administered to 252 agriculture teachers, and 119 teachers completed the survey. A four-point Likert-type scale was used to measure agriculture teachers’ intentions to continue teaching. The overall mean and standard deviation is 2.64 (.64) for the eight influential factors, which indicates that these factors slightly influenced teacher intentions to continue teaching. The multinomial logistic regression model using the stepwise forward method was used to predict the likelihood of individuals’ plans to continue teaching. The model was statistically significant ($\chi^2 = 39.97; p = 0.01$), and the following significant, influential factors can explain 31 percent (Pseudo $R^2=.31$) of the variance: teacher recognition ($p=.001$), teaching as a right career ($p=.035$), family expectation of staying ($p=.035$) and teaching makes oneself feel good ($p=.040$). Findings from this study support evidence from previous research that reported teachers with strong self-esteem and belief that teaching is the right career for them and will remain longer in the profession.

Keywords Agriculture Teachers, Intentions to Continue Teaching

1. Introduction

Teacher attrition has been acknowledged as a crucial issue in many countries, including the United States (Borman & Dowling, 2006; Brill & McCartney, 2008; Watt & Richardson, 2008). Teacher attrition can be defined as the percentage of beginning teachers who leave the teaching profession (Unesco, 2017). A high number of teacher attrition will increase training costs for a new teacher and lead to difficulty in teacher retention.

Brill & McCartney (2008) stated teacher attrition issue had been an alarming trend in the United States for a few decades (Ingersoll, 2001), where 46 percent of teachers leave within the first five years. Realizing how critical this issue is, the recruitment of new teachers is required to resolve teacher attrition problems. Although recruitment is essential, retention of teachers must be prioritized to lower teacher attrition rates (Ingersoll and Smith, 2003).

Previous studies, such as those by Camp (2000) and Edwards & Briers (2001), focus on determining why individuals leave the teaching profession, whether they do voluntarily or involuntarily. Many of these studies were conducted more specifically on agriculture teachers to ascertain any personal problems (Myers, Dyer, & Washburn, 2005), determine job satisfaction (Cano & Miller, 1992; Walker, Garton, & Kitchel, 2004) and verify there is family and work-life balance (Murray, Flowers, Croom, & Wilson, 2011).

Until now, several teacher retention strategies have been implemented, including student loan forgiveness, scholarships, and professional development programs for early, mid-career, and late-career agriculture teachers in the US. However, these current strategies do not effectively overcome shortages of qualified agriculture teachers at school (Walker, Garton, & Kitchel, 2004). Thus, this study aims to determine factors that influence agriculture teachers’ intentions to remain in teaching. This study addresses the American Association for Agricultural Education national research agenda priority related to ensuring there are enough qualified and high-quality teachers.

2. Literature Review

Worthy (2005) found that individuals who stay in teaching for more than five years reach their full potential
more than those who quit. This finding is supported by previous literature, which states that teachers who have five to eight years of teaching experience often master their professions (Scherer, 2001). Individuals who stay in teaching longer gain more experience and become more effective teachers. Several studies investigating individuals’ intentions to continue teaching have been carried out on beginning teachers; it has been found that many teachers leave the profession after only a few years of teaching (Wilhelm, Dewhurst-Savellis, & Parker, 2000; Inman & Marlow, 2004; Borman & Dowling, 2006; Curry & O’Brien, 2012).

2.1. Factors Influencing Intentions to Continue Teaching

Researchers have determined several factors that influence individuals’ intentions to continue teaching. Professional knowledge and skills, teaching values, responsibilities, and preparedness, perceptions about plans to remain in teaching and self-efficacy are identified as individuals’ personal and professional needs that influence their intentions to stay in teaching (Battle & Looney, 2014; Walker, Garton, & Kitchel, 2004; Darling-Hammond, Chung, & Frelow, 2002; Haberman, 1989; Battle & Wigfield, 2003). Knowledge can be defined as knowing and gaining information on something, whereas skills are about doing activities that involve practice or training (Merriam-Webster). Previous studies have reported that teachers with more relevant knowledge and skills can be expected to persist in teaching (Haberman, 1989; Darling-Hammond, 1990; Battle & Looney, 2014).

Delnero & Montgomery (2001) conducted a study that incorporates teachers’ responsibilities along with their knowledge and skills in teaching. For instance, teaching requires individuals to have knowledge and skills in various subject matters, curriculum review, lesson plan design, providing instruction, conducting students’ learning assessments, advising students, communicating with parents, and maintaining records of student learning. Besides, Roness (2011) notes that the quality of experiences at the earliest stage in teaching careers can determine an individuals’ intention to stay. This statement corroborates previous research, which has found that the initial year of one’s teaching experience is essential for professional development, career satisfaction, and longevity (McCormack, Gore, & Thomas, 2006).

Preparedness and self-efficacy have also been identified as influential factors for individuals to continue teaching (Darling-Hammond, Chung, & Frelow 2002). Teachers with sufficient preparation can produce more effective lessons that will benefit students as well as satisfy themselves as teachers. Bandura (1977) claims that positive relationships between new teachers and their students enhance students’ quests for learning, which contributes positively to teachers’ feelings of fulfillment. Adding to this, Monk (1994) has found a positive correlation between teachers’ subject matter preparedness and student achievement.

Battle & Looney (2014) studied individuals’ intentions to remain in teaching by investigating teachers’ values and perceptions of education and concluding that there is a positive relationship between intrinsic-attainment and utility value; moreover, Battle & Looney reported that there is a negative relationship between cost and intentions to continue teaching. Roness (2011) found that feelings of happiness and positive perceptions retain teachers longer. Furthermore, it has also been found that new teachers perceive difficulty in teaching, task assignments, and work conditions as important factors influencing them to stay (Hope, 1999). Kutcy & Schulz (2006) and Huberman (1989) described the first year or two of teaching as “a time of survival,” while Skaalvik & Skaalvik (2008) wrote that negative perceptions of teaching can cause new teachers to quit early. Finally, the mismatch between teachers’ expectations and the reality of teaching might also make teachers leave the profession early (Chambers, Coles, & Roper, 2002).

2.2 Plans to Remain in Teaching

Previous studies show that individuals’ plans to remain in teaching are associated with their intentions and commitment to teaching (Delnero & Montgomery, 2001). Rots, Aelterman, Vlerick, & Vermeulen (2007) linked commitment to individuals’ intentions to teach. They also underlined the significance of teacher commitment to addressing teacher attrition problems. Data from previous findings of beginning teachers’ plans to stay consistently show that many teachers planned to quit teaching after only five years of service (Ingersoll & Smith, 2003; Hughes, 2012; Whittington, McConnell, & Knobloch, 2006). The results from the studies indicate that experienced teachers are more likely to continue teaching until retirement age.

Studies regarding agriculture teacher intent to remain in the teaching profession found four critical factors that influence commitment to stay, including agriculture work experience, responsibility to teach agriculture, self-efficacy and human capital investment in teaching agriculture (Edwards & Briers, 2001; Whittington, McConnell, & Knobloch, 2006). Agriculture teachers in Iowa State might have different intentions to continue teaching, but far too little attention has been paid to this type of study. Therefore, this research was conducted to understand the factors that influence high school agriculture teachers’ intentions to continue to teach in Iowa.

2.3 Conceptual Framework

The conceptual framework for this study was derived from the expectancy-value theory. Expectancy-value theory emphasizes that individual choice, persistence, and
performance explain how well individuals believe, perform, and value activities (Wigfield & Eccles, 2000). Several studies have used expectancy-value theory as a framework to the issues of career choice, which suggest that individual values and expectations are essential determinants in choosing a career.

Investigate the prediction of outcomes. In different, this theory was adopted to examine career processes work results in addition to selecting jobs (Feather, 1992). The expectancy-value theory was used as a framework to study the predictors of future employment status (Lynd-Stevenson, 1999). Besides, Borders, Earleywine, & Huey (2004) predicted the problematic behaviors of high school students by using expectancy-value theory. Eccles (1987) also extended expectancy-value theory to study the issues of career choice, which suggest that individual values and expectations are important determinants in choosing a career.

The concept of task value in the expectancy-value theory is appropriate to predict individuals’ intentions (Battle & Wigfield, 2003; Eccles, 1983). The task value constructs, in theory, consist of utility, importance, and interest items, which collectively affect an individual’s achievement outcomes. A previous study used the task value portion to predict individuals’ intentions to continue teaching (Battle & Looney, 2014). Parsons, Adler, & Meece (1984), in their study of students’ educational plans, found that task value emerged as a significant predictor.

An adaption of the subjective task value concept in the expectancy-value theory was used as a guide to frame the present research study conceptually. In this research, the conceptual framework consists of demographic variables, a curriculum for agricultural science education (CASE), and non-CASE factors that influence individuals’ intentions to continue teaching, as seen in Figure 1. These factors include teachers’ knowledge and skills, perception of plans to remain in teaching, early teaching experiences, teaching responsibilities, and teaching values. The selection of these factors was based on studies by Battle & Looney (2014) and Battle & Wigfield (2003).

**Figure 1.** Conceptual framework of factors that influence high school agriculture teachers’ intentions to continue teaching.
2.4 Purpose and Objectives

The purpose of the study was to investigate factors that influence high school agriculture teachers’ intentions to continue teaching. Objectives of the study include:
1. Describe the personal characteristics of agriculture teachers in terms of age, gender, educational levels, years of teaching experience, years of teaching agriculture courses, use of the CASE curriculum, and individuals’ plans to remain in teaching.
2. Describe the factors that influence individuals’ intentions to continue teaching.
3. Predict individuals’ plans to remain teaching from the factors that influence their intentions to continue teaching.

3. Methodology

The purpose of this descriptive survey study was to investigate the personal and professional needs that influence high school agriculture teachers’ intentions to continue teaching. This was a census study that focused on 252 high school agriculture teachers in Iowa State. The list of participants was obtained from the Iowa State Future Farmers of America Organization.

3.1. Instrument

A questionnaire was developed using the Qualtrics online survey-making software consisted of four parts; however, only parts two and four are used in the manuscript. Part two of the online questionnaire has been adapted from the work of previous scholars (Kyriacou & Kunc, 2007; Battle & Looney, 2014). It contains Likert-type and multiple-choice items. There are eight Likert-type items measuring factors that influence individuals’ intentions to teach. Response options range between 1= strongly disagree, 2= disagree, 3=agree, and 4=strongly agree. Three multiple-choice questions were used to measure knowledge and skills, early teaching experience and aspirations to move into administration, respectively. Part four contains several demographic items, and one item focused on individuals’ plans to remain in teaching.

3.2. Validity

A panel of three agricultural education experts was appointed to review the validity of the questionnaire. One expert was satisfied with the instrument face, content, and construct validity, while the other two experts recommended a few changes. The researcher made the changes as recommended by the experts and resent the questionnaire to the panel. All three of the experts agreed that the questionnaire’s face, content, and the construct were valid.

3.3 Reliability

A pilot study was conducted before formal data collection. The pilot study involved ten high school agriculture teachers in Iowa State. Internal consistency of needs that influence high school agriculture teachers’ intentions to continue teaching was computed using Cronbach’s alpha. The reliability coefficient was 0.75.

3.4 Data Collection

In formal data collection, the researcher followed the tailored design method (Dillman, Smyth, & Christian, 2009). The pre-notification email was sent to 252 agriculture teachers in Iowa State. Three days later, the researcher sent a second email via Qualtrics that included information about the study and a URL link to the questionnaire. Ten days then, a reminder was sent via Qualtrics to the non-respondents.

After an additional week, a second reminder email was sent to respondents via Qualtrics to ask for help from the non-respondent teachers. A postcard that included the URL link to the survey was sent through the U.S. Postal Service to the non-responding teachers as a last contact seven days after the second reminder. The researcher used a postcard as a different mode to contact the non-respondents to increase the response rate (Dillman, Smyth, & Christian, 2009). The final response rate for all five methods of contact was 47 percent (n = 119). One week after the last communication, the online questionnaire was closed.

3.5 Data Analysis

Participant answers from the online questionnaires were gathered from Qualtrics, and the data were processed and analyzed using the Statistical Packages for Social Science (SPSS) version 23.0. After the formal study data collection, the Cronbach alpha value was used again to measure reliability on factors that influence agriculture teachers’ intentions to continue teaching. The reliability coefficient was 0.73.

The researcher compared early responses (n= 60, the first half participants) to late responses (n=59, the second half participants) using an independent sample t-test. Results show that there was no significant difference between early and late respondents. It provides some evidence of representation for the entire population of agriculture teachers in Iowa (Lindner, Murphy & Briers, 2001).

This was a census study; therefore, the researcher acknowledges some questions could be raised about whether inferential statistics were appropriate. Only 119 agriculture teachers completed the questionnaire, which served as a valid sample from a population of 252 total teachers contacted to participate. In agricultural education, it is customary to use inferential statistics in similar situations. It is recommended readers interpret the findings
4. Analysis and Findings

4.1. Descriptive Analysis

Objective 1:
Describe the personal characteristics of agriculture teachers in terms of age, gender, educational levels, years of teaching experience, years of teaching agriculture courses, use of CASE curriculum, and teachers’ plans to remain in teaching.

The participants in the study consisted of 119 high school agriculture teachers from Iowa State. Of the 199 teachers, 52.9 percent identified as female, and 47.1 percent identified as male. The teachers ranged in age from 21 to 65 years. The average age was 38.15 with a standard deviation of 13.12. The teachers were asked to indicate their highest level of academic attainment. For a majority of teachers (63 percent), a bachelor’s degree was their highest level of educational achievement; for the remaining 37 percent of teachers, the highest level of education was a master’s degree. Years of teaching experience ranged from 1 to 40 years with an average of 14.11 and a standard deviation of 12.49. Teachers were also asked to indicate the number of years they taught agricultural education explicitly. Results show that years of teaching agriculture courses ranged from 0 to 40 years with a mean of 13.80 and a standard deviation of 12.52.

Table 1. Selected Personal Characteristics of High School Agriculture Teachers (n=119)

<table>
<thead>
<tr>
<th>Variables</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Agriculture using CASE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>85</td>
<td>71.4</td>
</tr>
<tr>
<td>No</td>
<td>34</td>
<td>28.6</td>
</tr>
<tr>
<td>Number of Agriculture Teachers using CASE Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Agriculture, Food and Natural Resources</td>
<td>71</td>
<td>59.7</td>
</tr>
<tr>
<td>Principles of Agriculture Science Animal</td>
<td>42</td>
<td>35.3</td>
</tr>
<tr>
<td>Principles of Agriculture Science Plant</td>
<td>38</td>
<td>31.9</td>
</tr>
<tr>
<td>Natural Resources and Ecology</td>
<td>22</td>
<td>18.5</td>
</tr>
<tr>
<td>Food Science and Safety</td>
<td>9</td>
<td>7.6</td>
</tr>
<tr>
<td>Animal and Plant Biotechnology</td>
<td>7</td>
<td>5.9</td>
</tr>
<tr>
<td>Agricultural Power and Technology</td>
<td>7</td>
<td>5.9</td>
</tr>
<tr>
<td>Agricultural Research and Development</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Mechanical System in Agriculture</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Environmental Science Issues</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Agriculture Business and Foundations</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Agricultural Marketing and Communications</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Teachers’ Plans to Remain Teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 Years</td>
<td>42</td>
<td>35.3</td>
</tr>
<tr>
<td>6-10 Years</td>
<td>21</td>
<td>17.6</td>
</tr>
<tr>
<td>11 or more Years</td>
<td>54</td>
<td>45.4</td>
</tr>
</tbody>
</table>
Objective 2:

Describe factors that influence teachers’ intentions to continue teaching.

The teachers responded to eight statements representing personal and professional needs that influence individuals’ intentions to continue teaching. A Likert-type scale with four-points ranging from strongly disagree (1) to strongly agree (4) was used. A decision rule was created to interpret scores, as shown in Table 3.

<table>
<thead>
<tr>
<th>Likert-type categories</th>
<th>Mean Score</th>
<th>Interpretation of the statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00 – 1.5</td>
<td>Strongly Disagree (Negative)</td>
</tr>
<tr>
<td>2</td>
<td>1.51 – 2.5</td>
<td>Disagree (Negative)</td>
</tr>
<tr>
<td>3</td>
<td>2.51 – 3.5</td>
<td>Agree (Positive)</td>
</tr>
<tr>
<td>4</td>
<td>3.51 – 4.0</td>
<td>Strongly Agree (Positive)</td>
</tr>
</tbody>
</table>

Table 4 shows the means and standard deviations of factors that influence their intentions to stay in the teaching profession. The grand mean for the needs was 2.64, with a standard deviation of 0.64. This finding suggests that, overall, it slightly influenced individuals’ intentions to teach. Regarding influential factors, agriculture teachers provided the highest mean score for the item “I want to stay because I believed that I could positively affect student performance” at 3.29 (SD = .56). This was followed by “I want to stay because teaching is the right career for me” with a mean of 2.99 and a standard deviation of 0.66. Agriculture teachers rated the item “I will end up getting a promotion if I stay in teaching” (M = 1.97, SD = .62) as the lowest factor that influenced their intentions to teach.

Most teachers (f = 73, 61.3 percent) indicated that knowledge of subjects and skills in teaching were relevant influencers to continue teaching, as shown in Table 5. Most of the teachers (f = 103, 86.6 percent) indicated that they had a negative experience early in their career, and even more (f = 105, 88.2 percent) identified that they had no aspirations of moving into administration.

<table>
<thead>
<tr>
<th>Questions</th>
<th>M</th>
<th>SD</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching will help me fulfill future personal objectives.</td>
<td>2.66</td>
<td>0.69</td>
<td>Positive</td>
</tr>
<tr>
<td>I choose to stay in teaching because I need to be recognized as a teacher.</td>
<td>2.34</td>
<td>0.72</td>
<td>Negative</td>
</tr>
<tr>
<td>My family expects me to stay in teaching.</td>
<td>2.16</td>
<td>0.69</td>
<td>Negative</td>
</tr>
<tr>
<td>I will end up getting a promotion if I stay in teaching.</td>
<td>1.97</td>
<td>0.62</td>
<td>Negative</td>
</tr>
<tr>
<td>Total</td>
<td>2.64</td>
<td>0.64</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Note: Based on scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.

<table>
<thead>
<tr>
<th>Variables</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptions of Importance:</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Knowledge of the subject is most important</td>
<td>41</td>
<td>34.5</td>
</tr>
<tr>
<td>Skills in teaching are most important</td>
<td>73</td>
<td>61.3</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Had negative experience in the first years of teaching</th>
<th>103</th>
<th>86.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16</td>
<td>13.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have aspirations of moving into administration</th>
<th>14</th>
<th>11.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>105</td>
<td>88.2</td>
</tr>
</tbody>
</table>

4.2. Multinomial Logistic Regression Analysis

Objective 3:

Predict teachers’ plans to remain teaching from factors that influence their intentions to continue teaching.
Multinomial logistic regression was used to predict three different plans to stay in teaching from the needs that influence individuals’ intentions to continue teaching. Predictor variables that were considered and retained after the multinomial logistic regression analysis are listed in Table 6. The dependent variable plans to stay in teaching and is broken down into three groups: 1-5 years, 6-10 years and 11 or more years. The baseline category was planning to stay for 1-5 years. Multinomial logistic regression using the forward entry stepwise method was used to reduce eight predictor variables to four. The assumption was met; the correlational matrix for predictor variables shows no multicollinearity issues.

### Table 6. Variables Considered and Retained for Predicting Teachers’ Plans to Stay in Teaching

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variables retained in the final model by stepwise logistic regression.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors that Influence Agriculture Teachers’ Intentions to Continue Teaching:</td>
<td></td>
</tr>
<tr>
<td>1. Stay because I believe that I have the ability to positively affect student performance.</td>
<td>2. Stay because teaching is the right career.</td>
</tr>
<tr>
<td>2. Stay because teaching is the right career.</td>
<td></td>
</tr>
<tr>
<td>3. Teaching fulfills my needs.</td>
<td></td>
</tr>
<tr>
<td>4. Staying in teaching because it makes me feel good about myself in the future.</td>
<td>4. Staying in teaching because it makes me feel good about myself in the future.</td>
</tr>
<tr>
<td>5. Teaching will help me fulfill future personal objectives.</td>
<td></td>
</tr>
<tr>
<td>6. Staying in teaching is to be recognized as a teacher.</td>
<td></td>
</tr>
<tr>
<td>7. The family expects me to stay in teaching.</td>
<td></td>
</tr>
<tr>
<td>8. I will end up getting a promotion if I stay in teaching.</td>
<td></td>
</tr>
</tbody>
</table>

### Table 7. Multinomial Logistic Regression (Model included significant variables at .05 level of significance)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>SE</th>
<th>Wald</th>
<th>df</th>
<th>P</th>
<th>Odd Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plans to Continue Teaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 to 10 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.31</td>
<td>1.98</td>
<td>0.438</td>
<td>1</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Staying in teaching to be recognized as a teacher</td>
<td>-1.32</td>
<td>0.56</td>
<td>5.60</td>
<td>1</td>
<td>0.02</td>
<td>0.27</td>
</tr>
<tr>
<td>11 or more Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.12</td>
<td>1.84</td>
<td>5.03</td>
<td>1</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Staying in teaching makes me feel good about myself in the future.</td>
<td>1.03</td>
<td>0.50</td>
<td>4.19</td>
<td>1</td>
<td>0.04</td>
<td>2.80</td>
</tr>
<tr>
<td>Staying because teaching is a right career</td>
<td>-1.51</td>
<td>0.46</td>
<td>11.02</td>
<td>1</td>
<td>0.01</td>
<td>0.22</td>
</tr>
<tr>
<td>Family expects to stay in teaching</td>
<td>1.09</td>
<td>0.52</td>
<td>4.47</td>
<td>1</td>
<td>0.04</td>
<td>2.99</td>
</tr>
<tr>
<td></td>
<td>-0.80</td>
<td>0.38</td>
<td>4.44</td>
<td>1</td>
<td>0.04</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Note: (n= 119). The reference category is 1-5 years. Model fit ($\chi^2 = 39.97; \ p = 0.01$).

Based on Table 7, results show that the model was statistically significant ($\chi^2 = 39.97; \ p = 0.01$), where Pseudo R2 (Nagelkerke) was 0.31, as shown in Table 7. The odds ratio was used to interpret the multinomial logistic regression analysis for individuals’ plans to stay in teaching for 6-10 years relative to the 1-5 year plan. Results indicate that agriculture teachers who have a one-unit increase in their scale score with the variable “staying in teaching to be recognized as a teacher,” the odds of a teacher being likely to stay for 6-10 years decreases by a factor of 0.27 while other variables are held constant. The odds ratio depicted teachers with this variable as likely preferring short-term plans (remaining in teaching for 1-5 years) as opposed to long-term projects (remaining in teaching for 11 or more years).

Besides, the odds ratio was used to interpret the multinomial logistic regression analysis for teachers’ plans to stay 11 or more years relative to 1-5 years. Agriculture teachers who have a one-unit increase in their scale with the variable “staying in teaching because it makes me feel good about myself in the future,” the odds of the teachers planning to stay for more 11 years increases by a factor of 2.80 while other variables are held constant.

Results show that agriculture teachers who have a one-unit increase in their scale score with the variable “staying in teaching to be recognized as a teacher,” the odds of the teachers who were likely to stay in 11 or more years decreases by a factor of 0.22 while other variables are held constant. This odds ratio indicated teachers were more likely to stay for 1-5 years. Agriculture teachers who have a one-unit increase in their scale score with the variable “staying in teaching because it is the right career,” the odds of teachers...
being likely to stay in 11 more years increases by a factor of 2.99 while other variables are held constant. Adding to this, teachers who have a one-unit increase in their scale score with the variable “family expects me to stay in teaching,” the odds of the teachers planning to stay in 11 or more years decreases by a factor 0.45 while other variables are held constant.

While, Table 8 shows a classification table, and indicates how accurately the model predicts the category of three different plans to stay in teaching. The model correctly classifies 59.7 percent of agriculture teachers. The overall correct classification rate shows a 16.4 percent improvement over selecting the model category, and a 34.1 percent improvement if the dependent variable holds constant. It would be more accurate to predict agriculture teachers’ plans in the 11 or more years category. Around 74.1 percent of teachers who were observed in 11 or more years plan category were predicted to be in this category.

Table 8. Classification of the Model

<table>
<thead>
<tr>
<th>Years</th>
<th>Observed</th>
<th>Predicted</th>
<th>Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 Years</td>
<td>29</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>6-10 Years</td>
<td>9</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>11 or more</td>
<td>13</td>
<td>1</td>
<td>40</td>
</tr>
<tr>
<td>Overall %</td>
<td>42.9</td>
<td>4.2</td>
<td>58.0</td>
</tr>
</tbody>
</table>

The results also show the model was best at classifying teachers who plan to stay in teaching for 11 or more years (74.1 percent) and 1-5 years (65.9 percent). However, the model poorly classifies teachers in the 6-10 years category, indicating that other predictors may better organize teachers in this category.

5. Conclusion, Implications, and Recommendations

The purpose of the study was to investigate the personal and professional needs that influence high school teachers’ intentions to continue teaching in Iowa. The findings of this study show that many individuals plan to teach for 11 or more years. This positive finding corroborates a previous study conducted by Hughes (2012), which found that 83.5 percent of individuals plan to teach until they retire. In contrast, this finding disagrees with studies by Guarino (1996) and Johnson & Birkeland (2003), which found that individuals do not plan to teach for their entire careers and that they view teaching as a short-term career. In this study, several teachers (f = 42, 35.3 percent) planned to teach for a short period (1-5 years). This is a significant number of teachers, and their loss will contribute to the teacher shortage.

More than three quarters (n = 85, 71.4 percent) of respondent agriculture teachers used the CASE curriculum to teach, and the majority show “Introduction to Agriculture, Food, and Natural Resources” (AFNR). The increasing trend of agriculture teachers in Iowa becoming CASE curriculum certified and using CASE to teach will benefit both teachers and students in the classroom. The National Association of Agricultural Educators Communities of Practice (2011) reported growth and expansion of the CASE program in 17 states that implemented foundational CASE courses for plant and animal science. All Iowa programs with CASE certification increased by 30 percent from 2011 to 2013.

Influential factors show that individuals are more likely to be influenced to continue teaching because they believe they can positively affect student performance. This finding is consistent with a previous study reporting that teachers appreciate student achievement and have positive relationships with students (Taylor, McNaney-Funk, Jardine, Lehman, & Fok-Chan, 2014). Agriculture teachers intend to stay most likely because they see the value in teaching, they want to serve students and the community well, and they want to contribute to student knowledge positively.

Professional knowledge and skills are so valuable to teachers that they noted these qualities as essential influencers for their intentions to remain in teaching. This is an agreement with previous studies that found individuals with relevant knowledge and skills intending to stay in teaching (Haberman, 1989; Darling-Hammond, 1990; Battle & Looney, 2014; Delnero & Montgomery, 2001). It is somewhat surprising that almost all teachers indicated they had negative early teaching experience. However, this finding supports Kutcy & Schulz (2006) and Haberman (1989) that describe the first two years of teaching as survival time. It is recommended that school administrators and educators provide full support to novice teachers and make them feel appreciated. Additionally, partnerships between teacher educators and high school teachers can provide teachers with the survival skills necessary to remain in teaching longer.

The last objective sought to determine the contributions of factors that influence teachers’ intentions to continue teaching teachers’ plans to remain in teaching. The influential factors that were significant predictors of individuals’ plans to continue teaching included teacher recognition, teaching as the right career, family expectation to stay, and teaching that makes oneself feel good.

Individuals who agree that teaching makes oneself feel good and that teaching is the right career are more likely to stay in education long enough to retire. This study reaffirms previous research regarding teachers’ self-esteem, good feelings and acting consistently with their beliefs when teaching (Nias, 1996). Peske, Liu, Johnson, Kauffman, & Kardos (2001) found that teachers who decided to teach were the right career for them that
would first consider the support and compensation being giving to them by their jobs. In contrast, teachers motivated by teacher recognition and family expectation to stay are more likely to report their intentions to leave the profession within 1-5 years.

The findings from this study show that teachers have varying intentions to stay in the field of education. Policymakers should create opportunities or pathways geared toward assisting the work of both individuals that plan to teach long-term and those that plan to teach short-term. This effort would benefit agriculture teachers specifically by providing supports and heightening individual commitment to teach.

6. Recommendations for Future Research

The study should be replicated with agriculture teachers in other states. Future studies should determine school administrators’ perceptions of individuals’ intentions to stay in teaching. Also, future studies could employ qualitative methods to gain a deeper understanding of teachers’ personal and professional needs and their plans to continue teaching long-term.

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Looking into Students' Willingness to Communicate: A Case Study in Mandarin Language Learning

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Abstract This case study explores the students’ willingness to communicate in Mandarin language. The learning of Mandarin as foreign language (FL) in Kolej Profesional MARA (KPM) Beranang has started since 2013. However, there have been some issues on students’ willingness to communicate using Mandarin especially on students’ reluctance to use the targeted language. Therefore, this research was aimed to explore students’ willingness to communicate using Mandarin language in KPM Beranang. The research used a qualitative approach and the main data for the study was semi-structured interviews and observations. The researcher used Atlas.ti version 8.0 to analyze the data. The research findings showed that students’ willingness to communicate by using Mandarin was only limited to greeting their teachers. It was found that students were not willing to use Mandarin in voicing out their opinions during the teaching and learning processes, not to mention when they are outside of the classroom context. The students did not have the confidence to use the targeted language and were not willing to communicate with strangers.

Keywords Willingness to Communicate, WTC, Mandarin Language, Foreign Language, FL

1. Introduction

China’s rapid growth from a poor developing country to a major economic power has been very remarkable. Currently, China is the world’s largest source of imports, largest merchandise trading partner of the United States and third-largest export market (Morrison, 2011). The emergence of China as one of the world economic powers has been spreading the demand of Mandarin language. The need to converse in the language especially in economical fields is extensively necessary for one to compete and survive in the ever-changing dynamic world.

The widespread demand of Mandarin language has also inevitably influenced Malaysia’s education system to perceive the current global trend. Majlis Amanah Rakyat (MARA) as an important agency under the Ministry Rural Development is responsible for providing education facilities for Bumiputeras (Malaysian Malays and other indigenous people)

In carrying out its responsibility to produce first class human capital globally, MARA through Higher Education Division has adopted and adapted the Mandarin language into their education frameworks. The general aim of having Mandarin subjects in the curricula is to prepare the students with Mandarin language skills in order to produce marketable graduates, as these subjects are an added value towards the students’ development.

Currently, there are two Mandarin courses being offered in all Kolej Profesional MARA (KPM) which are Mandarin Proficiency and Conversational Mandarin. Although the implementation of Mandarin subjects in KPM has been running for many years, since 2013, there however have been some issues raised especially regarding language learners’ willingness to communicate.

During the learning processes, the students do have higher tendency in avoiding speaking Mandarin language. It has been observed that in Mandarin language classroom, although the students may participate in the class activities such as reading, writing and listening, they however, were not willing when it comes to speaking the language itself. This scenario has shown that students generally do not adopt active speech roles in the classroom, whereby they should be more actively involves in order to develop their communication and speaking skills (Burgoon, 1976).

The concerns mentioned do not only happened during the teaching and learning processes, but also has gone beyond the classroom settings. Most of the language teachers often encounter a common difficulty presented in language pedagogy. In this context, students were seen to be reluctant in conversing Mandarin language outside the classroom, whether with their friends and even with the
teacher itself.

Based on the data gathered from the researcher’s preliminary observation, it is found that most of the students will try to avoid bumping into their Mandarin teachers outside of the classroom. One of the scenarios is illustrated as follows:

"The awkward situations happened when I, as a Mandarin teacher greeted a group of students in the hallway using a simple Mandarin sentences such as “你们好！你们要去哪里?" (Hello! Where do you want to go?) and yet, the students seem to be startled and completely taken aback by the situation."

The learning of Mandarin does not only evolve in the classroom, but it goes beyond the classroom.

Therefore, in the case of foreign language learning, the students’ unwillingness to communicate using the targeted language can lead to major issues especially in achieving the educational goal of Mandarin language subjects, which is to produce competent graduates, equipped with bilingual skills (including Mandarin) in order to withstand the global needs and challenges. Hence, it is empirical to explore deeply students’ willingness to communicate in Mandarin.

1.1. Research Purposes and Research Questions

Based on the problem statements described earlier, the primary purposes of this research study were to explore students’ willingness to communicate using Mandarin language in KPM Beranang. The research went for deeper exploration especially in term of their willingness to communicate in Mandarin not only in the classroom context, but also outside of the classroom settings.

Meanwhile the research purposes mentioned above has led to the following research questions, which were how willing are the KPM Beranang students to communicate using Mandarin? And to what extend are they willing to use the language?

1.2. Significance of the Study

There are several reasons that support the significance of this study. This study may contribute towards providing depth and better understanding in the implementation of Mandarin subject, particularly in Kolej Profesional MARA Beranang. The findings from it will helps to assist curriculum developers especially MARA Higher Education Division to review the curriculum by giving suggestions on how to make students more ready in using the language.

Last but foremost, the results of this study will help the teachers and educators uncover the mysteries on how to best understand and support the students in achieving the proficiency and reaching their language learning goals. This is also in line with the institutional philosophy especially in preparing and shaping the students to be holistic graduates.

1.3. Research Limitation

The current research is restricted to a number of limitations. This case study was conducted in KPM Beranang, therefore the results cannot be generalized to five other KPM across Malaysia which are KPM Ayer Molek, KPM Bandar Melaka, KPM Bandar Penawar, KPM Seri Iskandar and KPM Indera Mahkta.

Along with that, the research is restricted to students’ willingness to communicate in Mandarin regardless their Mandarin cohort. Starting from intake June 2018, they are three different cohort of Mandarin language subject being offered in KPM Beranang, which are Mandarin Proficiency (new cohort), Mandarin (old cohort) and Conversational Mandarin (for Diploma in Landscape Horticulture cohort only).

2. Literature Review

In the current study, Mandarin language curriculum is designed especially for students who do not have any background in Mandarin and the native language of the students is Malay language.

Therefore, learning Mandarin in this study is described as foreign language learning. Mandarin as foreign language is a study of Chinese language (which is the Mandarin language) by non-native speakers. The learning of Mandarin language is not just about the phonological structure and orthographic feature, but it is beyond these alphabetic phonetic systems (Abro, Zhenfang & Shabbir, 2014).

2.1. The Nature of Mandarin Language

The nature of Mandarin is an immensely complex language. It consists of Hanyu Pinyin (phonological structure) and Chinese characters (orthographic feature). Hanyu Pinyin is the Romanized alphabet system which consists of 21 initials, 36 finals, 411 possible combinations of initials and finals, and can up to thousands of syllables when applying the four tones (Xu, 2011).

Meanwhile, Chinese character is the Chinese writing system. Based on the List of Common Characters in Modern Chinese reported by Chinese State Language Commission and the Chinese State Education Commission (1988), there are more than 3500 characters are commonly being used (Chen, 1999).

On the other hand, it is viewed from the linguistic perspectives that listening, speaking, reading and writing skills are the way to learn Mandarin as foreign language (Spencer, 2015). According to the book of “Teaching Chinese as a Foreign Language: Theories and Applications” (2008), the authors emphasized on teaching listening and speaking skills through an interactive approach. The authors elaborate on the process of how the speaking skill derives from listening, and at the same time enhance the
2.2. Communicative Language Teaching

According to Richards & Rodgers (1985), under the umbrella of foreign language learning, there are three terms that need to be understood, which are approach (related to the beliefs and theories on the language), procedure (focused on the techniques and practices inside the language classroom) and design (more connected to the teaching materials being used such as books, etc.). Under this section, the researcher tries to investigate and understand theories related to the foreign language learning.

The research on foreign language is a dynamic subject as it keeps on evolving especially in helping the learners to grasp the targeted language comprehensively and at the same time, able to achieve their academic goals effectively (Richards & Theodore, 2001). Among of the focuses are the exploration on language pedagogical trends including Cognitive Approaches, Audio lingual Approach, Grammar Translation Method and communicative pedagogy (Larsen-Freeman, 2000). However, in the 20th century, there are two main language approaches became a prominence study which are Grammar Translation Method and Communicative Language Teaching (Hinkel, 2005).

As the Grammar Translation Method relatively focuses on thorough analysis in terms of language usage accuracy and error-free grammar rules, the Communicative Language Teaching contrarily sees language as tool to maintain the social relations in daily life communications (Hendrickson, 1991). According to the American Council on the Teaching of Foreign Language’s National Standards (1999), communication is conceptualized into three modes which are interpersonal, interpretive and presentational. The learners are said to be in the interpersonal communication mode when they engaged in a conversation and interpret other’s speech and presenting their own view of points. These three communication modes can be effectively working under the framework of Communicative Language Teaching.

Numbers of linguistics and educators foresee the need to emphasize communicative proficiency in language teaching, rather than the mastery of structures (Widdowson, 1978; Candlin, 1981; Richards & Rodgers, 1986; Galloway, 1993). It is very important to equip the learners as communicative competence, in which Hymes (1972) defined as the ability to determine when to speak or not to speak, with whom, where, when, talk about what and in what manner (cited in Richards & Rodgers, 2001).

Although the origin of Communicative Language Teaching is said to be developed from the second language theories (Savignon, 1987; 1991), multiple educators (such as Widdowson, 1978; Johnson and Morrow, 1981; Richards and Rodgers, 1986; Larsen-Freeman, 1986 etc.) significantly recognized the application of Communicative Language Teaching in learning foreign language field areas. Among major characteristics of Communicative Language Teaching are the focus towards function or use of the language rather than grammatical structure (Larsen-Freeman, 1986), the emphasized on fluency and accuracy to engaged in language use (Brown, 1994) and the teaching of grammar is still needed but less systematically and more innovative approaches (Thompson, 1996). On top of that, Communicative Language Teaching also focuses on providing meaningful learning opportunities especially in real-life situations and real communication (Johnson and Morrow, 1981) and promoting learners’ confidence in all four skill areas of listening, speaking, reading and writing, and not limited to oral proficiency only (Celce-Murcia, 1991; Savignon, 2002).

Hence through the humanistic approach of Communicative Language Teaching, the language learning focuses on task-oriented and student-centered language teaching practice to provide the students with a comprehensive use of the targeted language (Richards, 2006).

2.3. Willingness to Communicate

The concept of willingness to communicate (WTC) was originated from the notion of “unwillingness to communicate” which is a work of Burgoon in 1976 (McCroskey & Richmond, 1982, 1987; McCroskey & Baer, 1985). There are two basic constructs that is formulated to relate to actual communicate behavior, which are approach-avoidance and reward. However, the finding of her construct cannot provide support for or against in determining one’s being willing or unwilling to communicate.

In 1985, McCroskey and Baer refined the work of Burgoon and changed the construct to a positive stance – “willingness to communicate (WTC)”. The new construct also incorporates the elements found in the work of Mortensen, Arntson and Lustig (1977) on verbal behavior and McCroskey and Richmond’s work (1982) on shyness (McCroskey & Baer, 1985; MacIntyre, Dornyei, Clement & Noels, 1998).

Although initially WTC was used to first language learners’ willingness to communicate, however it can also be applied to second or foreign language learners (MacIntyre et al., 1998, 2007). Later in 1998, MacIntyre et al. proposed a new “heuristic model” that presents the variable which has impact towards second language WTC. According to MacIntyre (1998), the new refined model is defined as “a readiness to enter into any discourse at any particular time with a specific person(s) using second or foreign language.

Based on the Pyramid Model of WTC (MacIntyre, 1998), the actual use of second language (in this context: foreign language) is at the Layer I, which is dependent on the
willingness to communicate in Layer II. While at the middle layer of the model (Layer III-V), it focuses on various aspects that might affect the usage of a second language such as self-confidence, motivation, affective-cognitive context etc. At the most bottom layer of the pyramid, it highlights on the social and individual context.

MacIntyre et al. (1998, 2001) rationalized the pyramid by making distinction of second language WTC inside and outside of the classrooms as the learning of second or foreign language usually takes place inside the classrooms. The WTC model incorporates the four language skills (listening, speaking, reading and writing), and scenarios inside and outside of language classrooms (MacIntyre et al., 2001). The model also taken into account the variables of communication apprehension, motivation, self-perceived communication competence as among the strongest points in assessing one’s willingness to communicate using second or foreign language.

2.4. Theoretical Underpinnings

Based on all the theories discussed, the theoretical framework for this case study context comprises of various importance elements from the Mandarin language learning as foreign language and students’ willingness to communicate using the targeted language in KPM Beranang.

The literature reviews described four skills that Mandarin language learners need to gain throughout the learning which are listening, speaking, reading and writing. This is also in line with the characteristics of Communicative Language Learning, which one of the major characteristics focuses on the language learners’ development on listening, speaking, reading and writing skills (Celce-Murcia, 1991; Savignon, 2002). However, in the present research, the writing skills will not be taken into account as the curriculum context of Mandarin subjects in KPM Beranang does not include writing skills as their curriculum educational objectives. Hence, the language skills that learners need to be able to demonstrate are listening, speaking and reading skills.

Meanwhile, the theory of Willingness to Communicate (MacIntyre, 1998) will be used as a guidance to describe the students’ willingness to communicate using Mandarin language in KPM Beranang.

3. Methodology

The current study aimed to investigate KPM Beranang students’ willingness to communicate in Mandarin language. In the direction towards searching the answers for this research, the study was conducted qualitatively. Denzin and Lincoln (1994; 2003) summarized that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. Hence, through qualitative research, the researcher able to get in depth understanding towards the scenarios and the desired results.

Meanwhile, case study design was chosen for this research design. According to Stake (1995), case study design is the best way to help the researcher in describing and understanding an individual case, which in this particular research is a case of foreign language learners’ willingness to use the targeted language in one particular setting. In fact, Lincoln and Guba described case study as “holistic and lifelike” as through this research design it presents a picture credible to the actual informants in a setting and can easily be cast into the ‘natural language’ of the audiences that involved.

3.1. Population and Sampling

The current research was conducted at KPM Beranang, Selangor Darul Ehsan. During the data collection period, KPM Beranang offered Mandarin 2, Mandarin 3, Mandarin Proficiency 1, Mandarin Proficiency 2 and Conversational Mandarin 2. There were 375 students registered for Mandarin classes. Through purposive sampling, only five students from total students registered for Mandarin classes were chosen as the research informants. Each informant represents each Mandarin level.

This case study was conducted at Kolej Profesional MARA Beranang, Selangor Darul Ehsan. Altogether there were 1350 students in KPM Beranang, and there were only 375 students who are currently taking Mandarin language subjects. These groups of students were the ones that have been observed during the class sitting observations.

According to Yin (2011), “The participants or sources of data is selected based on their anticipated richness and relevance of information in relation to the study’s research questions” (Gentles, Charles & McKibbon, 2015; Yin 2011). Therefore, it is crucial to select informants who would be able to impart significant insights on their experiences on the Mandarin language subject implementation in Kolej Profesional MARA Beranang as their role being the informants will provide comprehensive information in order to answer the purpose of this study.

3.2. Data Collection Methods and Data Analysis Procedures

The data from the current case study were collected through semi-structured interview and observations. The main qualitative data for this research was collected from the semi-structured interview. The researcher used Patton’s approaches in designing the interview protocols (2001). The multiple interview protocols will be constructed separately for each student. These protocols will be reviewed by the experts especially relating to the aspects of
clarity, redundancy, readability and completeness. The experts should be the one who are expert in the field of second language acquisition curriculum, particularly Mandarin language subjects. The experts’ reviews will ensure the interview questions are more comprehensible and appropriate to the informants.

Besides that, data collection for this case study also were collected from the observation method. The observation phase was conducted repeatedly within the eight instructional weeks. Through this method, it does provide researchers with ways to check for non-verbal expression of feelings, observing the conversation in terms of contents, who speaks to whom, who listens, silences and how that role affects the environment, and what one says or thinks (Schmuck, 1997).

In this qualitative case study design, the data analysis is called the process of making sense of the data received (Miles & Huberman, 1994). It is very crucial to have a system in analyzing the data in order to produce efficient results of the data analysis. According to Creswell (2014), data analysis procedures include coding the data, reducing the data into meaningful segments and combining the codes into broader themes. Thus, the research was analyzed by following a general inductive data analysis format. Through Atlas.ti version 8.0, all the data were coded, categorized and thematized.

3.3. Researcher’s Role

Lincoln and Guba (1985) described researcher as an instrument as the researcher himself or herself can be responsive to the environment, able to adopt the techniques to the particular circumstances, capable to increase or expand his or her understanding through observation to nonverbal aspects and explore anomalous responses.

In this context, the researcher able to explore and identify various conditions of the implementation of Mandarin language subjects’ curriculum in KPM Beranang, which will then enhance the researcher’s understanding and insights from the perspectives of the informants rather than the researcher.

3.4. Establishing Trustworthiness

Qualitative research design uses a naturalistic approach that allows the researcher to understand the phenomena in context-specific settings, such as “real world setting where the evaluator does not attempt to manipulate the phenomenon of interest” (Patton, 2001). In this context, the researcher himself/herself is the instrument of this study.

The credibility of this qualitative study depends on the ability and effort of the researcher. Hence, it is very crucial to establish the trustworthiness of the data collected.

In this case study, the interview questions inventory will be submitted to the supervisor to ensure the research objective and its theme is aligned with the research questions. The supervisory committees will also review the interview questions pertaining to its language, wording and relevance. At this point of process, the supervisors’ reviews and evaluations is also considered as a form of validity.

Besides that, the research also developed an audit trail from the beginning till the end of the research as an evidence to prove its trustworthiness (Creswell and Miller, 2000). All the raw data, notes from interview and observation sessions, test scores and attendance records will be kept for cross-checking the inquiry process. Thus, making the audit process is beneficial for the researchers who seek validation for their works.

4. Results and Discussion

The research questions looked into the students’ willingness to communicate using Mandarin in overall context and to what extent they are willing to use the targeted language comprehensively. Under these research questions, there were three themes that can be identified during the interview sessions, and for certain themes, field notes from the observation data were served as the supporting data. The themes are as follows: 1) Willingness to Use the Language, 2) Confidence and 3) The Influence Language Teachers.

4.1. Willingness to Use the Language

Under this theme, the researcher ought to explore the students’ oral efficiency in terms of their willingness to use Mandarin in daily conversation and as a means of communication. The exploration involved the regular setting of the students’ daily life, up to unfamiliar environments in several events such as using the language to converse with strangers and buying things at the market.

In the regular setting of the students’ daily life, the informants showed their willingness to use the language to greet their Mandarin teacher if they bump into their teacher outside of the classroom. This is proven by the following statements:
From the data stated in Table 1, majority of the informants positively willing to greet their teachers outside of the classroom, and informant (P/MP2/M/005) specifically mentioned that she will greet her teacher in simple greetings only. Meanwhile, only one informant (P/MP1/M/004) reacted differently as he will only greet his teacher in English because he afraid will mispronounce the words.

Going deeper in seeking the students’ willingness especially in expressing one self’s thought, the researcher attempted to ask the students whether they are willing to use the language to express their thoughts or feelings. Majority of the informants are not willing to express their thoughts publicly, even in the classroom contexts. In this scenario, informants were asked whether they are willing to express their opinion in Mandarin class using Mandarin.

From the above findings, it can be summarized that majority of the informants were only comfortable and willing to use Mandarin with their teachers only. They, however, were not willing to use the language not only to voice out their opinions, also not to use the language outside of their normal settings which is their classroom settings.

### 4.2. Confidence

This theme is derived from the informants owns perspectives especially in using Mandarin language. All informants are not comfortable to start a conversation in Mandarin. They lack confidence to utilize their Mandarin language.

**Table 4. Informants’ responses on their confidence to use Mandarin**

<table>
<thead>
<tr>
<th>Informant</th>
<th>Data Extract (verbatim)</th>
<th>Coded for</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/M3/F/001</td>
<td>“I maybe a little bit afraid. I do not know the words”.</td>
<td>[willingness] [express opinions] [negative]</td>
</tr>
<tr>
<td>P/M2/F/002</td>
<td>“I am not that confident”.</td>
<td>[willingness] [express opinions] [negative]</td>
</tr>
<tr>
<td>P/CM2/M/003</td>
<td>“Not confidence. Not comfortable because I never speak to anyone in Mandarin”.</td>
<td>[willingness] [express opinions] [negative]</td>
</tr>
<tr>
<td>P/MP1/M/004</td>
<td>“No. Not prepared”.</td>
<td>[willingness] [express opinions] [negative]</td>
</tr>
<tr>
<td>P/MP2/M/005</td>
<td>“It is not possible for me to converse in Mandarin”.</td>
<td>[willingness] [express opinions] [negative]</td>
</tr>
</tbody>
</table>

The exploration on students’ willingness to use the language goes beyond the classroom settings, up to the extent outside of their regular settings. It is aimed to gain understanding on their readiness to use Mandarin publicly as simple as greetings stranger to buying things. However, majority of the students are reluctance to use the language outside of their comfort zone. Among the reasons given were being shy and afraid. This is proven by the following statements:
The data above showed that students are either shy or scared to use the language in conversation or communicating with others. Their lack of confidence and motivation to apply and practice the language in daily life are among of the other issues that needed attention from the stakeholders including teachers, curriculum policymakers and school administrators.

According on the fourth layer of the Pyramid Model proposed by MacIntyre (1998), the motivational propensities are among the aspect that affect language learners’ willingness to communicate. The motivational propensities are interpersonal motivation, intergroup motivation and self-confidence.

Hence, through thorough curriculum review especially in considering the integration of Chinese cultural elements and changing from examination-based assessments towards active language practical assessments (as discussed in the previous part), students’ willingness to use Mandarin can be further improved.

4.3. The Influence of Language Teachers

The influence of language teachers is considered as an emerging theme in this research study. The current research focuses on describing the students’ willingness to communicate using Mandarin. However, during the exploration of data, it is profound that students are more likely to engage in learning Mandarin due to the significant attribute of language teachers. Students are positively ready towards responding to their teachers’ instructions. This can be supported by the following excerpts:

Table 5. Informants’ responses regarding their language teachers

<table>
<thead>
<tr>
<th>Informant</th>
<th>Data Extract (verbatim)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/M3/F/001</td>
<td>“I really like my Mandarin teacher. She’s happy go lucky. She makes me want to enter Mandarin class with her fun teaching”</td>
</tr>
<tr>
<td>P/M2/F/002</td>
<td>“Yes! My teacher really helps me in class. She encourages me to speak and she did not mad if I make mistakes”</td>
</tr>
<tr>
<td>P/MP2/M/005</td>
<td>“My teacher is very good. I love to learn with her. I never missed her class”</td>
</tr>
</tbody>
</table>

Therefore, the above findings emphasized the role of language teachers in attracting and influencing students’ willingness to use Mandarin. Teachers’ attributes play an important role in the foreign language learning. According to Dornyei and Csizer (1998), there are ten guidelines listed to motivate students, which three of the commandments focus on teachers’ pedagogical practices. Based on the guidelines, teachers are encouraged to set a personal example with teacher’s own behavior such as enthusiasm in teachings, along with creating a conducive and relaxed environment in the classroom. Students’ ability to grasp the language will be greatly enhanced when the students feel a low level of anxiety (Krashen, 1982, 1985). On top of that, building a good relationship with the learners will greatly enhance students’ readiness especially in entering the class and engaging with the teachers inside and outside of the classroom.

Besides that, it is crucial for the teachers to reflect their own pedagogical practices. The above findings also mentioned the participants are fond of their teachers because of the teachers’ pedagogical practices. Foreign language teachers need to be able to manage their own learning, from planning the teaching to the implementation of learning process and evaluating the learners’ learning outcomes (Mardia, 2014). These types of competencies should be owned by teachers to strive successes in their teaching and learning processes.

5. Conclusion

In a conclusion, it can be summarized that students’ willingness to communicate using Mandarin were still situational. The analyzed findings showed that students were only willing to communicate their own language teachers using simple greetings. However, when being asked to voice out their opinions or using the language outside of the classroom settings, they were not confident and unwilling to use the language.

Hence in the current study, the willingness to use the language in a broader context is an important issue that needs to be taken into account specially to enhance students’ readiness in using Mandarin to converse and communicate with others. Fluency in willingness to use the language is described as the natural language use when a speaker engages in a meaningful interaction and maintains the ongoing communications (Gang & Xiaochun, 2015).

Hence, there is a need to revise the assessment from examination oriented to more practical language learning, which is also in line with the Communicative Language Teaching approaches. For instance, instead of having an examination-based assessment, learning opportunities should be more in a real context setting such as project-based learning, problem-based learning etc.

According to Lee & VanPatten (2003), foreign language learning requires using the language to interpret and express real-life circumstances, especially to provide the learners with learning opportunities. Engaging in an active learning environment, learners are said to be more responsible for their learning and able to enhance their willingness to communicate using the targeted language (Ballman, 2001).

On top of that, it is very crucial for the teachers to equip themselves with the knowledge especially in the area of teaching pedagogical competencies. Teachers’ pedagogical practices play an important role in enhancing the students’ willingness to use the targeted language especially in terms of considering inculcating the approaches of Communicative Language Teaching. Besides being able to
enhance the teachers’ professionalism, at the same time students’ willingness to communicate in Mandarin also can be enhanced.

REFERENCES


An AR-based Gamified English Course in Vocational College through Interest-driven Approach

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Abstract In recent years, augmented reality (AR) technology’s application has been explored in numerous disciplines. Many studies claimed that AR technology had significant advantages in enhancing learning interesting and boosting the understanding and collaborative learning etc. However, in China, most college students lack learning interest and adopt a passive method to learn English. In order to improve the learning situation, the researcher utilized the interest-driven creator (IDC) theory as the basis to design an AR-based gamified English course in vocational college. The study aimed to answer the following questions: (1) How does the AR-based gamified learning environment impact students’ learning motivation in English course? (2) How does the AR-based gamified learning environment impact students’ collaborative learning in English course? This study was conducted in a vocational college of China and the in-depth interviews were adopted to collect data. The results of the investigation revealed that students’ learning motivation was enhanced through the change of teacher’s role and using AR technology’s virtual content. Additionally, the AR-based gamified learning environment can effectively enhance collaborative learning through strengthening the willingness of discussion and providing more opportunities, and the relaxed learning atmosphere.

Keywords English Course, Motivation, Collaborative Learning, AR Technology, Interest-driven Creator Theory

1. Introduction

The rapid development of information and communication technology significantly impacts educational field and changes the traditional teaching form. With the coming of the fourth industrial revolution which is driven by “artificial intelligence (AI) + 12tech” that consists of six digital transform and six analog transform technologies together with AI [1], the emerging technologies is bringing new innovations for education. Given the fact that technology revolution, in 2018, China’s Ministry of Education issued the education informationization 2.0 action plan, which marks China will further develop and apply artificial intelligence and related technologies into educational field. Emerging technologies is gradually applied in different disciplines and the teaching form and environment are undergoing great changes in China. AR technology as one of the emerging technologies is also applied in different disciplines including English teaching and bring new teaching reform.

2. Literature review

AR technology allows virtual objects to superimpose on real objects in the same space and interact in real time [2]. When virtual objects are superimposed on the real images, it provides users with access to rich and meaningful multimedia content [3]. Because of the unique features of AR technology, numerous researchers explore the application in English teaching and claim that AR technology has significant advantages in English teaching [4]. The application of AR technology in English teaching often involved vocabularies learning [5, 6, 7]. In He, Ren, Zhu, Cai and Chen’s [8] study, AR technology was utilized to present learning materials including virtual pictures, the meaning and pronunciation of words in English word learning. The vivid picture was superimposed on English word card, which improved children’s interest in learning.

Another study conducted by Chen, Zhou, Wang and Yu [9] also used AR cards through scanning the maker to see 3D scenes and 3D models of the word and hear the pronunciation. The difference was that children can interact with the 3D model by clicking on the screen. The result revealed that AR technology can inspire learning interest and improve participation. The similar feature of display and interaction of AR technology was also utilized by Hsieh, Kuo and Lin [10]. In this study, course content
was based on English prepositions of place with multimedia formats including text, voice, graphic, movie and interaction. The results pointed out the AR-based English learning was novel and interesting for students learning. According to the literature review, it is obvious that AR technology has significant advantages in enhancing learning interest and interaction in English learning.

However, there is a common characteristic in educational practice among the Asian countries, namely examination-driven [11]. In college English learning, this feature is also obvious. Learning English is usually to get a better score and acquire a certificate by adopting the mechanical learning way which means unhappy and passive learning. This is a typical phenomenon that students are extrinsically motivated to learn and lack of interest. Because the examination-driven trend, traditional English classroom always adopts the teacher-centred approach to import the knowledge, which results students lost interest and cannot engage in active learning [12]. Therefore, how to improve the English sentence learning's initiative need to pay more attention on the change of instructor’s teaching approach and students’ interest and engagement. Ottenbreit-leftwich and Ertmer [13] pointed out effective technology was a strong assistant for teachers to change the traditional teacher-centre class and to create an active learning environment. The emerging AR technology provides the new approach to improve the problem of English learning.

Therefore, in this study, researchers have utilized the interest-driven creator (IDC) theory as the basis to design an AR-based gamified English course in vocational college. IDC theory was proposed by Tak-Wai Chan’s team [11] and their studies pointed out when students were motivated to learn with their own interest, they would eventually develop their own ways of learning habit and create new knowledge after immersing into a repeated technology-supported learning environment. IDC theory provides three anchored concepts namely interest, creation and habit, and each of them undergoes a coherent learning process that form a loop. This theory claims that interest is regarded as the crucial component and should be run through the whole learning process. Creation make students feel the sense of satisfaction and achievement. Habit is a sign that students change to an interest-driven creator namely an autonomous learning learner. In this study, researchers primarily used the interest loop. The technology-supported environment was provided by AR technology. According to the IDC theory, interest is regarded as the crucial component and context drives the interest of learners in an activity. It includes triggering, immersing and extending. Therefore, this study combined the feature of AR technology which was verified that it could significantly enhance learning interest and easily incorporate the way of gamification to design a learning model to explore the English sentence leaning.

3. Research Methodology

This study was conducted in the course of College English and fifty vocational students participated this activity. The in-depth interviews were conducted to collect data. The researcher selected the interviewees from each group randomly until the data reached the saturation. The data collected by interviews was analyzed with the assistance of Nvivo software and with the guidance of the research questions, the themes were refined through coding and categorizing the interview transcripts.

4. Design of the Model

The model was implemented in the course of College English. In order to master the English sentence expression regarding the campus building. The model was designed as follows.

4.1. The rationale for design

According to IDC theory, the whole leaning process was designed to an active leaning process through the AR-based gamified leaning approach. In the learning process, the AR technology was applied the three main points.

4.2. Design of an AR-based gamified English course

Collins [14] stated that it was significant to construct the efficient learning environment to learning English in the area of technology-assisted language studying. In the whole learning process of this model, AR technology was used for three points to construct the learning environment by overlaying the virtual graphics onto real-world objects. Point 1 was lead-in and to learn the sentence expression. The five pictures of language lab, library, dining hall, teaching building and cinema were used as markers through Easy AR platform which was a free service platform for AR technology.

![Students Dormitory](image)

**Figure 1.** One of the markers for lead-in

After the processing of Easy AR platform, students could use mobile phone to scan the pictures by importing the program. Subsequently, the video of English introduction about one of the buildings, the 3D graphics and a conversation video regarding how to find buildings
would be overlaid onto real picture so as to construct the learning environment.

Point 2 was the game level which was used to examine the learning effect. Under the guidance of IDC theory, in this course, the traditional teacher role was changed and teacher played the game level. The game level required the students to scan the teacher’s item which could be captured easily by mobile camera. The video regarding the requirement of the game levels would be overlaid onto the image. Students needed to describe the building’s location. Meanwhile, the virtual 3D cartoon character was designed throughout the game process. When the player scanned images, a virtual 3D cartoon character representing the player would appear.

Point 3 was game over. When students stitched the correct campus map and scanned the picture of game over, the video about the introduction of the whole campus and congratulations were shown on the real map. It proved that the team had finished the game successfully and reached the teaching goal.

4.3. Game rules

The game had five parts and each part included one learning content of building. Besides, each team with ten students worked together to finish each part. Therefore, there were five small teams and each of which chose a picture randomly and then scanned the picture by mobile phone to begin the game.

After that, players entered the point 1. Each small team members needed to interact with the content alone and discussions were allowed between team members after independent thinking. Then players needed to describe the building’s basic situation and how to find it. After getting the answers, the players went to the game level which was played by teacher. The game level had the right to ask the small teams went back to point 1 and also gave them the suggestions. After the five small teams finished the work respectively, they entered the point 3 together, then the game was over.

5. Findings and Discussion

According to data analysis, there were two themes which emerged from the interview transcript to answer the first question, namely the use of technology and the change of teacher’s role.

1. How does the AR-based gamified learning environment impact students’ learning motivation in English course?

   (1) The use of technology

   The first theme emerged from the results was the use of technology. When students studied English sentence in the AR-based gamified learning environment, the characteristic of AR technology was found that it could positively impact students’ learning motivation. Two participants stated that the use of the vivid AR content inspired their enthusiasm to learn English sentence.

   "I’m very excited and the virtual graphics are very interesting. Besides, the virtual interpretation of knowledge can overlay onto the real pictures, which make me feel curious about the learning of English sentence.
   (Dai yuanuyuan)

   I like the 3D character and it is interesting, which makes me want to know what we learn in the English
course. Furthermore, the explanation of knowledge provided by AR technology is also interesting.

(He zhiyuan)

Additionally, the findings also revealed that apart from the interesting AR learning content enhance students’ learning motivation. The operation of using AR technology also attracted students to learn.

I think the virtual graphic, video and 3D character are all interesting and I also like to play with my phone, which makes me want to try to use my phone to scan something. The use of AR technology attracts me to begin to learn English.

(Tang jianming)

I like use my phone to scan the picture, because there always something new comes out and the learning contents are also very interesting.

(Zhang mingyang)

Furthermore, the finding also showed that the use of AR technology effectively maintain learning interest and immersed students in learning environment.

I like to use my phone to scan the pictures and the content is interesting and different every time, which attracts me to continue to find and learn, especially, when I scan one picture, one vivid virtual character superimposed on the image. I feel very excited and want to learn more about the English content. I am totally immersed in the study.

(Zhu ya)

Hsieh and Lin [15] claimed that the virtual contents were overlaid on the real objects, students could obtain the sense of excitement. The findings above showed that AR environment can attract students’ interests in English learning [16]. Specifically, it could significantly trigger the students’ interest in English learning through using 3D character and virtual graphics and video. Furthermore, as the IDC theory claimed that interest is regarded as the crucial component and learning context drives the interest of learners in an activity. In this study, the operation of AR technology not only inspires students’ learning enthusiasm but also effectively remain vocational students’ learning interest.

(2) The change of the teacher’s role

Some participants also pointed out that the change of the teacher’s role in this learning environment effectively enhanced their learning motivation. Compared with traditional English course, the new setting of the teacher’s role in class attracted students to learn English.

The teacher’s role is very fresh, novel and interesting. In other courses, most teachers just read the PowerPoint whose teaching approach are always like that. In this course, teacher can engaged in the learning process with us, which enhanced my learning interest and want to learn something in the class.

(Wu dan)

Apart from that, the change of the teacher’s role provided more learning interaction, which attracted and maintained students’ learning motivation. Two interviewees expressed that in the interaction, they began to think their knowledge weakness and tried to find the solution.

The teacher becomes a virtual character, which is very interesting. Furthermore, the teacher as a virtual character can give us the feedback for the content of previous studying in point 1, and the interaction enhances the learning interesting. Although our group did not past the game level directly, our group was also very excited and came back to learn again and discussed where we should learn again.

(Xu qian)

It is different from the traditional course I experienced, the teacher participates in the game, which is very interesting. Besides, in this course, the teacher can interact with us and provide some feedback and suggestion. Our group feel excited and learn seriously. We are all immersed in finding how to use the English sentence to past the game level.

(Zhang ke)

According to the aforementioned results, it indicated that the innovative change of teacher’s role in this environment improved the students’ interests in English learning. Besides, in the learning process, the finding showed that students liked the new role of teacher and thought the change of teacher’s role maintained their learning interest. Furthermore, according to IDC theory, extending interest was one of the most important component of interest formation. Extending interest implied that students try to look for solutions, which is the compliance with the extending component of interest loop [17]. In this study, it was revealed that students try to think how to use the English sentence properly, whose ideas or thinking may equip them when they encounter the similar situation in the real life.

2. How does the AR-based gamified learning environment impact students’ collaborative learning in English course?

(1) The use of AR-based gamified strategy

The findings revealed that the use of AR-based gamified strategy enhanced the intention of discussion. Students expressed that they were more willing to participate the discussion.

Because it is very clear and interesting that the learning content is introduced through virtual content, the discussions afterwards with team members become positive. Meanwhile, The well-designed point 1 and 2 which supported by the virtual images, video and 3D character also guided our discussion and inspired our group members’ discussion enthusiasm.

(Li juncheng)

The learning materials are very interesting and our
group members are all excited. In order to finish the game successfully, our team need to complete our own parts in part 1 and 2. Therefore, discussion is treated seriously.

(Zhang xing)
In addition to enhance the willingness of discussion, some students also pointed out that the AR-based gamified strategy used in the study also provide more space and opportunities to think and discuss, which boost their collaborative learning.

When we begin to scan images to learn, our group have chance to discuss the learning materials and we can look at ourselves phone and express our ideas. Besides, the interaction with teacher also provides more opportunities for us to think and discuss.

(Xia yong)
Khambari [17] pointed out that in an interest-driven activity, the use of technology can provide students more opportunities of interaction and content engagement. In this study, the results of investigation also showed the AR learning environment provided the more opportunities for students to attend the collaborative learning. Especially, with regards to AR technology, it was found that AR technology integrating the gamification form acquired better effect [18].

In this course, the gamified form especially the role of teacher provides many suggestions for our group, which is interesting and also makes us to discuss more detailedly in later repeated learning.

(Qin liang)
The AR learning materials provide chance for our group to discuss new English sentences. Meanwhile, when we interact with teacher, the game level also provides some suggestions for us to learn and discuss. In this course, I feel we have many opportunities to discuss and I also like the way of discussion with teacher and my group members.

(Zhu yang)
(2) The relaxed learning atmosphere
Some interviewees expressed that the relaxed learning atmosphere both in the whole learning environment and among the group members boost their collaborative learning. Two participants commented that the relaxed atmosphere enhanced their willingness of discussion and reduced the pressure of participation.

I really hate the traditional teaching approach, the whole learning environment is boring and no attraction for me to discuss. This learning process is relax and it is without the pressure of traditional teaching form, which makes me to want to try to participant in the group.

(Wang jiao)
Actually, my English is very poor and I don’t want to discuss anything with classmates before. But in this class, we can scan the picture to acquire the interesting vivid learning content. The atmosphere between the group is relaxed and exited, which makes me want to engage in the group to discus and find some new learning content.

(Ma hua)
These excerpts showed that in an interest-driven activity, the use of technology and integrating proper learning strategy not only provided the more space and opportunities to think and discuss but also positively impact students’ internal participative willingness. Meanwhile, the relaxed learning atmosphere was crucial for students to engage in learning actively and autonomously.

6. Conclusion

Based on the result of interviews, it was particularly evident that the model can effectively enhance students’ learning motivation through the change of teacher’ role and using AR technology’s vivid virtual content. Sandholtz [19] also claimed that it was significant to refine the role of teacher in the technology environment. In this study, the new setting of the teacher’ role and more learning interaction with teacher attracted and maintained students’ learning motivation. Additionally, the findings of study also pointed out this model can significantly enhance collaborative learning. The use of technology-based gamified strategy enhanced the intention of discussion and provide more space and opportunities for collaborative learning. Furthermore, the relaxed learning atmosphere enhance their willingness of discussion and reduce the pressure of participation.

According to the finding, it implied that when researchers applied an interest-driven approach to design a course, a proper technology is essential for constructing an active learning environment to enhance students’ motivation and collaborative learning. Besides, the new role of teacher also need to combine the specific form to design carefully in the interest-driven learning environment, which may impact students to extend interest in the further.

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Motivation to Learn Science as a Mediator between Attitude towards STEM and the Development of STEM Career Aspiration among Secondary School Students

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Abstract Education system plays an important role when it is able to produce skilled labour in the Science, Technology, Engineering and Mathematics field (STEM) for industrial need. Increasing students’ interest to explore science by integrating STEM in the learning process is the main agenda for the global education system to ensure the learning outcome for students to excel in the future is achieved. Therefore, the need to cultivate the attitude towards STEM and the motivation to learn science is the drive in the development of students’ STEM career interest. Hence, this research will 1) Identify the direct effect of attitude towards STEM and 2) Identify the effect of mediator which is motivation to learn science towards the development of students’ STEM career interest. This research is a quantitative research that uses questionnaire forms. The research respondents are comprised of 419 Form 4 science stream students in Selangor, Malaysia. The result from the study can answer the research questions by proving the influence of attitude towards STEM is significant (p=.002) and the huge effect of motivation in science as mediator (R2=.458) towards the development of students’ STEM career interest. The result of the study is hoped to be able to give meaningful input towards students’ future.

Keywords Attitude towards STEM, Motivation to Learn Science, STEM Career Interest, Secondary School, Science Curriculum

1. Introduction

Malaysia is concerned about the education system because it wants to ensure the nation’s economic development is always supported by develop of human capitals that have high level of competitive spirit. The spirit that is parallel and consistent will create revolution in the nation’s education system. The revolution process includes the development of policies and goals that is adapted according to the current need of the nation’s education system. Educational policy developed from Education Ordinance 1957 and currently Education Act 1996 is used as a reference for the educational system. The act highlighted not only on the development of the nation but also education as a tool to produce skilled work force in various fields including Science, Technology, Engineering and Mathematics (STEM) (Hassan, Awang, Ibrahim, & Zakariah, 2013) [1].

Identifying students who has the potential to excel in science stream is important in order to ensure the establishment of human capitals in this nation is aligned with the nation’s vision and mission. The practice of “open system” in Malaysia education system specifically in the upper secondary level has caused the enrolment of students that took subject-based art stream (such as economics, accounting, al-Quran study, commerce and courses related to languages) has surpassed students who have chosen to pursue science based subjects even though most of them are eligible to pursue science stream (Talib, Luan, Azhar, & Abdullah, 2009) [2]. The decline in the number of students joining science stream is due to the students’ perception that art stream is easier compared to science stream. It is easier for students to get good grades in art stream and this will enable students to have an easy path to go to Higher Education Institution (HEI) (Jen, Chui, & Yong, 2013) [3].
2. Literature Review

2.1. The Importance of Science Education

Developed countries are always linked to the growth in science and technology. Part of the development is due to the analysis and awareness towards science curriculum development. The goal of science education is to increase mastery in science and mathematics from preschool level until higher education institution (HEI). Global development in science and technology occur rapidly; students who are less interested towards science and career in science is a global concern and it demands a reform towards science education (Liaghatar, Soltani, & Abedi, 2011) [4].

Malaysia Ministry of Education has decided to change Secondary School Integrated Curriculum (SSIC) and replace it with Secondary School Standard Curriculum (SSSC) in 2017 by integrating science with technology, engineering and mathematics (STEM). However, STEM approach has begun earlier through projects such as Formula 1 (F1), National Robotic Competition (NRC) and National Science Challenge (NSC) (Suhanna Zainudin, Lilia Halim, & Zanaton Iksan, 2015) [5]. Developed nation concern towards science education development is parallel with the high demand towards skilled work force in STEM field in order to face the growing economic challenge (Kelley & Knowles, 2016) [6].

Past researches have put much emphasis on the importance of science towards career especially towards global importance (Gottfried et al., 2016) [7], increase the nation’s socio-economy (Paige, Zeegers, Llyod, & Roetman, 2016) [8], guarantee the stabilization of technology (Onyekuru, 2015) [9] and towards a better quality development of science curriculum (Fensham, 2016) [10]. Nevertheless, in order to create students who are scientifically literate and have interest in science, various factors must be identified so that a quality skilled work force can be produced. Hence, factors that influence students’ interest towards science must be evaluated in terms of students learning requirement.

2.2. STEM Consolidation

For more than one decade, STEM has been a national topic of discussion. The discussion was driven by the change in economic global and a demand towards more skilled work force in STEM field. The concern becomes more serious when the demand towards skilled work force increase but the awareness of the relationship between STEM career and Science education is still vague (Gottfried et al., 2016) [7]. Early planning regarding the absorption of students’ knowledge towards STEM is important for students’ preparation to understand clearly STEM career field. Good achievement influence students’ attitude towards science and students’ perception towards science will decrease through the passage of time (Bouvier, 2011) [11]. The awareness of importance of STEM field towards students and preparation to face global challenges start by focusing on learning activities that integrate science, technology, engineering and mathematics towards an approach that could increase the students’ interest towards STEM field (Micari, Van Winkle, & Pazos, 2016) [12]. Thus, maintaining students’ positive attitude towards science in secondary school level and preparing students with information regarding STEM career interest accurately is important.

2.3. Attitude towards STEM

Students’ attitude towards STEM affects an active participation in learning session that integrates STEM element parallel with the mastery of science knowledge (Forbes & Skamp, 2015) [13]. The growth of positive attitude towards STEM can increase students’ interest in science field and profession that is related to STEM. Attitude is defined as psychological tendency by evaluating certain entities. Attitude towards STEM is different from interest towards science because attitude is more general and subjective regarding someone’s relationship with environmental pressure (Uitto, 2014) [14].

Secondary school is the most active period for students to build positive attitude towards STEM and eventually leads towards various perception based on the exposure and awareness towards STEM (White & Harrison, 2012) [15]. Therefore, secondary phase is an important period to give inspiration to students towards science and the importance of STEM career field. Low attitude towards science will influence students’ motivation and later the students’ interest to choose science related career. Past research shows a positive correlation between attitude and students’ motivation (Narmadha & Chamundeswari, 2013) [16]. Attitude towards STEM can be measured based on seven constructs: (1) science learning in school, (2) practical work in science, (3) science value to the community, (4) importance of science, (5) self-concept in science, (6) career choice in science field, and (7) combination of interest in science (Khisfe & Boujaoude, 2014) [17]. Nonetheless, strong relationship between two variables which are attitude towards STEM and science motivation both affect students’ interest in STEM career.

2.4. Science Motivation

Motivations to learn refers to the way students think about themselves by taking into consideration process and learning activity. Motivation in academic is influence by various factors including personal, social, family and culture (Togia, Korobili, & Malliari, 2012) [18]. Motivation to learn is divided into two categories which are intrinsic motivation which is relevant to personal perception and environmental influence, while extrinsic motivation influenced by good achievement and career choice. Students will be less motivated to learn science when they
are placed in science stream class but are not interested to
learn science. Consequently, the role of parents is necessary
to ensure the students maintain a positive motivation
towards science (Taneja, 2016) [19]. Students who have
positive motivation will show high performance in science
without being influenced by environmental factors such as
school categories and the teachers teaching method (Talib et
al., 2009) [2].

The students nearest mediator and can influence students’
motivation is parent’s authority. Parents’ authority level on
students’ motivation towards science differs according to
parents’ perception and academic background but research
result found that there is a positive correlation between
students’ motivation and parents’ authority towards students’
interest in science (Ishak, Low, & Lau, 2011) [20]. Parents
play an important role in students’ education. Therefore,
identifying the level of parents’ influence towards
motivation is vital to increase students’ interest towards
science.

3. Methodology

Research correlation design is to measure the research’s
independent variable (attitude towards STEM) with
independent variable (science motivation) towards
dependent variable (STEM career interest). Survey method is
used as research approach by using two research
questionnaires Student Attitudes toward Science, Technology,
Engineering, and Math and interest in STEM careers
(S-STEM) and Science Motivation Questionnaire II (SMQ-II)
that have been given consent to be adapted and changed
according to the suitability of the research objectives which
are:
1). Identifying direct effect of attitude towards STEM
2). The effect of mediator which is motivation to learn
science towards the development of students’ STEM
career interest.

3.1. Research Instrument

This research utilizes an instrument to measure attitude
and career, Student Attitudes toward Science, Technology,
Engineering, and Math and interest in STEM careers
(S-STEM). S-STEM contains 2 constructs that consists of
attitude towards STEM and STEM career interest. Motivation
level towards science and STEM career interest is measured by
using Science Motivation Questionnaire II (SMQ-II).

3.1.1 Student Attitudes toward Science, Technology,
Engineering, and Math (S-STEM) and Interest in
STEM Careers

This questionnaire is divided into two parts; part 1
evaluates students’ attitude towards STEM and part 2
evaluates students’ interest in STEM career. Part 1 covers
the evaluation of self-confidence towards STEM subject
and 21st century skills. The questionnaire for this part
consists of 37 items and four components which are 8 items
for mathematics subject, 9 items for science subject, 9 items
to evaluate understanding and technology and engineering
relationship in students’ everyday life and 10 items to
evaluate students’ self-confidence in studies that involve
21st century skills. This evaluation uses Likert scales
(1-strongly disagree, 10-strongly agree). A separate section
related to evaluation of students’ STEM career interest; the
questionnaire contains 11 items that represent profession in
the science field and every profession represents work
criteria that is related to science, technology, engineering or
mathematic subject. This questionnaire uses Likert scales
(1-Strongly uninterested, 10-Strongly interested) to measure
students’ interest towards career in science field.

3.2. Location and Research Respondent

Research location covers 10 districts in Selangor that is
divided according to the two zones in Selangor. Zone 1
covers Hulu Selangor, Gombak, Petaling, Hulu Langat and
Sepang districts, while Zone 2 comprises of Klang, Kuala
Langat, Kuala Selangor and Sabak Bernam districts. The
division of districts according to zones is based on
information taken from Department of Survey and Mapping
Malaysia (2017) [21]. The school chosen is secondary
school and 419 form 4 students from the science stream are
chosen as research respondents. Proportionate Stratified
Random Sampling is used as sampling method.

3.3. Pilot Study

Pilot study is carried out to test whether the instruments
that are being used can be measured well. Alpha Cronbach
is used to measure the reliability of the research instruments
(Zainudin Awang, 2010; 2012) [22]. The pilot study is
executed to measure each research items so that they can be
well understand by the respondents and there is no
confusion in terms of language and meaning that could
affect the result of the research later (Sekaran, 2013) [23].
The pilot study is carried out on 100 respondents that
comprise of secondary form 4 science stream students.
Based on the result of the data analysis of the study, it is
found that the alpha Cronbach value is more than .70 (Table
1) and all items for both instruments are accepted (Hair,
Black, Babin, & Anderson, 2010) [24]. Therefore, both
instruments can be used for field research.
4. Results

4.1. Confirmatory Factor Analysis (CFA)

CFA was performed to evaluate unidimensionality, validity and reliability of measurement model that consists of latent construct (unmeasurable) (Cresswell, 2012) [25]. Measurement model is an analysis that is carried out on constructs that is summarized in the form of line chart (Hair et al., 2010) [24]. The purpose of CFA was to evaluate models based on theory. CFA focused on items that were consistent and dominant to evaluate every research construct. According to Hair et al., (2010) [24] model has fit index according to set categories and it must be achieved to validate that the measurement model meets the suitable index as seen in Table 2:

<table>
<thead>
<tr>
<th>Categories</th>
<th>Index Name</th>
<th>Accepted Index Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute Fit</td>
<td>Chisq</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td></td>
<td>RMSEA</td>
<td>&lt; 0.08</td>
</tr>
<tr>
<td></td>
<td>GFI</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>Incremental Fit</td>
<td>AGFI</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td></td>
<td>CFI</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td></td>
<td>TLI</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td></td>
<td>NFI</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>Parsimonious Fit</td>
<td>Chisq/df</td>
<td>&lt; 5.0</td>
</tr>
</tbody>
</table>

Table 2. Model fit indexes according to Hair et al. Indexes (2010)

Based on the analysis result, it was found that the measurement model passed the majority fit index value that involved all three categories which were Chisq, RMSEA, CFI, TLI, Chisq/df and the value of p (Figure 1). As stated by Schreiber et al. (2006) [26] measurement model that fulfill majority of the model fit indexes value shows that it is a good and accepted measurement model.

![Figure 1. Measurement Model between Attitude towards STEM and Science Motivation](image)

*Attitude (SIKAP) and Motivation (Motivasi)

The findings from the measurement model had also achieved indexes at least one index for every category (Table 3). Measurement model that achieved at least one index for every category is a model that achieved suitability index model.
Motivation to Learn Science as a Mediator between Attitude towards STEM and the Development of STEM Career Aspiration among Secondary School Students

and is accepted for next analysis (Hair et al., 2010) [24]. Hence, this research took the bolded index value to represent each category.

Table 3. Model Fit Indexes for Measurement Model

<table>
<thead>
<tr>
<th>Categories</th>
<th>Index Name</th>
<th>Accepted Index Value</th>
<th>Measurement Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute Fit</td>
<td>Chisq</td>
<td>&gt; 0.05</td>
<td>1763.629</td>
</tr>
<tr>
<td></td>
<td>RMSEA</td>
<td>&lt; 0.08</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>GFI</td>
<td>&gt; 0.90</td>
<td>.822</td>
</tr>
<tr>
<td>Incremental Fit</td>
<td>AGFI</td>
<td>&gt; 0.90</td>
<td>.801</td>
</tr>
<tr>
<td></td>
<td>CFI</td>
<td>&gt; 0.90</td>
<td>.917</td>
</tr>
<tr>
<td></td>
<td>TLI</td>
<td>&gt; 0.90</td>
<td>.912</td>
</tr>
<tr>
<td></td>
<td>NFI</td>
<td>&gt; 0.90</td>
<td>.879</td>
</tr>
<tr>
<td>Parsimonious Fit</td>
<td>Chisq/df</td>
<td>&lt; 5.0</td>
<td>2.180</td>
</tr>
</tbody>
</table>

4.2. Structure Model

Analysis result of the measurement model had fulfilled the requirement for model fit indexes. Therefore, the next analysis will be conducted to evaluate models in order to answer the research objectives which are:

1. Identifying direct result of attitude towards STEM
2. The effect of mediator which is motivation to learn science towards the development of students’ STEM career interest.

4.2.1. Direct Effect

Direct effect is the effect of influence that occurs between exogenous variable and endogenous variable. Identifying direct effect is also part of an important foundation before performing analysis towards the effect of mediator. Independent variable that directly does not have a significant value towards dependent variable will cause the result of the research to be not accurate in determining the mediator (Aguinis, Edwards, & Bradley, 2016) [27]. Thus, the research had performed direct analysis that involves both the independent variables which were attitude towards STEM and science motivation towards the development of STEM career interest. of mediator value for value of p which was less than .05 and becomes the foundation value to measure the value of p for social science field (Aytekin, Erdil, Erdogmus, & Akgun, 2016) [28]. Furthermore, attitude towards STEM also achieved the requirement for next analysis which is the determination. Significant influence (β=.201, p=.002) (Table 4) based on the structure model built. The research also used significant and development of STEM career interest (KERSTEM) had Direct influence between attitudes towards STEM (SIKAP).

(i) Direct Effect of Attitude towards STEM and Development of STEM Career Interest

*Attitude (SIKAP) and STEM Career (KERSTEM)

Figure 2. Direct Influence of Attitude towards STEM and Development of STEM Career Interest Model

Figure 2 shows direct influence of attitude towards STEM and development of students’ STEM career interest model.
4.2.2. Direct Effect of Science Motivation and Development of STEM Career Interest

Table 4. Evaluation of Direct Effect of Attitude towards STEM and Development of STEM Career Interest

<table>
<thead>
<tr>
<th>Construct</th>
<th>Estimate</th>
<th>Standard Estimate</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM Career</td>
<td>&lt;--- Attitude</td>
<td>.201</td>
<td>.247</td>
</tr>
</tbody>
</table>

Figure 3 shows direct model between science motivation and development of STEM career interest. Result showed that science motivation (MOTIVASI) statistically had significant value towards the development of STEM career interest (KERSTEM) ($\beta=.598$, $p<.001$) (Table 5). Thus, research to determine the mediator can be carried out for science motivation variable because it has a direct effect that is significant.

![Diagram showing the direct effect of science motivation and development of STEM career interest](image)

* Motivation (Motivasi) and STEM Career (KERSTEM)

Figure 3. Direct Effect of Science Motivation and Development of STEM Career Interest Model

Table 5. Evaluation of Influence of Science Motivation and Development of STEM Career Interest

<table>
<thead>
<tr>
<th>Construct</th>
<th>Estimate</th>
<th>Standard Estimate</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM Career</td>
<td>&lt;--- Motivation</td>
<td>.598</td>
<td>.713</td>
</tr>
</tbody>
</table>

4.2.3. Science Motivation as Mediator

This section will discuss on the role of science motivation as mediator between influence of attitude towards STEM and parents’ authority in developing students’ STEM career interest according to the modification model. Therefore, analysis was executed to determine whether mediator exists between independent variable and dependent variable which is categorized as full mediation, partial mediation and non-mediation.
When mediator was evaluated in the proposed model (Figure 4), the beta coefficient value (estimate) reduced from .598 (refer Table 5) to .080 (refer Table 6). The reduction in value refers to a decrease in direct influence and had switched towards mediator and brought in an insignificant value of p at value of p<0.05 between attitude towards STEM and students’ STEM career interest. In short, the influence of mediator (indirect influence) for Attitude→Motivation, (β=.181, p=.002) and Motivation→STEM Career, (β=.568, p<.001) were significant.

The type of mediator that exists between attitude towards STEM and STEM career interest was Full Mediation for the value of p less than 0.05. Full Mediation showed that direct effect between independent variable (IV) and dependent variable (DV) was insignificant when mediator exist within model.

4.2.4. Description of Coefficient of Determination (R²) Model

Coefficient of determination between the influence of exogenous and endogenous variables, squared multiple correlation (R²) must be taken into consideration to determine the overall research contribution based on the modification model that was produced suitable with the chosen independent variables. Determination of R² for a complete model is vital to determine the overall effect of the involved exogenous towards endogenous in the research through the usage of SEM (Hair et al., 2010) [24]. In brief, determining R² value in the research is vital to measure the overall effect of independent variables which are attitude towards STEM, parents’ authority and science motivation towards development of students’ STEM career interest accurately based on the complete model.

According to Table 7, overall effect or contribution of variables influence in research model to predict the development of students’ STEM career interest recorded a variance value of .499 or 49.9%. Kline (2011) [29] stated that variance value that is more than .30 and above (refer Table 8) contributes a huge effect in influencing the overall research result. Hence, the effect of influence of attitude towards STEM and science motivation towards development of STEM career interest was strong among Form Four science students.
Table 8. The Value of R^2 and Research Effect Size

<table>
<thead>
<tr>
<th>R^2</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;.01</td>
<td>Small</td>
</tr>
<tr>
<td>.10  - .29</td>
<td>Medium</td>
</tr>
<tr>
<td>&gt;.30</td>
<td>Large</td>
</tr>
</tbody>
</table>

5. Discussion

The effect of indirect influence (mediator) exists between independent variables for attitude towards STEM to development of STEM career interest with science motivation as mediator. Result of analysis found that science motivation as mediator between attitude towards STEM towards development of STEM career interest recorded a high value of variance which was .499 or 49.9% and it brought effect or huge contribution of influence towards students’ STEM career interest. Besides, the result of mediator determination found the effect of full mediation for science motivation as mediator between attitude towards STEM and development of STEM career interest. In conclusion, showing students’ need especially for adaptation process from overflow of STEM information is substantial to provide preparation for students to adapt the need and importance of STEM for future industrial revolution.

6. Conclusion

Proposed model of influence of attitude towards STEM and science motivation is one of the ways to identify students’ interest tendency towards STEM career specifically through statistic evaluation. Moreover, researcher evaluates the extent of the consistency of students from the science stream that achieved good grades in science and mathematics subject to be interested in STEM career.

The research also gives positive impact on science education towards the production of students that are able to compete in STEM’s industry by providing significant contribution based on the research result that had been carried out. This is said as such because the research had combined accurate variables to translate information from Secondary School Standard Curriculum (SSSC) to channel the importance of STEM to students more comprehensively especially to students in the secondary school level and school community. Attitude towards STEM and science motivation model had gone through a systematic validation process and had been evaluated with testing of direct and indirect influence towards each of the involved variables.

7. Recommendation for Practice and Future Studies

The study that was performed was based on specific objectives developed at the beginning of the study to be carried out for specific scope. Thus, there was limitation in the execution of the study. This section will discuss on research limitation and will suggest a few steps that must be taken for future research in order to ensure a better discovery can be contributed especially in curriculum development.

The research that was carried out was a full quantitative method research. Data was collected through findings from respondents; among students who answered the questionnaires. However, the research did not involve data collection through interviews, building lesson modules, experimenting or methods that are deemed suitable to identify influence towards students’ STEM career interest. Further study that involves teachers as research respondents can also provide views from different perspective as an effort to develop students’ career interest based on approach such as lesson plan, activity conducted, and teachers’ readiness to implement STEM in their teaching. In conclusion, the need to diversify research method and respondents to gain better influence factor will provide different essence towards development of STEM career interest among students.

REFERENCES


Motivation to Learn Science as a Mediator between Attitude towards STEM and the Development of STEM Career Aspiration among Secondary School Students


Using Ordering Tasks to Determine Fraction Magnitudes

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Abstract The focus of this study was to investigate the students’ ability in ordering four types of proper fractions. Type I: same numerators; Type II: same denominators; Type III: different numerators and different compatible denominators; Type IV: different numerators and different incompatible denominators. The researchers used library search and survey methodology through document search and questionnaire methods. The respondents of this study were 100 fourteen-year old students in two secondary schools from two districts. The results revealed that (i) students could easily order Type I and Type II proper fractions; (ii) students had less difficulty ordering Type II proper fractions compared with Type I proper fractions; (iii) students had difficulty ordering Type III and Type IV proper fractions; and (iv) when presented with tasks on ordering of Type III and Type IV proper fractions, students had most difficulty when ordering Type IV fractions. This showed that students still struggle with determining magnitudes of Type III and Type IV proper fractions. The findings of this study revealed that an appropriate method of instruction should be developed to teach students to order fractions of these three types of questions.

Keywords Comparing, Ordering, Fraction Magnitudes, Numerators, Denominators

1. Introduction

Fractions are difficult for children to master and thus many children struggle learning fractions (Gabriel, Szucs & Content, 2013; Brown, 2015). Competency with fractions are not only necessary for daily activities, such as dealing with measurements for recipes and financial management but, knowledge of fractions is used in daily life, including budgeting, and understanding mortgage rates to carrying out home repairs (Hansen, 2015). According to many studies, knowledge of fractions is fundamental to later mathematics achievement or development (Bailey, Hansen, & Jordan, 2017), including success with algebra (Rodrigues, Dyson, Hansen, & Jordan, 2016).

Many educators indicate that understanding fraction magnitudes provides the foundation for acquiring knowledge of fraction operations. Moreover, according to Bezuk and Cramer (1989) to be successful in fraction computation, children need to understand not only fraction concepts but ordering and equivalent fractions. In addition, knowledge of fraction magnitude affects how well children perform in fraction arithmetic and their overall performance in mathematics (Siegler, Thompson, & Schneider, 2011). Therefore, fraction magnitude is an important skill that need to be mastered by all students if they want to carry out fraction operations successfully and succeed in mathematics in general.

With reference to the Malaysian Mathematics Secondary School Curriculum Standard, ordering of proper fractions is covered in the form one Curriculum and Assessment Document Standard (Kementerian Pendidikan Malaysia Bahagian Pembangunan Kurikulum, 2015) implemented in the year 2017. Students are taught to compare and arrange positive and negative fractions in order. In other words, students are taught to sort up to four or five proper fractions in ascending or descending order that is from smallest to largest fraction or vice versa. Questions that constitute proper fraction ordering include the following: i. which of the following proper fractions is the largest or the smallest, ii. arrange the following proper fractions in ascending or descending order, iii. given a set of proper fractions, find the fraction in the middle. Therefore, it is important that students learn to order fractions of these three types of questions.

Questions on ordering of proper fractions also appeared in the world level The Trends in International Mathematics and Science Study (TIMSS) international survey. Sample
question asked was, which of the following numbers is smallest \( \frac{5}{6}, \frac{5}{12}, \frac{1}{6}, \frac{1}{12} \) (TIMSS, 2007).

Moreover, a sound knowledge of ordering of proper fractions is needed to answer the PT3 (a compulsory national level examination for form three students in Malaysia) questions not only on ordering of fractions but operations on fractions. Since children need to understand not only fraction concepts but ordering and equivalent fractions, in order to be able to carry out computations with fractions, Bezuk & Cramer (1989) recommended that the teaching of operations on fractions should be taught only after pupils have mastered the concepts and the ideas of the order and equivalence of fractions. Therefore, the objective of this study was to investigate the abilities of Malaysian students in determining fraction magnitudes using ordering proper fractions tasks. The focus of the study was on the abilities of form two students to determine fraction magnitudes by ordering a set of four proper fractions.

2. Literature Review

Geller, Son and Stigler (2017) defined fraction magnitudes as tasks that measure students’ understanding of fraction magnitude which include comparing the size of two fractions, ordering sets of fractions in ascending or descending order, deciding where each fraction lies on a number line and even estimating fraction size. Fraction magnitude skill is one of the foundations of fraction sense. Fennell and Karp (2017) defined fraction sense as “involving fraction equivalence and magnitude, comparing and ordering fractions, using fraction benchmarks, and computational estimation” (p. 348). Therefore, understanding fraction magnitude is essential to developing fraction sense. Since knowledge of fractions is a foundational mathematical skill, research in this area is necessary. This is because not only are fractions integrated in many areas of mathematics such as in trigonometry, prealgebra and algebra, and others, a weak understanding of fractions would render equations in these areas meaningless (Fazio, Dewolf and Sieglar, 2016).

More researchers began to study the importance of knowledge of fraction magnitude in relation to achievement in mathematics. Hansen, Rinne, Jordan, Ye, Resnick and Rodrigues (2017) conducted a longitudinal study to assess the relationship between fraction magnitude knowledge and mathematics achievement. The sample for their study consisted of 536 participants who completed a standardized mathematics achievement test and two measures of fraction magnitude understanding which are fraction comparisons and fraction number line estimation. Their findings suggested that fraction magnitude knowledge and broader mathematics achievement mutually support one another. Hansen et al. (2017) concluded that fraction number line estimation affected mathematics achievement more strongly than did fraction comparisons, possibly because the fraction number line estimation task is a better tool to assess fraction magnitude understanding. Furthermore, Fennell and Karp (2017) argued that proficiency with fractions is not only a prerequisite for success in advanced mathematics but serves as an entry to numerous occupations and contexts past the mathematics classroom. Hurst and Cordes (2018) investigated rational number magnitude and arithmetic performance in both fraction and decimal notation in fourth to seventh grade children. Their results revealed that children do represent the magnitudes of fractions and decimals as falling within a single numerical continuum and that, children can process decimal notation much better than fraction notation. They highlighted that fraction concepts are a necessary prior knowledge for higher order mathematics such as Algebra.

Many researchers agree that childrens’ difficulty with fractions stems from whole number knowledge bias. According to Bezuk and Cramer (1989), when dealing with fractions, children must change previously learnt rules for whole numbers because these rules often conflict with fraction concepts. For example, with whole numbers, children have learnt that 3 is greater than 2. However, when ordering fractions with like numerators, children learn that \( \frac{1}{3} \) is less than \( \frac{1}{2} \). Therefore, this new fraction rule conflicts with the whole number rule. In addition, DeWolf and Vosniadou (2015) investigated the effects of whole number knowledge when representing fraction magnitudes through two experiments. In Experiment 1, participants were asked to compare fraction magnitudes where half of the comparisons were consistent with whole number ordering and the other half were not. In Experiment 2, the researchers manipulated the distance between the fraction pairs given. They found that in Experiment 1 participants were comparing the magnitude of the whole fraction rather than just the parts and in Experiment 2, they found that the whole number effect was clearly apparent when the distance between the fraction pairs was very small. They suggested that even adults may rely on alternative strategies to decide on a fraction's magnitude on the number line especially when the magnitudes are close together.

On the other hand, other researchers have found that childrens’ difficulty with fractions stem not from whole number knowledge bias but from difficulty understanding that fractions are actually numbers that have different sizes. Fazio and Siegler (2010) stated that fractions are often taught using the idea that fractions is a part of a whole and seldom “as numbers with magnitudes” that “can be ordered from smallest to largest” (p. 10). They believe that children who only understand the part/whole approach to fractions often make errors regarding fraction magnitudes. Furthermore, Gabriel, Coché, Szucs, Carette, Rey and Content (2013), found that “mean percentage of correct responses for comparison of fractions were very low for fractions with common numerators and fractions no common components” (p. 15). In addition, Gabriel (2016) found that typical mistakes happen when comparing
fractions $\frac{1}{7} > \frac{1}{3}$, because 7 is larger than 3. Each of these errors are caused by the lack of conceptual knowledge and understanding on the magnitude of fractions. In support, Malone and Fuchs (2017) conducted a study on error patterns in ordering fractions among 227 at-risk fourth grade students who were asked to complete a nine-item ordering test. They found that 81% of problems given were answered wrongly and that almost 65% of mistakes occurred because students used whole number concepts and rules to fractions. Malone and Fuchs concluded that the mistakes were mainly due to fraction magnitude estimation skill, and not to part-whole understanding.

This difficulty in determining fraction magnitudes was also found among Malaysian students. Fadzilah Abdol Razak, Noraini Noordin, Rohana Dollah and Rohana Alias (2012) reported that when given a set of fractions, $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}$, only 183 (63.54%) of students were able to arrange the set given in ascending order while the rest of the students, with the exception of two students who did not indicate any response to the question, ordered the fractions in the following manner, $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}$ by focusing only on the magnitude of the denominators. In the same study, Fadzilah Abdol Razak et al. (2012) reported that 13-year old students in Malaysia did not have a good conceptual understanding of comparing proper fractions.

According to the Malaysia Education Blueprint 2013-2025 (2013), "lessons did not sufficiently engage students, and followed a more passive, lecture format of content delivery. These lessons focused on achieving surface-level content understanding, instead of higher-order thinking skills" which would provide for conceptual understanding (Ministry of Education Malaysia, 2013, E. 14). Many researchers agreed that conceptual understanding was critical for fraction magnitude understanding. Fazio, Dewolf and Siegler (2016) found that college students good at mathematics used a variety of strategies depending on the type of fractions involved and that were found to be consistently reliable. However, how fast and accurately a student obtained an answer depended on the type of strategy and how it was carried out. Their findings suggest that students tend to use poor fraction magnitude comparison strategies because of the lack of conceptual understanding of the requirements of effective strategies. Ward (1999) in his study asked students to arrange five fractions, which are represented by dominoes, in ascending order. He found that among the strategies used were: using mental math to re-express the fractions in terms of present’s, re-expressing the fractions as decimals to compare the magnitude, obtaining a common denominator for two fractions to compare their magnitude and finding a least common multiple. Ward found that students seemed to lack the inclination and ability to formulate a mental picture of fractions but instead used a common denominator to compare the fractions.

Other researchers stressed on the importance of using the number line to represent fraction magnitude for conceptual understanding (Fennell and Karp, 2017). Booth and Newton (2012) recommended using number lines to develop students’ knowledge of fractions. Furthermore, Fazio and Siegler (2010) also suggested using number lines during instruction to effectively ensure that students understand that fractions are numbers with magnitudes and not just part-whole relations. They recommend teachers to have students locate and compare fractions on number lines. According to Fazio and Siegler (2010), students can compare fraction magnitudes simply by placing different fractions on a number line.

In addition, Hansen, Rinne, Jordan, Ye, Resnick, and Rodrigues (2017) found that when solving fraction comparisons, older students used the cross-multiplying technique to obtain the correct answer. They also found that some students might use strategies such as rounding, simplifying, or converting fractions to decimals to place fractions on the number line.

The instruction of fraction magnitude understanding is also facilitated through games and physical models. Cramer, Post and delMas (2016) compared the achievement of students using either commercial curriculum (CC) for initial fraction learning with the achievement of students using the Rational Number Project (RNP) fraction curriculum. The RNP curriculum made use of multiple physical models together with modes of representation-pictorial, manipulative, verbal, real-world, and symbolic. Students using RNP project materials had statistically higher mean scores on the post-test and retention test and on four (of six) subscales: concepts, order, transfer, and estimation. Interview data also showed differences in the quality of students’ thinking as they solved order and estimation tasks involving fractions. In addition, Mendiburo (2014) “indicated that most of the 78 students learned to use the computer system to create accurate models in a relatively short period, but not all students learned how to use the models to reason about the correct answers to the problems by the end of the intervention” (p. 76).

Another strategy introduced many decades ago but still not widely used, despite its effectiveness, is the benchmark model. Reys, Kim and Bay (1999) discuss the benchmarks which ought to be established when teaching fractions, such as knowing how a fractional number compares with 0, 1/2, or 1. They found that using benchmarks enables students to estimate and assess the reasonableness of their answers, for example, if students are asked to compare 5/8 with 4/9, usually they would find the common denominator, then convert both fractions to equivalent fractions using this common denominator, and then compare the numerators. However, according to Reys et al. (1999) a far more efficient method to compare magnitudes of fractions would be to compare each fraction with 1/2, and we can conclude that 5/8 is larger.
than 1/2, since it is larger than 4/8; and 4/9 is less than 1/2, since 4/9 is less than 4.5/9, or 1/2. Furthermore, So (2014) developed a lesson unit to help the students develop a benchmark model that can be used for comparing and ordering fractions. So found that by the end of the unit most students were comfortably using the benchmark model and could comprehend the relationship between the parts and the whole of a fraction. Nevertheless, Gabriel, Coché, Szucs, Carette, Rey and Content (2013) found that children performed better with familiar fractions. They believed that by using a wide range of fractions, children will be exposed to a greater variety of fraction magnitude representations.

3. Methodology

The study was conducted at two secondary normal day schools from the district of Sepang and Nilai in the state of Selangor and Negeri Sembilan respectively. The two schools were selected based on purposive sampling. The researchers conducted a survey based on the questionnaire developed by the researchers and library search based on document search. The survey was carried out at the respective schools in students’ own classrooms. Respondents were given as much time as needed to answer 12 tasks on ordering proper fractions of Type I, Type II, Type III and Type IV without the use of calculators. Respondents’ demographic data was also collected to understand the profile of respondents. The respondents for this study consisted of 100 fourteen-year old students from those schools and they had already learned ordering of proper fractions.

The survey instrument was developed based on research findings by Behr, Wachsmuth, Post, & Lesh (1984) in which they compared “fraction pairs of three types: same numerators, same denominators, and different numerators and denominators” (p. 323) with some modifications. Questions from the TIMMS 2007 released papers for eighth-grade students and Form One Curriculum and Assessment Document Standard (Kementerian Pendidikan Malaysia Bahagian Pembangunan Kurikulum, 2015) as well as reference books (Kiang, Cheu, & Kian, 2013) were also taken into account when developing the instrument. The instrument contained four types of tasks on ordering of proper fractions. Type I tasks included ordering of proper fractions with same numerators. Example of Type I task is \[
\frac{\frac{1}{2}, \frac{2}{3}, \frac{1}{4}}{\frac{1}{9}, \frac{1}{3}, \frac{4}{5}, \frac{9}{6}}.
\] Type II tasks included ordering of proper fractions with same denominators. Example of Type II task is \[
\frac{\frac{1}{2}, \frac{4}{5}, \frac{5}{6}}{\frac{1}{9}, \frac{2}{3}, \frac{3}{4}}.
\] Type III tasks included ordering of proper fractions with different numerators and different but compatible denominators. Example of Type III task is \[
\frac{\frac{1}{2}, \frac{2}{3}, \frac{5}{6}}{\frac{4}{8}, \frac{9}{12}}.
\] Type IV tasks included ordering of proper fractions with different numerators and different but incompatible denominators. Example of Type IV task is \[
\frac{\frac{2}{3}, \frac{1}{4}, \frac{1}{5}}{\frac{5}{6}, \frac{7}{9}}.
\]

The instrument was divided into two parts. The first part consisted of questions to collect demographic information on the profile of the respondents. Demographic data collected included students’ age, class, sex and mathematics grade for year six Primary School Evaluation Examination (UPSR) exam. The second part consisted of 12 tasks: 3 tasks for Type I; 3 tasks for Type II; 4 tasks for Type III and 2 tasks for Type IV. The instrument was pilot tested at a nearby secondary school. The pilot test consisted of 12 tasks created by the researcher. The sample for the pilot test consisted of 30 Form Two students. The instrument was checked for content validity by an expert panel from two Institut Pendidikan Guru mathematics lecturers and two mathematics school teachers. Kuder-Richardson Formula 20 was used for estimating the reliability of the test. Kuder-Richardson which measures inter-item consistency is routinely used for estimating reliability for one time administration of one test (Mervis and Spagnolo,1995). The KR20 value which was equivalent to the Cronbach alpha coefficient was 0.78. This showed that the instrument has high reliability and is suitable to be used.

4. Results and Discussion

Based on Table 1, analysis of the respondents’ profile showed that of the 100 form two students involved in the study, 39% were males and 61% were females. The number of respondents who achieved grade A in the Primary School Evaluation Examination (UPSR) for Mathematics subject were 84%, grade B were 10% and grade C were 6% as in Figure 1. Therefore, majority of the respondents were high achievers. Analysis of the demographic data also showed that 96% of respondents knew what ordering proper fractions were in ascending order. But only 58% of respondents said they found it easy to order proper fractions in ascending order. However, 91% of respondents were confident that they could solve ordering of proper fractions in ascending order.
Table 1. Respondent Profile

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39(39%)</td>
<td>61(61%)</td>
</tr>
<tr>
<td>UPSR Mathematics Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>84(84%)</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>10(10%)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>6(6%)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>94(94%)</td>
<td>6(6%)</td>
</tr>
<tr>
<td>No</td>
<td>98(98%)</td>
<td>2(2%)</td>
</tr>
</tbody>
</table>

Do you like to learn Mathematics?

| Yes | 94(94%) | 6(6%) |
| No | 98(98%) | 2(2%) |

Do you know what a proper fraction is?

| Yes | 98(98%) | 2(2%) |
| No | 96(96%) | 4(4%) |

Do you find it easy to order proper fractions in ascending order?

| Yes | 58(58%) | 42(42%) |
| No | 91(91%) | 9(9%) |

Table 2 shows the results of the analysis for the number of incorrect answers when ordering proper fractions Type I for tasks 1, 4 and 5. The results were interpreted as follows: 17(17%) respondents answered tasks 4 incorrectly; similarly 17(17%) respondents answered tasks 5 incorrectly; 8(8%) respondents answered task 1 incorrectly. A mean of 14 (14%) respondents answered task Type I incorrectly.

Table 2. Number of Incorrect Answers Obtained Ordering Proper Fractions Type I

<table>
<thead>
<tr>
<th>Task No</th>
<th>Task</th>
<th>Number of incorrect answers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/3 , 1/6 , 1/9 , 1/2</td>
<td>8(8%)</td>
</tr>
<tr>
<td>4</td>
<td>2/5 , 2/6 , 2/8 , 2/13</td>
<td>17(17%)</td>
</tr>
<tr>
<td>5</td>
<td>1/4 , 1/5 , 1/3 , 1/15</td>
<td>17(17%)</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>14(14%)</td>
</tr>
</tbody>
</table>

The graph in Figure 2 below shows the percentage of incorrect answers when ordering proper fractions Type I.

Table 3 shows the results of the analysis for the number of incorrect answers when ordering proper fractions Type II for tasks 2, 3 and 6. The results were analysed as follows: 21(21%) respondents answered task 2 incorrectly; 1(1%) respondent answered task 3 incorrectly; 0(0%) respondents answered task 6 incorrectly. A mean of 7.3 (7.3%) respondents answered task Type II incorrectly.

Table 3. Number of Incorrect Answers in Ordering Of Proper Fractions Type II

<table>
<thead>
<tr>
<th>Task No</th>
<th>Task</th>
<th>Number of incorrect answers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>8/9 , 1/9 , 4/9 , 5/9</td>
<td>21(21%)</td>
</tr>
<tr>
<td>3</td>
<td>1/11 , 10/11 , 6/11 , 5/11</td>
<td>1(1%)</td>
</tr>
<tr>
<td>6</td>
<td>4/7 , 1/7 , 6/7 , 5/7</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>7.3(7.3%)</td>
</tr>
</tbody>
</table>

The graph in Figure 3 below shows the percentage of incorrect answers when ordering proper fractions Type II.
Using Ordering Tasks to Determine Fraction Magnitudes

Table 4 shows the results of the analysis for the number of incorrect answers when ordering of proper fractions Type III for tasks 8, 9, 10 and 11. The results were analysed as follows: 55 (55%) respondents answered task 8 incorrectly; 44 (44%) respondents answered task 9 incorrectly; 27 (27%) respondents answered task 10 incorrectly; 46 (46%) respondents answered task 11 incorrectly. A mean of 43 (43%) respondents answered task Type III incorrectly.

Table 5 shows the results of the analysis for the number of incorrect answers when ordering of proper fractions Type IV for tasks 7 and 12. The results were analysed as follows: 74 (74%) respondents answered task 7 incorrectly; 88 (88%) respondents answered task 12 incorrectly; 27 (27%). A mean of 81 (81%) respondents answered task Type IV incorrectly.
Table 7 shows the percentage of incorrect answers interval for tasks type I, II, III and IV. Task 12, a Type IV task, had a percentage of wrong answer interval of above 75. Tasks 7 and 8, Type III and IV tasks respectively, had a percentage of wrong answer intervals between 50 to 74. Tasks 9, 10 and 11, Type III tasks, had a percentage of wrong answer interval between 25 to 49 while Type I tasks consisting of tasks 1, 4 and 5 and Type II tasks consisting of tasks 2, 3 and 6, had a percentage of wrong answer interval below 24.

<table>
<thead>
<tr>
<th>Percentage of wrong answers Interval</th>
<th>Task</th>
<th>Task Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 75</td>
<td>12</td>
<td>IV</td>
</tr>
<tr>
<td>50 to 74</td>
<td>7 and 8</td>
<td>III and IV</td>
</tr>
<tr>
<td>25 to 49</td>
<td>9, 10 and 11</td>
<td>III</td>
</tr>
<tr>
<td>Below 24</td>
<td>1, 2, 3, 4, 5 and 6</td>
<td>I and II</td>
</tr>
</tbody>
</table>

The results of the investigation reveal that generally, respondents lack the ability to solve ordering of proper fractions even though the respondents were drawn from four intact form two classes, the majority of whom were high achievers. A large number of respondents were unable to solve ordering of proper fractions Type IV (81%) followed by Type III (43%). However, only a small number of the students could not solve ordering of proper fractions Type I (14%) and Type II (7.3 %). These results reveal that (i) students did not have much difficulty ordering proper fractions with same denominators or same numerators; (ii) students had less difficulty ordering proper fractions with same denominators compared with proper fractions with same numerators; (iii) students had difficulty ordering proper fractions with all different numerators and different denominators; and (iv) when presented with tasks on ordering of proper fractions with all different numerators and different denominators, students had most difficulty when ordering fractions with incompatible denominators.

The findings of this study are supported by Gabriel, Coché, Szucs, Carette, Rey, and Content (2013) who reported: When fractions share the same denominator (e.g., \( \frac{2}{5}, \frac{4}{5}, \frac{2}{5} \)), the global magnitude of fractions is congruent with the magnitude of the numerators (e.g., 4 is larger than 2). In this case, pupils could only compare the numerators in order to choose the larger fraction. However, the researchers found that when fractions share the same numerator, the global magnitude of fractions is incongruent with the magnitude of denominators (e.g., \( \frac{2}{3}, \frac{2}{5} \)). (p. 8).

Gabriel, et al. (2013) also found that “For fractions with no common components, pupils probably only compared numerators and denominators separately. This strategy led to larger error rates”. (p. 8). In addition, Jordan, Resnick, Rodrigues, Hansen and Dyson (2016) in their longitudinal study on the development of fraction knowledge, found that there were three related barriers to the learning of fractions: (a) focusing on the numerator as a counting number and ignoring the denominator and the related whole, (b) not grasping how the numerator and denominator work together to determine the magnitude of a fraction, and (c) failing to understand that fractions are magnitudes that can be represented on a number line. Therefore, it is important to further study strategies respondents use to solve ordering of proper fractions in order to help respondents gain a deep understanding of fraction magnitudes.

5. Conclusions

In conclusion, a large percentage of respondents in this study did not have the ability to solve ordering of proper fractions, especially of Type III tasks which consisted of fractions with different numerators and different but compatible denominators and Type IV tasks, which consisted of fractions with different numerators and different and incompatible denominators. Thus, the respondents of this study have not even achieved general performance level 2 of the Form One Mathematics Curriculum and Assessment Document Standard which states that, “students should be able to display understanding by, for example, explaining a mathematical concept verbally or non-verbally” (Kementerian Pendidikan Malaysia Bahagian Pembangunan Kurikulum, 2015, p. 23)

This research is an important aspect of feedback using ordering tasks to assess knowledge of fraction magnitudes to enhance ordering of fractions strategy with respect to student needs. Therefore, it is appropriate that proper action be taken to address this problem.

The method used in schools to teach ordering of fractions clearly has to be improved so that students have a quantitative and conceptual understanding of fraction magnitudes. Bezuk and Cramer (1989), said that the teaching of fraction magnitudes should emphasize the development of a quantitative understanding of fractions instead of the development of algorithms for doing computations of fractions. They believed that children should understand that \( \frac{3}{7} \) is less than \( \frac{5}{9} \) not because of a rule they had learn but because they know with understanding and reasoning that \( \frac{3}{7} \) is less than \( \frac{1}{2} \) and \( \frac{5}{9} \) is greater than \( \frac{1}{2} \). If Students can reason in this way, then they are deemed to have a quantitative understanding of fractions. Moreover, the practice of teaching fractions emphasizes procedures instead of conceptual understanding of fractions (Gabriel, et al., 2013). An appropriate technique to teach fraction magnitudes could consider informal ordering strategies to make quick estimations of fractions and to decide on the reasonableness of their answers (Bezuk & Cramer, 1989), guiding teachers to help students use sense making to compare fractions (Silbey, 2015) and being able to develop
a mental picture of fractions instead of using a common denominator to compare the fractions (Ward, 1999). Many researchers recommend the use of a number line (Fazio and Siegler, 2010; Fennell and Karp, 2017; Jordan, Rodrigues, Hansen and Resnick, 2017) as the main technique or strategy for representing fraction magnitudes in order to develop conceptual understanding. Other researchers also recommend the use of benchmarks (Reys, Kim and Bay, 1999 & So, 2014) for estimating fraction magnitudes. The findings of this study suggest that a greater emphasis on conceptual knowledge of fraction magnitudes, would perhaps improve students’ skill in ordering of fractions. Understanding that fractions, like whole numbers, have magnitudes, and thus can be ordered will contribute greatly to the development of fraction sense. Therefore, an appropriate mode of instruction should be developed to teach students to order fractions of Type III and IV because the skill of ordering proper fractions is important for fraction sense, fractions arithmetic and mathematical development.

Acknowledgements

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A longitudinal study from third through sixth grade (Order No. 3718335). Available from ProQuest Central; ProQuest Dissertations & Theses Global. (1708647206).


Mobile Technology Usage: The Shift of Focus to Cultivate High Level Thinking Skills (HOTS) in the Malay Language Education System

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Abstract The rapid growth of information and communication technology has also affected the current education world. Teachers as individuals in charge of teaching and guiding pupils in the classroom need to undertake a paradigm shift related to pedagogy conducted. Teachers should be wise in balancing between the content of knowledge and information to be conveyed and then combine it with other skills, especially the skill of high order thinking (HOTs) by using mobile technology. The use of mobile technology is now increasingly gaining attention in the world community in all matters. Hence, the educational system is able to offer chances and opportunities to embrace high-level thinking by making mobile technology a device that brings about and facilitates teachers to deliver knowledge and skills to pupils of generation Z.

Keywords Mobile Technology, High Level Thinking Skills (KBAT), T&L, Teacher Perception

1. Introduction

Both local and global education systems have made mobile technology an avenue to apply higher order thinking skills (HOTs) in teaching and learning (T&L) instruction, as it is deemed as the latest trend in the pedagogy of Malay Language. The use of mobile learning should be seen as a challenge for teachers in their effort to uphold Malay Language besides ensuring that children learn and master language skills, namely speaking, listening, reading and writing skills. Teachers also play important roles to ensure the success of students at the end of their T&L instruction, to ensure that the end product could compete, adapt and apply the mastery of knowledge outside the classroom (Mohd Salmi Osman, Maria Chong Abdullah, Abdul Aziz Ismail & Samsilah Roslan, 2015). In addition, the transformational transition and dependency on mobile technology are parallel with the hope of the Ministry of Education (MOE), which has set the cultivation of HOTs in T&L as an agenda that needs to be achieved in the National Education Development Plan beginning 2013 until 2025 (KPM, 2013).

Therefore, the practitioners of Malay Language education system should be aware that the responsibility of education not only depends on the students’ ability to receive knowledge. In fact, teachers should advocate the philosophy, curriculum, pedagogy and assessment of education as authentic corresponding mechanism to realise the effort to cultivate holistic HOTs (Fuziah Rosman, Norlidah Alias, Mohd Nazri Ab Rahman & Dorothy Dewitt, 2016). The challenges of transition and dependency on mobile devices entail teachers to contribute ideas, expertise and commitment in facing the waves of change in the education system. The extremely competitive changes of the local and global education systems also challenge the ability of teachers in producing a generation of students who could not only master the language, but also those who could translate the language mastery into their daily demands to suit the evolution of generation.

2. Statement of Problem

The discussions about the cultivation of HOTs in T&L instruction as well as teachers’ pedagogical knowledge have garnered the attention of education researchers (Md. Yusof Dawam, 2006; Suhaimi Zakaria @ Othman, Baharuddin Aris, Hasnah Mohammed, Norasykin Mohd Zaid & Zaleha Abdullah, 2014; Yahya Othman, 2014; Muhamad Sidek Said, 2016). The consensus gathered
among the researchers found that there was a need to improve HOTs through the use of effective methods, approaches, techniques or learning strategies. As for students’ cognitive ability during T&L, the implementation of various teaching approaches, techniques or strategies acted as boosters to simulate and generate students’ HOTs (Shamsuddin Muhammad, Ruzlan Md. Ali & Siti Noor Ismail, 2016). The methods, approaches, techniques or strategies used to increase the mastery of HOTs in T&L in the study including the use of questioning techniques (Supramani S., 2006; Tee Tze Kiong, et al., 2011; Wan Mat Sulaiman & Norkhairiah Hashim, 2011), the use of problem-solving learning (Musliha Salma Mohd Radzi, 2010; Alizah Lambri & Zamri Mahamod, 2015), the use of self-study thinking skills and Buzan mind mapping (Tee Tze Kiong, et al., 2011), the use of SALAK didik element (A. Rahman Haron, Jamaludin Badusah & Zamri Mahamod, 2015) and the use of language learning model (Zulkifli Osman, 2015).

However, there were only few researches that involved the application of HOTs in Malay Language subject (A. Rahman Haron, Jamaludin Badusah & Zamri Mahamod, 2015). Teachers were seen to apply less HOTs in T&L because they practised conventional teaching method such as ‘chalk and talk’ instead of two-way teaching method (Nooriza Kassim & Effandi Zakaria, 2015). Consequently, it was found that student-centred T&L activities that aimed to expand the use of HOTs through outside of class T&L activities such as group discussions, games or shows were not being practised by teachers (Shamsuddin Muhammad, Ruzlan Md. Ali & Siti Noor Ismail, 2016). This scenario is deemed as opposing the needs of 21st century’s T&L instruction that requires teachers to vary their teaching approaches that are concentrated on the elements of HOTs, collaborative skills, communication skills and creativity (Badrul Hisham Alang Osman & Mohd Nasaruddin Basar, 2016). Hence, the implementation of HOTs in effective T&L instructions requires teachers’ deep understanding upon the needs and demands of the curriculum, the knowledge and pedagogical knowledge, the choice of strategy, the method or teaching approach, as well as the identification of the criteria of different students development (Shamsuddin Muhammad, Ruzlan Md. Ali & Siti Noor Ismail, 2016; Owi Wei Ping & Ang Ken Hua, 2017).

Likewise, teachers were also found to disregard the use of consistent application of HOTs in their teaching instruction due to their failure to plan the T&L process properly (Sharifah Nor Puteh et al., 2012; Sukiman Saad, Noor Shah Saad & Mohd Uzi Dollah, 2012; Chew Fong Peng & Shashipriya Nadaraja, 2014; Zulkifli Osman, 2015; Zarina Abdul Rashid, 2016). Failure in planning the application of HOTs in T&L instruction was also caused by teachers’ time constraint in completing the T&L syllabus, while there are teachers who only applied HOTs in T&L instruction based on their individual understanding and experience only. This has resulted in teachers being seen as frail and pessimistic in getting information on HOTs, feeling confused to use suitable HOTs teaching strategy, and having insufficient trainings to apply HOTs in T&L instruction (Zarina Abdul Rashid, 2016; Mohd Nazri Hassana, Ramlee Mustapha, Nik Azimah Nik Yusuff, Rosnidar Mansor, 2017).

Questioning techniques used by teachers were also found to influence the implementation of HOTs in T&L. Results showed that teachers were prone to use lower order thinking skills questioning technique in their teaching instruction (Sharifah Nor Puteh et al., 2012; Sukiman Saad, Noor Shah Saad & Mohd Uzi Dollah, 2012; Chew Fong Peng & Shashipriya Nadaraja, 2014; Zulkifli Osman, 2015; Zarina Abdul Rashid, 2016). This has in a way caused teachers to teach students to memorise facts and to test students’ knowledge through multiple-choice questions tests (Yahya Othman, 2003; Noor Rohana Mansor, 2007a & 2007b). This routine was steered by teachers due to the existence of the belief that students need to acquire prior knowledge about all the facts and concepts of a subject before they are encouraged to think (Mohd Nazri Hassana, Ramlee Mustapha, Nik Azimah Nik Yusuff, Rosnidar Mansor, 2017). This practice is found to be against the effort to implement HOTs in T&L, which requires teachers to give attention to HOTs that comprise the application, synthesis and analysis, excellent thinking skills and opportunities to organise ideas. As for the implications of future T&L, teachers were found to face difficulty to teach students the skills of analysing, synthesising and evaluating some subject contents (Musliha Salma Mohd Radzi, 2010).

Besides that, research also showed that the non-existent modules as guidelines impede the effort to apply HOTs in T&L (Mohd Nazri Hassana et al., 2017). The application of HOTs in T&L based on the module sample is crucial for teachers who did not get the opportunity to follow the course or workshop to gain exposure on how to execute the pedagogy that applies HOTs in T&L. Other than modules, teaching aids also play a role in the application of HOTs in T&L (James Ang Jit Eng, 2017). The ignorance of these teaching aids and modules could deteriorate the intellectual participation of students in T&L, as well as the quality of practice and work given to them (Baharuddin Jabar, 2006; Md. Yusof Dawam, 2006; Yahya Othman, 2009).

3. Literature Review: Mobile Technology

The dynamic revolutionary world of information technology and communication comprises the structural and technical forms that reflect the changes of ancient era to literacy era, printing era, and electronics era; whereby each era represents a type of specific communication – verbal, written, printed, and telecommunication (Siti
Ezaleila Mustafa & Azizah Hamzah, 2011). Today, information is produced and equipped with the criteria of convergence, digital network, global network, interaction, and communication by combining the overall communication elements, namely verbal, written, visual, data, and sound elements through the use of computers and telecommunication devices and integrating them via one platform. This can be highlighted in the meaning of mobile technology, which refers to the use of tools or gadgets that consist of mobile phones, personal data assistant (PDA) and tablets that are compact and easily accessible anytime and anywhere (Nurul Syazwani Ismail, Jamalludin Harun & Shaharuddin Md. Salleh, 2016).

The variety of technologies introduced each day has great influences in our daily lives (Aznan Omar, 2017). This scenario happens because these technological revolutions aim to form a global community that interacts among one another which then brings about the impacts to businesses, education, social sciences, and science and technology. This results in the worldwide acceptance of mobile devices as there is an existence of personal interaction among individuals. There are eight factors that cause the preference of personal interaction (Siti Ezaleila Mustafa & Azizah Hamzah, 2011). These factors consist of (i) the depletion of the power of dollars; (ii) the talk about marketing; (iii) the creation of new behaviours that stem from globalisation; (iv) the use of CMC by Gen Y or the millennials to replace telephones and face-to-face communication; (v) the increase of research findings on social media; (vi) the contribution of bigger government’s findings for technology and human interaction related projects; (vii) the reassessment of issues on humanity and spirituality post-11 September 2001 incidents, and (vii) the importance of social networking as a factor in connecting relationship and successful businesses, as well as the increase of research on social capital. As for their impacts, the education world is not exempted from the rapid development and replacement of mobile technology in the execution of T&L. As the saying goes, ‘everything is at the tip of their fingers and ‘a world without borders’ are turning into reality in this progressive education system. As a result, the use of technology is apparently not only limited to the use of personal computer.

On the other hand, the focus on the communication world has shifted to the use of mobile technology, which has garnered interest and obsession among the public, especially school children and university students. Previously, the education world went beyond the developmental phase of Web 1.0 technology, known as the World Wide Web (Siti Ezaleila Mustafa & Azizah Hamzah, 2011; Fuziah Rosman, Norlidah Alias, Mohd Nazri Ab Rahman & Dorothy Dewitt, 2016), which then led to Web 2.0, that included social webs such as blog, Wikis, podcasts, Friendster, Youtube, Facebook, Twitter, Instagram, Telegram and other applications that created as a business model and e-learning (Siti Ezaleila Mustafa & Azizah Hamzah, 2011; Fuziah Rosman, Norlidah Alias, Mohd Nazri Ab Rahman & Dorothy Dewitt, 2016). Additionally, the revolution of global technology has been replaced with simulations through social computing in the virtual world known as Web 3.0. (Fuziah Rosman, Norlidah Alias, Mohd Nazri Ab Rahman & Dorothy Dewitt, 2016). Among the Web 3.0 technologies used are the e-learning applications such as Padlets, EdPuzzle and Screen O Matic. The next shift headed to the Industrial Revolution 4.0, which covers the findings of new technology such as automation, Internet of Things (IoT), analysis and big data, simulation, system integration, robotics and cloud which will enhance the success of modern world landscape (Utusan Online, 2017). These revolutions mark the existence of physical cyber system which includes the new overall ability of humans, machines and new technological methods. In other words, the automation technology is seen as having a technological ability which does not require direct involvement of humans.

Realising the advancement of this technology, the information technology and communication (ICT) in today’s 21st century has also given attention to a few matters to ensure that the technology used in education fulfills the needs of HOTS among students and students. There are seven main components in ICT literacy, which are (i) defining, (ii) accessing, (iii) managing, (iv) integrating, (v) evaluating, (vi) creating, and (vii) communicating (Abdul Manaf et al., 2015). Hence, teachers should ensure that they have the capability to carry out effective T&L by using the transition of mobile technology in education as a challenge and not a hindrance or even a problem for them (Mohd Salmi Osman et al., 2015).

3.1. Cultivating HOTS in T&L in Malaysia

Education curriculum in Malaysia is imbalanced and focuses on factual-based input that is abstract and difficult to be mastered by students due to the ignorance of the development of their right brain (language, literature, aesthetics, sports, creativity and art talents) and excessive attention is given to the development potential of the left brain (academic matters, which consist of analytical and logical mathematics). Pedagogical process that is done by teachers may sometimes be prone to be teacher-centred. On the contrary, teachers should practise pedagogical practice that is thematic (student-centred) and is strengthened by the revampment of the new curriculum so that learning will be more significant to students by instilling the education elements that encourage them to think and apply the information in their daily life (Aminah Ayob, 2003).

In planning the mould of Malay Language education system, the integration of teaching skills in T&L is crucial as stressed by Maimunah Osman (2004) who explained that thinking practice should be nurtured in each individual continuously and should be given early emphasis at schools...
and higher learning institutions. Supportive conducive environment to open doors for vast exploration opportunities, trials, trainings and improvement are required to realise the effort to instill the culture and ability of the individuals to think continuously. The production of quality output can be done through techniques that encourage thinking skills besides the existence of environments that aid students to think well. In fact, strengthening students’ cognitive is also done through planning and conducting thinking activities in groups. Students have to be exposed to the culture of divergent thinking by looking at some matters from various perspectives and not only restricted as receivers of knowledge, as they are also taught to be those who seek for diverse knowledge. Thus, teachers have to prepare various plans, practice and alternatives to be discussed so students could sense the ultimate meanings that form the base of certain questions.

In the hope of cultivating thinking skills as the main element to progress T&L, Malay Language teachers should be aware of some questions that have turned into a dilemma in using HOTs. Among the questions is, “How does one produce or integrate a process of thinking or an experience of thinking in a language instruction?” (Kamsiah Abdullah, 2002). This issue will definitely be a nightmare to teachers since the cultivation of thinking skills strategy in the process of T&L needs to be systematically planned instead of being spontaneously done. Subsequently, the change in education pedagogical field focuses on how thinking process is carried out besides ensuring the product quality of the learning outcome from the thinking activity. Besides that, there are also other questions on (1) how thinking ability could give new added value which could elevate T&L to a better level; (ii) what makes a learner different from other students, (iii) how to create something that did not exist in the past; (iv) how to develop a new thinking pattern; or (v) how to improve something in a new alternate way. All these questions have to be scrutinized and overcome fairly in the effort to cultivate HOTs in Malay Language education (Maimunah Osman, 2004). If Malay Language teachers are clear about the objectives of using thinking skills, they will be able to interpret their insightful holistic ideas into the form of effective T&L.

Looking at the importance of cultivating continuous HOTs in T&L, various sectors should contribute their expertise towards the planning of new curriculum. Curriculum change is divided into two categories, which include the current restructuring and the replacement of existing curriculum in education system. The implementation of HOTs falls in the second category, whereby HOTs act as a continuation to the existing KBKK, which has been a practice in the previous T&L process (Abdul Halim Abdullah, 2016). The paradigm shift of Malaysian education system is seen to take place through the implementation of KSSR beginning in 2011, followed by the introduction of Kurikulum Standard Sekolah Menengah (KSSM) in 2017 in all schools nationwide. The introduction of the new curriculum system is a sign of respect to PPPM 2013-2025 besides the RM500 million additional grants given to realise PPPM 2013-2025. Moreover, KPM has given attention to a lot of changes in teachers’ teaching approaches in classrooms through the preparation of source management efforts to provide trainings and programmes that are accepted by teachers to boost their knowledge of HOTs. The change in teachers’ pedagogical approach also includes the application of KBKK, the introduction of mind mapping i-Think programme, questioning technique, mind mapping, compare-contrast, and the six thinking hats as thinking tools that assist teachers to form the values of HOTs, to create original ideas that are generative in learning, besides being able to evaluate the relevance of each idea using evaluative attitude (Abdul Halim Abdullah, 2016).

The final change involves the aspect of assessment in the process of T&L. In 2016, 40% of HOTs questions were integrated in UPSR, while 50% of the questions were integrated in SPM to improve the central assessment system carried out by LPM in comparison to 2013, whereby only a small percentage of 10% was involved for both central examinations. For the next implementation of HOTs, the product of HOTs from specific programmes will be assessed through the national and international assessments such as Trend in Mathematics and Science Study (TIMSS) and Programme International Student Assessment (PISA). To sum up, the cultivation of thinking skills in life acts as a major development of civilization in the evolution of society. The practice of intellectual thinking tradition could propel the prestige of language and advanced race to create more progressive thinkers that are dynamic and powerful, as proven in history that clearly showed the glory of relevant and timeless thinking culture (Nur Hidayah Ismail, 2015). It is essential that decent and active thinking culture is able to determine how far a society could grow to reach success. This is shown in Figure 1.0 on the HOTs implementation framework in the education system in Malaysia in a holistic manner.
In the 21st century, the work burden of teachers is getting more challenging. Other than teaching task, teachers are also burdened with clerical work, being the facilitators, motivators, planners, co-curricular advisors and club leaders, sports coaches; and are also involved in associations, uniform bodies and many more. Other than academic task, teachers are tasked with various positions such as chairman of the committee, committee members as well as other side work which lessen their focus on their main task, which is teaching (Siti Hajar Halili & Suguneswary, 2016). Therefore, teachers are unable to spend more time to prepare teaching aids that are based on mobile technology in the teaching process.

It is vital for teachers to have a positive perception on the use of mobile technology in the T&L of Malay Language. Positive teachers’ acceptance of the use of mobile technology shows the ability of an educator or a teacher to accept a tool or a person for the purpose of improving the process of T&L to follow the shift of focus on mobile technology in teaching. In this context, the acceptance of teachers refers to their level of willingness to use mobile technology based on the teachers’ mastery of information technology and communication in the T&L of Malay Language. There are three main aspects that facilitate the teachers’ readiness to use mobile technology in T&L, which are (i) the perception on the facilities of mobile technology; (ii) the skills of using mobile technology; and (iii) the attitude of teachers towards the acceptance of mobile technology usage (Siti Hajar Halili & Suguneswary, 2016).

Besides that, research findings also showed that the perceptions and attitudes of teachers could change if they are given trainings or courses on the preparation of teaching materials based on mobile technology. This is because teachers are being optimistic about the use of mobile technology as an aid in T&L; realising that mobile technology is important in today’s life; having the negative change to positive perceptions, and experiencing the increase of confidence through the use of mobile teaching in T&L. Therefore, attitude and awareness are the best ways to expect and predict the commitment towards the use of mobile technology in T&L. Attitude and confidence as
well as high efficacy among teachers will assist the smooth process of increasing the acceptance of mobile technology in T&L in classrooms.

3.2. T&L in the 21st century: The Use of Mobile Device

T&L process requires effective teaching strategy to reach the learning objective. This is because the use of mobile technology gives consideration to a few aspects, which are (i) it functions as a multimedia approach that is linked to the presentation; (ii) it uses interaction through the simulation available in the market or industry for education; (iii) the interaction through simulation, which is developed, has to balance between education and fun in learning (Nurul Syazwani Ismail, Jamalludin Harun & Shaharuddin Md. Salleh, 2016). Besides that, the use of mobile technology that is based on the pedagogical approach also considers a few important aspects that include the appropriateness of real time, the needs of students and the assessment and grading.

In the education world, the revolution of mobile technology should be seen as a new pedagogy in delivering the content of knowledge to students. In realisation of this fact, teachers and the practitioners of Malay Language should not be left behind in finding opportunities to make mobile technology as a scaffold that eases T&L instructions in classrooms. Consecutively, mobile technology usage could also function as a communication tool that drives the sharing of knowledge in T&L. This scenario clearly confirms with the view that the use of mobile devices is not merely a matter of desire, but it is a requirement in T&L. Furthermore, the dependency on mobile technology has given impacts on the change of learning pattern and style of students because of its total usage since it is easily accessible, affordable and precise. Students do not need to commute from one place to the other to gain knowledge or information because of the mentioned situation.

Therefore, it is clear that the trend towards the shift of mobile technology exists in Malaysia as more people are using it in T&L, may it be at school level or higher education level. The shift of the focus on mobile technology is predicted to have the capacity to offer space for teachers and students to have two-way interaction in T&L. Teachers have to be prepared to face informal learning situations since students will take the opportunity to use mobile devices to contact teachers, to find information for the needs of T&L, to browse the Internet to find relevant topics, to download sources, to find meanings of terms or to find questions for exercises (Nurahimah Mohd Yusoff & Muhammad Nidzam Yaakob, 2016). Based on the level of awareness, it is important for teachers to develop teaching materials that implement HOTs in future T&L.

4. Conclusions

Teachers are the main catalyst for the implementation of effective and exciting language teaching because teachers are seen as the “primary source in language and language learning” (Muhammad Zuhair Zainal, 2017). Notably, teachers are responsible to create the elaboration of content by using creative speech and communication skills to engage students’ participation during T&L process of Malay Language. Hence, the use of mobile technology will lighten the burden of teachers and help them implement effective pedagogy besides cultivating HOTs among students.

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Mobile Technology Usage: The Shift of Focus to Cultivate High Level Thinking Skills (HOTS) in the Malay Language Education System


Psychometric Properties of Graduate Employability Instrument among Malaysian Higher Education Institution Students

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Abstract Sustainable Development Goals defined that quality education and youth employment are two inter-related indicators that reflect the economic growth. It is important to conduct early assessment of graduate employability to better equip them with necessary knowledge and skills to increase their chance of achieving more sustainable future in their career path. This study aims to develop and validate an instrument termed as the Graduate Employability Instrument to measure the employability attributes among the undergraduate students. The technical analyses are done according to the accepted standards in psychometric testing comprising exploratory factor analysis, reliability analysis and confirmatory factor analyses. Total 425 Malaysian undergraduate students were involved in the study. The findings supported the main proposed model with 33 items grouped in 7 constructs: work and career resilience, human and social capital, teamwork, conscientiousness, critical thinking, academic, and leadership. This study contributed in measuring self-perceived employability of undergraduate students, which reflected the dimensions of strengths in the higher education institution studied towards preparing youth to fit in the competitive working environment. This can be used for continuous programmer improvements and intervention plans to improve the quality of education and resolve youth unemployment issues.

Keywords Employability, Attributes, Sustainable Development Goal, Graduate, Education

1. Introduction

Employability is determined by the assets an individual possesses, in terms of knowledge, skills, attitudes (Hillage & Polland, 1998; Mason, Williams & Cranmer, 2006) and commercial understanding (Mason, et al., 2006). These assets, also referred as “work readiness” by Mason et al. (2006), are important for fresh graduates as a determining factor to the success of their carrier paths. Yorke (2006) specified these skills as achievement skills and added that personal attributes as well as understanding will increase graduates’ chances of employment and success in the job market.

In the recent increasingly competitive workplace, the perception of guaranteed employment for tertiary degree holders is no longer applicable. Employers currently are more interested in employing graduates who have certain identified employability skills and qualities, in addition to expertise in the respective fields (DEST, 2002). They are searching for candidates who do not possess only basic academic skills, but also higher order thinking skills such as good reasoning, analytical, critical and creative thinking, effective decision making and problem solving. In addition, personal attributes of graduates such as highly responsible, good social skills, cooperative, confidence, independent and self-directed are highly seemed after. However, university students might not be aware of these industry requirements and might not even be able to link their studies or classroom activities to the expectations of the real world. It is here that the universities role must be expanded beyond merely providing teaching and training to increase students’ knowledge and expertise in different disciplines, but also preparing students towards becoming highly employable by developing the psychosocial components mentioned. Higher education institutions should strive get to know which dimensions to strengthen in order to best increase the student’s employability.

The failure of graduates to be employable may be related to the mismatched emphasis of existing undergraduate programmes (de la Harpe, Radloff & Wyber, 2000). Graduates are claimed to leave universities without adequate soft skills and knowledge needed for career success (Dass, 2018, August 6; Nik Hairi, Azmi, Rusu.da, Arena, & Khairani, 2012; Singh & Singh, 2008). Dass (2018) added that the incongruency between the job
requirements and youth quality is one of the main factors that lead to unemployment. As Mohamad Sattar, Md Yusof, Napsiah, Rashid and Rose Amnah (2009) pointed out from their study, graduates are skilful in their field, but did not have sufficient skills in communication and problem solving, and lack flexibility. Thus, both technical and soft skills trainings are required during tertiary studies to ensure career readiness and career success of undergraduates in the future.

There is a worldwide concern of the effectiveness of higher education institutions in preparing university students with professional skills as well as soft skills to reduce unemployment issue among young population. International Labour Organization (ILO) reported that 5.6% of the global population were unemployed as of 2017 and remains high, above 192 million in 2018. According to the 17 Sustainable Development Goals (SDGs) proposed by the United Nations (UN), Quality Education (Goal 4) is one of the key Sustainable Development Goal, and this is to ensure inclusive and quality education for all. In line with this, UN targets to substantially increase the number of youths who have relevant skills for employment by 2030. There is no doubt that education is believed to be the key driver to achieve other Sustainable Development Goals. In addition, Goal 8 that aims to promote inclusive and sustainable economic growth, employment and decent work for all also targets to provide youth with skills that match labour market demand for the purpose of reducing the proportion of youth not in employment.

Therefore, there is a need for Higher Education Institutions (HEIs) to assess employability of the undergraduate students and use this information to strengthen the quality of HEIs. Although some measurements of self-perceived employability have been developed (Bezuidenhout, 2011; Rothwell & Arnold, 2007), there is still insufficient empirical research in this area, especially in Malaysia context. In addition, most measurements created were more suited for employers but not university students. Hence, the need is to develop a graduate employability measurement that suits both Malaysian industry and HEI contexts.

1.1. Employability Attributes

This study focuses on the development of a Graduate Employability Instrument (GEI) to measure undergraduate students’ employability. In order to determine the constructs to measure employability, existing theories and models were referred to. The main models reviewed (Figure 1) included Coopers and Lybrand’s Employability Dimensions (1998), Fugate, Kinicki and Ashford’s Model of Employability (2004), Fugate and Kinicki’s Dispositional Model of Employability (2008), Van der Heijde and Van der Heijden’s Competence-Based Employability Model (2006), Pool and Sewell’s Key to Employability Model (2007), Bridgestock’s Conceptual Model of Graduate Attributes for Employability (2009), Mohamed and Hamzah’s Graduate Employability Model APEC (2009), and Bezuidenhout’s Graduate Employability Model (2011). Table 1 summarizes the five dominant attributes of employability proposed for this study based on the employability models and theories reviewed.

After a thorough analysis of the models and theories mentioned, five dominant attributes were selected as constructs for the proposed instrument. The five attributes are academic attributes, personal management attributes, exploration attributes, connectivity attributes and career management attributes. Academic attributes refer to the performance of the undergraduate students in the university, which include their knowledge on the discipline of study and relevant co-curricular activities experience. The second attribute of employability, personal management attributes, refer to the way that undergraduate students deal with daily life, such as attitude, sense of responsibility, leadership skills, adaptability and emotional intelligence. The third attribute is the exploration attributes, referring to the way undergraduate students explore the world. The attributes include being imaginative and innovative, and having critical and creative thinking, problem solving and learning skills. The fourth attribute of employability, connectivity attributes, refer to the way undergraduate students interact with people in their surroundings and how they build social network that helps in career development. This domain includes skills in communication, teamwork and technology integration, social capital, and cultural competence. The last attribute of employability, career management attributes, refer to the potential way undergraduate students deal with their career. This domain measures motivation, work and career resilience, career goals, planning and development and learning opportunities exploitation. The instrument was developed and tested for its validity and reliability by referring to the method of scale development proposed by Brown (1983) and Cohen, Swerdlik and Sturman (2013) which involved five stages grouped in three phases.

![Theoretical Framework](image-url)
<table>
<thead>
<tr>
<th>Employability Models</th>
<th>Dominant Employability Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coopers and Lybrand (1998)</td>
<td>Academic: Knowledge of organization and how companies in the industry work</td>
</tr>
<tr>
<td></td>
<td>Personal management: Traditional intellectual skills (critical evaluation and logical thinking); Key skills (numeracy, information technology, problem solving skills, learning ability)</td>
</tr>
<tr>
<td></td>
<td>Exploration: Career Management: Key skills (communication, teamwork)</td>
</tr>
<tr>
<td></td>
<td>Connectivity: Coopers and Lybrand (1998)</td>
</tr>
<tr>
<td></td>
<td>Fugate, Kinicki and Ashford (2004)</td>
</tr>
<tr>
<td></td>
<td>Academic: Human capital (expertise, capabilities, tacit and explicit knowledge)</td>
</tr>
<tr>
<td></td>
<td>Personal management: Personal adaptability (optimism, propensity to learn, openness, internal locus of control, generalized self-efficacy)</td>
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<tr>
<td></td>
<td>Exploration: Social capital (support network)</td>
</tr>
<tr>
<td></td>
<td>Connectivity: Social capital (support network)</td>
</tr>
<tr>
<td></td>
<td>Career Management: Social capital (support network)</td>
</tr>
<tr>
<td></td>
<td>Fugate and Kinicki (2008)</td>
</tr>
<tr>
<td></td>
<td>Academic: Openness to changes at work</td>
</tr>
<tr>
<td></td>
<td>Personal management: Work and career proactivity</td>
</tr>
<tr>
<td></td>
<td>Exploration: Work and career resilience (Optimistic, positive self-evaluation and expectation for future, confidence); career motivation (motivation control and learning goal orientation)</td>
</tr>
<tr>
<td></td>
<td>Connectivity: Work and career resilience (Optimistic, positive self-evaluation and expectation for future, confidence); career motivation (motivation control and learning goal orientation)</td>
</tr>
<tr>
<td></td>
<td>Van der Heijde and Van der Heijden (2006)</td>
</tr>
<tr>
<td></td>
<td>Occupational expertise: Anticipation and optimization; Personal flexibility; Corporate sense (emotional intelligence)</td>
</tr>
<tr>
<td></td>
<td>Career Management: Corporate sense (social capital, social skills)</td>
</tr>
<tr>
<td></td>
<td>Fugate and Kinicki (2008)</td>
</tr>
<tr>
<td></td>
<td>Academic: Degree subject knowledge</td>
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<td></td>
<td>Personal management: Emotional intelligence</td>
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<tr>
<td></td>
<td>Exploration: Career development learning and understanding; Generic skills</td>
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<tr>
<td></td>
<td>Connectivity: Career development learning and understanding;Generic skills</td>
</tr>
<tr>
<td></td>
<td>Bridgestock (2009)</td>
</tr>
<tr>
<td></td>
<td>Academic: Discipline-specific skills</td>
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<td></td>
<td>Personal management: Self-management</td>
</tr>
<tr>
<td></td>
<td>Exploration: Career building and Generic skills</td>
</tr>
<tr>
<td></td>
<td>Connectivity: Career building and Generic skills</td>
</tr>
<tr>
<td></td>
<td>Mohamad and Hamzah (2009)</td>
</tr>
<tr>
<td></td>
<td>Academic: Career self-management drive (emotion management); Personal dispositions (career resilience, openness to change, proactivity, entrepreneurial orientation)</td>
</tr>
<tr>
<td></td>
<td>Personal management: Career self-management drive (constant gathering of career-related information)</td>
</tr>
<tr>
<td></td>
<td>Exploration: Cultural competence; Personal dispositions (sociability)</td>
</tr>
<tr>
<td></td>
<td>Connectivity: Career self-management drive (self-evaluation, create career goals and action plans, exploit opportunities); Personal dispositions (Career related core self-evaluations)</td>
</tr>
</tbody>
</table>
2. Materials and Methods

2.1. Participants and Procedures

A total of 425 Malaysian undergraduate students from one of the Higher Education Institution (HEI) participated in this study using the final version of the Graduate Employability Instrument (GEI). The HEI was randomly selected from the central region of Malaysia. Only final-year undergraduate students were included in this research. Paper-and-pen self-administered approach was used for data collection. The respondents were given the information sheets that summarized the nature of this study in order to obtain their permission for participating in the study. Only participants who agreed to commit were requested to fill in the survey form. Participation of the subjects was voluntary. All information obtained was meant for research purpose and was kept confidential. Out of the 425 responses, there were 51.5% (n=206) male and 48.5% (n=206) female students. In terms of area of study, 50.4% (n=214) of the participants were from technology and science; while 49.6% (n=211) were from art and social science.

2.2. Measures

The final version of the Graduate Employability Instrument (GEI) included 33 items, developed through a procedure suggested by Brown (1983) and Cohen et al (2013). It measures 7 attributes of employability, namely academic (four items), conscientiousness (five items), leadership (four items), critical thinking (four items), teamwork (four items), human and social capital (five items), and work and career resilience (seven items). Seven-point Likert scale ranging from (1) strongly disagree to (7) strongly agree, were given as response options and used to calculate the test score.

2.3. Scale Development Procedure

This study used a quantitative approach as the intention was to develop and validate the Graduate Employability Instrument (GEI) for students in higher education institution. There were three phases of scale development, which involved general procedure in constructing an instrument (Brown, 1983) and five stages to develop a test as suggested by Cohen et al (2013). The flow chart of the processes involved in the scale development is as depicted in Figure 2.

2.4. Phase 1 of Scale Development

This phase is comprised of test conceptualisation, construction and try-out.

![Figure 2. Flow chart of scale development](image-url)
2.4.1. Test Conceptualisation

In the first stage, test conceptualisation involved forming the idea of a test to understand an existing problem, social phenomenon or focusing to a specific purpose (Cohen et al., 2013). In this study, the instrument is targeted towards finding out the undergraduate students’ self-perceived employability in the hope that it will give some indications on the effectiveness of higher education institution in preparing them for the working world. The instrument was developed to provide a more holistic measurement of employability that included various attributes. This is different from most employability tests, which merely assess a particular aspect of employability. The definition of the variable, employability, as well as the constructs, academic attributes, personal management attributes, exploration attributes, connectivity attributes and career management attributes were discussed and defined through the theories and models as indicated in Table 1. In the present study, employability is referred as undergraduate students’ perception of attributes that they possess which enable them to obtain employment after they graduate and undergo continuous development in their career.

2.4.2. Test Construction

The second stage, test construction, is the process of designing and forming a test (Cohen et al., 2013) by translating into operational terms in the developing instrument plan (Brown, 1983). To describe all the characteristics that can measure the construct, and employability, theories of employability were reviewed. Based on review of literature and the relevant theories and models, this study categorised the characteristics of employability into five domains, namely academic attributes, personal management attributes, exploration attributes, connectivity attributes and career management attributes. These constructs had been defined explicitly. All the behaviours, skills and characteristics that describe these employability dimensions were included in the instrument and supported by the theories and models.

GEI includes nominal, ordinal and ratio scales. Nominal scale was used for respondents’ categorical demographic characteristics such as gender; ordinal scale was used for items on employability and ratio scale was used for respondents’ continuous demographic attributes such as age and academic performance (Cumulative Grade Point Average, CGPA). A seven-point Likert scale was adopted for all the items that measure the five dimensions of employability: 1 point for strongly disagreeing, 2 points for disagreeing, 3 points for mildly disagreeing, 4 points for neutral, 5 points for mildly agreeing, 6 points for agreeing and 7 points for strongly agreeing to each item. This Likert scale was chosen because research confirmed that the data collected using Likert items becomes significantly more accurate when the number of scale points were between five and seven (Johns, 2010). In addition, Symonds (1924) was the first to suggest that the use of seven-point Likert scale was found to improve the reliability of the scores (Symonds, 1924). Symonds’s finding was then supported by Miller (1956) who stated that human mind is capable of distinguishing about a limit of seven different categories when it comes to making judgments about magnitudes of unidimensional stimuli. The scoring model used is the cumulative model where higher test scores indicate higher employability and vice versa. For several decades, some other researches have also proven that seven-point Likert scale maximizes the inter-item consistency and test-retest reliability (Nunnally, 1967; Ramsay, 1973; Oaster, 1989). Preston and Colman (2000) found that five or seven point Likert scale was used in vast majority of rating scales and related psychometric instruments, and seven-point scales were more popular than five-point scales. The questionnaires are divided into two parts. Part A is related to respondents’ demographic information including gender, age, course and academic performance. Part B focuses on examining students’ employability using GEI. In the final version, the items measure five attributes as indicated in Table 2.
Table 2. Items and assessment for GEI (1st Version)

<table>
<thead>
<tr>
<th>Dimension of Employability</th>
<th>Assess and Measure</th>
<th>Total item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic attributes</td>
<td>Academic performance</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Job knowledge</td>
<td></td>
</tr>
<tr>
<td>Personal management attributes</td>
<td>Attitude, Responsibility, Adaptability, Leadership, Emotional intelligence</td>
<td>33</td>
</tr>
<tr>
<td>Exploration attributes</td>
<td>Imagination, Innovation, Critical and creative thinking, Problem solving skills, Learning skills, Career development learning, Career proactivity</td>
<td>22</td>
</tr>
<tr>
<td>Connectivity attributes</td>
<td>Social capital, Cultural competences, Communication skills, Teamwork, Technology integration skills, Commercial awareness</td>
<td>24</td>
</tr>
<tr>
<td>Career management attributes</td>
<td>Career resilience, Career motivation, Capability career goal, Identify and participate, Exploit opportunities</td>
<td>30</td>
</tr>
</tbody>
</table>

2.4.3. Test Try-out

Once the first draft of the instrument was developed, content validity was carried out by three psychology experts from Malaysian HEIs before the instrument was tried out. Both language and structure of the items were checked by the experts to avoid any sensitivity statements and gender bias. In addition, the experts decided the appropriateness of each item in measuring the construct and gave constructive feedback to improve the quality of the instrument. Items were then amended based on the feedback from the professionals. With all the amendments done, there were changes to the proportions of items for each dimension of the GEI. The distribution of items for the second version of GEI is demonstrated in Table 3.

After the content validity check, 2nd version of GEI was then tried out to further explore its applicability in research settings as well as to ensure the clarity of the instruction on the research instrument and items. For this purpose, a pilot study was done on 231 final-year undergraduate students. The respondents were assured that their information was classified and confidential and the information obtained will only be used for the intended academic purpose.

2.5. Statistical Analyses

The analyses described were performed on data derived from the validation study and the final main study. The data in the questionnaires collected was coded for processing using SPSS version 22. The technical analysis of GEI included item reliability and validity. After the data was collected from the test try-out, exploratory factor analysis was done to ensure that all domains represent the constructs that are the respective variables. The internal consistency reliability of the instrument was measured to ensure that homogeneity of the test. This was done by referring to the Cronbach’s Alpha coefficient of each construct. Both the exploratory factor analysis and reliability analysis were run with SPSS version 22. Confirmatory factor analysis was then carried out using AMOS to confirm that the proposed model adheres to the standard goodness of fit indices.

3. Finding and Discussion

The finding and discussion reported in this section refer to the results from Phase 2 and Phase 3 of the scale development. In Phase 2, validation study involved 231 final year undergraduate students for the item analysis, internal consistency reliability and construct validity. To enhance final version of the instrument, the results of the revised test were reported in Phase 3 of the scale development which involved 425 final year undergraduate students.
3.1. Phase 2 of Scale Development: Enhancement

A pilot study was done on 231 final year undergraduate students from one of the higher educational institution in Malaysia. They were all final year students with mean age of 22.28 years (SD=1.52) and mean CGPA of 3.2 (SD=.41). Normality test was conducted and showed that the data was normally distributed with the skewness value of .243. According to Leech and her colleagues (2011), the data is considered at least approximately normal with skewness value of -1 to 1. For the 231 sets of response, technical validity analysis was done, followed by reliability analysis.

3.1.1 Item Analysis

Item analysis is important to measure the quality of each item in a test and the test as a whole. Exploratory factor analysis was conducted to determine whether the suggested construct and the large item pool measure employability. There are a total of 5 constructs with 112 items generated in the 2nd version of the GEI through first phase of the scale development. To consider what items to remove or retain, the communality values and factor loadings of each item was computed. Every item should have at least a standardised loading estimate or communality value of .5, and ideally .7 or higher (Hair et al., 2006). In addition, Costello and Osborne (2005) commented that a good factor consists of at least five items with strong loading (greater than .50) and factors with less than three items are considered weak. Since there were a lot of items therefore factor analysis for this study was set at .5. Factors with less than three items of strong loading were removed by having the item with communality value of less than .5 or the least factor loading deleted one by one. Every deletion of an item was followed by a rerun of factor analysis. The generation of factor analysis stopped when all factors have at least three items with significantly strong loadings. The suitability of the data for factor analysis was proven in Table 4, which describes the extraction of seven common factors for 33 items. The result indicated that the 231 students were adequate to conduct a factor analysis for GEI. There were no cross loadings. Seven factors were extracted with eigenvalues of greater than one. These seven factors account for much of the variation among the items (68.48%). Kaiser-Meyer-Olkin (KMO) index increased to .929 and the Bartlett’s test of sphericity was significant (p<.001). According to Tabachnick and Fidell (2013), the Bartlett’s test of sphericity is significant since the p value is less than .05 and KMO index of greater than .6 and indicates the appropriateness to run factor analysis on the data. In addition, all items showed communalities of greater than .6. According to MacCallum and his colleagues (1999), this is a high level of communality, in other words, this indicated that the sample size was adequate to measure employability with the remaining 33 items.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigenvalue</th>
<th>Percentage of variance</th>
<th>Cumulative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13.375</td>
<td>40.530</td>
<td>40.530</td>
</tr>
<tr>
<td>2</td>
<td>2.214</td>
<td>6.710</td>
<td>47.240</td>
</tr>
<tr>
<td>3</td>
<td>2.037</td>
<td>6.174</td>
<td>53.413</td>
</tr>
<tr>
<td>4</td>
<td>1.575</td>
<td>4.773</td>
<td>58.186</td>
</tr>
<tr>
<td>5</td>
<td>1.196</td>
<td>3.623</td>
<td>61.809</td>
</tr>
<tr>
<td>6</td>
<td>1.130</td>
<td>3.425</td>
<td>65.234</td>
</tr>
<tr>
<td>7</td>
<td>1.071</td>
<td>3.244</td>
<td>68.478</td>
</tr>
</tbody>
</table>

A total of 79 items from the original 112 items (2nd version of GEI) with communality value of less than .5 or weaker factor loadings were deleted. Table 5 indicates the factor loading for GEI with acceptance of 33 items within seven factors. Based on the items extracted, most factors were renamed instead of using the proposed label. As shown in Table 5, the five attributes were renamed to seven factors namely, work and career resilience (seven items); human and social capital (five items); teamwork (four items); conscientiousness (five items); critical thinking (four items); academic (four items); leadership (four items).
### Table 5. Factor loading of items retained in GEI (3rd Version)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work and Career Resilience</td>
<td>89. I do not give up easily in pursuing my goals. 88. I take problems as challenges. 111. I accept challenge because I know I will learn from it. 108. I am always self-motivated. 110. I always evaluate and monitor my own performance. 95. I regularly evaluate myself. 87. I work hard until I achieve my goals.</td>
<td>.754  .744  .741  .672  .659  .606  .586</td>
</tr>
<tr>
<td>Human and social capital</td>
<td>77. I can predict the future trends of my field of study. 76. I have studied the history about my field of study. 78. When I need to plan my future career, I know who to consult. 81. I know how to use social network to support career building. 72. I always keep myself updated of the latest technology</td>
<td>.722  .702  .675  .649  .537</td>
</tr>
<tr>
<td>Teamwork</td>
<td>68. I can work in a team to achieve a goal. 69. I know how to contribute in a team. 67. I have learnt how to work in a team. 66. I can talk and listen to the others.</td>
<td>.809  .745  .737  .658</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>9. I normally complete my tasks on time. 8. I am always punctual. 12. I carry my responsibilities well. 55. I always complete my assignments given by the lecturers. 33. I manage my time wisely.</td>
<td>.846  .761  .656  .614  .594</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>47. I always evaluate the credibility of sources of information. 48. I can differentiate between facts and assumptions. 49. I can define a problem and identify the contributing factors. 46. I can interpret information accurately.</td>
<td>.800  .759  .684  .629</td>
</tr>
<tr>
<td>Academic</td>
<td>2. I know a lot of skills about the field I am studying. 3. I know how to apply the skills I learnt in real life situations. 1. I have a lot of knowledge about the field I am studying. 4. I know the job scope of all the positions in my field.</td>
<td>.765  .753  .723  .605</td>
</tr>
<tr>
<td>Leadership</td>
<td>14. I normally volunteer myself as a leader in a group work. 17. I am good in persuading my group members to agree to me. 13. I have learnt about various leadership skills. 15. When I am in a group, I am able to set a practical goal.</td>
<td>.827  .602  .571  .558</td>
</tr>
</tbody>
</table>

A. Factor 1: Work and career resilience

Items 88, 87, 89, 95, 108 and 111 were loaded on the first factor. All these items were proposed to measure career management related to work and career resilience. According to Fugate and Kinicki (2008), work and career resilience included having optimistic attitude, proactive self-regulation such as self-monitoring and self-evaluating, positive expectation for future and confidence in dealing with objective and affective challenges. Hence the factor was named “work and career resilience”.

B. Factor 2: Human and social capital

The second factor consisted of items 72, 76, 77, 78 and 81. These items were proposed to measure connectivity. Items 72, 76, and 77 were specifically about disciplinary knowledge while item 78 and 81 were related to social capital. These items could be related to one of the dimensions in Fugate, Kinicki and Ashford’s (2004) Model of Employability called human and social capital. Human capital refers to the personal variables that influence an individual’s career advancement such as knowledge while social capital refers to the social support network. So the factor was labelled “human and social capital”.

C. Factor 3: Teamwork

Items 66, 67, 68 and 69 were salient with the third factor. All the items were also proposed to measure connectivity or more specifically, the teamwork. Teamwork was one of the key skills in Coopers and Lybrand’s (1998) Employability Dimensions. Besides, the Ministry of Higher Education (2012) supported Mohamad and Hamzah (2009)’s Graduate Employability Model APEC where teamwork was one of the elements under the connectivity construct. Thus, the third factor was called “teamwork”.

D. Factor 4: Conscientiousness

Items 8, 9, 12 and 33 were proposed to assess personal management and item 55 proposed in exploratory attribute
were loaded on the fourth factor. All these items were related to conscientiousness, a trait in the Big-Five trait theory. Conscientiousness is related to the tendency to follow norms and rules, make and follow plans, delay gratification and be goal-oriented (Roberts, Jackson, Fayard Edmonds and Meints, 2009). Conscientious individuals are self-disciplined, task-focused and organized. Hence the fourth factor was named “conscientiousness”.

E. Factor 5: Critical Thinking

The fifth factor consisted of items 46, 47, 48 and 49. These items examined critical thinking skills as one of the important attributes established under the employability scale. For example, Coopers and Lybrand (1998) included critical evaluation in their Employability Dimensions under traditional intellectual skills. Mohamad and Hamzah (2009)’s Graduate Employability Model APEC also included critical thinking under the exploration construct. And the Ministry of Higher Education Malaysia (2012) has accepted the model as core skills to develop among Malaysian learners. According to Facione (2015, p. 25), “critical thinking is sceptical without being cynical. It is open-minded without being wishy-washy. It is analytical without being nit-picky. Critical thinking can be decisive without being stubborn, evaluative without being judgmental, and forceful without being opinionated”. Characteristics of a critical thinker include systematic, inquisitive, judicious, truth-seeking, analytical, open-minded and confident in reasoning.

F. Factor 6: Academic

Items 1, 2, 3 and 4 were developed to measure the academic attribute focusing on students’ knowledge and skills on discipline of study. Mohamed and Hamzah (2009) suggested that it is important for students to be exposed to their disciplinary and possess adequate knowledge about real world working environment.

G. Factor 7: Leadership

The last factor included items 13, 14, 15 and 17, which were developed to measure leadership skills. Leadership skills were included under the personal management attribute in Mohamad and Hamzah (2009)’s Graduate Employability Model APEC. Leadership is also one of the six attributes in the latest Malaysia Education Blueprint 2015-2025 (Higher Education) (Ministry of Higher Education, 2015). The Ministry of Higher Education expects higher education to educate learners to communicate effectively, to be intelligent emotionally, responsible socially, competitive, resilient, confident, and able to work across cultures. The items were related to some of these elements. Thus, the factor was named “leadership”.

3.1.2. Internal Consistency Reliability

Internal consistency of items of GEI (third version) was assessed using Cronbach’s alpha. The Cronbach’s alpha computed was .952 with 33 items which is acceptable according to Pallant (2001). Based on Fisher’s (2007) rating, the instrument’s reliability level is excellent. Comparing the reliability of each factor in GEI with Fisher’s rating, leadership dimension is fairly reliable (α=.796) while all the other dimensions have good reliability (.80<α<.90) Table 6 shows the Cronbach’s alpha for each factor in GEI after amendment.

### Table 6. Cronbach’s Alpha for Factors of GEI (Third Version)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work and career resilience</td>
<td>.903</td>
</tr>
<tr>
<td>Human and social capital</td>
<td>.864</td>
</tr>
<tr>
<td>Teamwork</td>
<td>.866</td>
</tr>
<tr>
<td>Personal management</td>
<td>.837</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>.862</td>
</tr>
<tr>
<td>Academic</td>
<td>.837</td>
</tr>
<tr>
<td>Leadership</td>
<td>.796</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>.952</strong></td>
</tr>
</tbody>
</table>

3.1.3. Construct Validity

To ensure that the constructs were valid in measuring employability, confirmatory factor analysis (CFA) was conducted on the 33 remaining items. This is to assess the goodness-of-fit of the model. Hair et al. (2006) stated that reporting at least one incremental index and one absolute index in addition to the chi-square ($\chi^2$) value and the associated degrees of freedom ($df$) would be sufficient to evaluate the model. Moreover, there should be at least one badness-of-fit index reported. With that, Hair et al. (2006) recommended reporting $\chi^2$ value, $df$, the CFI and the RMSEA. The goodness-of-fit indices for the model were as follows: $\chi^2 = 894.026 \ (p<.000)$, $df = 474$, CFI= .906, and RMSEA = .062. According to Hair et al. (2006), $\chi^2$ value with significant $p$ value of less than .05 shows good model fit. They also associated CFI above .90 and RMSEA below .10 with good model fit. All these goodness-of-fit indices showed that this model of Employability was fit. Construct validity refers to the test of the hypothesized constructs that represent the concept the researcher is measuring. To assess construct validity of GEI, convergent validity was conducted, which referred to the values of standardized factor loadings, construct reliability (CR) and average variance extracted (AVE). Table 7 shows the standardized factor loadings, CR and AVE of 3rd version of GEI from CFA.
Table 7. Factor loadings, Construct Reliability (CR) and Average Variance Extracted (AVE) of GEI (Version 3)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Factor Loadings (CR)</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>1.</td>
<td>.815</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>.813</td>
<td>.841</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>.648</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>.733</td>
<td></td>
</tr>
<tr>
<td>Personal management</td>
<td>8.</td>
<td>.816</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.</td>
<td>.651</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.</td>
<td>.748</td>
<td>.845</td>
</tr>
<tr>
<td></td>
<td>33.</td>
<td>.710</td>
<td></td>
</tr>
<tr>
<td></td>
<td>55.</td>
<td>.677</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td>13.</td>
<td>.728</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.</td>
<td>.672</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15.</td>
<td>.752</td>
<td>.801</td>
</tr>
<tr>
<td></td>
<td>17.</td>
<td>.680</td>
<td></td>
</tr>
<tr>
<td>Critical thinking</td>
<td>46.</td>
<td>.765</td>
<td></td>
</tr>
<tr>
<td></td>
<td>47.</td>
<td>.809</td>
<td></td>
</tr>
<tr>
<td></td>
<td>48.</td>
<td>.759</td>
<td>.864</td>
</tr>
<tr>
<td></td>
<td>49.</td>
<td>.800</td>
<td>.614</td>
</tr>
<tr>
<td>Teamwork</td>
<td>66.</td>
<td>.714</td>
<td></td>
</tr>
<tr>
<td></td>
<td>67.</td>
<td>.820</td>
<td></td>
</tr>
<tr>
<td></td>
<td>68.</td>
<td>.881</td>
<td>.874</td>
</tr>
<tr>
<td></td>
<td>69.</td>
<td>.767</td>
<td>.637</td>
</tr>
<tr>
<td>Human and social capital</td>
<td>72.</td>
<td>.747</td>
<td></td>
</tr>
<tr>
<td></td>
<td>76.</td>
<td>.761</td>
<td></td>
</tr>
<tr>
<td></td>
<td>77.</td>
<td>.827</td>
<td>.867</td>
</tr>
<tr>
<td></td>
<td>78.</td>
<td>.737</td>
<td>.567</td>
</tr>
<tr>
<td></td>
<td>81.</td>
<td>.686</td>
<td></td>
</tr>
<tr>
<td>Work and career resilience</td>
<td>87.</td>
<td>.797</td>
<td></td>
</tr>
<tr>
<td></td>
<td>88.</td>
<td>.840</td>
<td></td>
</tr>
<tr>
<td></td>
<td>89.</td>
<td>.802</td>
<td></td>
</tr>
<tr>
<td></td>
<td>95.</td>
<td>.657</td>
<td>.904</td>
</tr>
<tr>
<td></td>
<td>108.</td>
<td>.696</td>
<td></td>
</tr>
<tr>
<td></td>
<td>110.</td>
<td>.757</td>
<td></td>
</tr>
<tr>
<td></td>
<td>111.</td>
<td>.746</td>
<td></td>
</tr>
</tbody>
</table>

Based on Hair et al. (2006), every item should have at least a factor loading of .5, and ideally .7 or higher to show good convergent validity. CFA again proved that all items demonstrated strong factor loading in the model. As shown in Table 4.9, all items had factor loadings in the range of .64 and .89. Further, that all construct have CR value in the range of .80 and .91. This fulfilled the suggestion by Hair et al. (2006) that CR value should be .7 or greater to indicate adequate convergence. The last indicator of convergent validity was AVE value at least .5 or higher as evidence to prove adequate convergent validity (Hair et al., 2006). Referring to Table 4.9, AVE of all seven constructs were in the range of .50 and .64. Hence, convergent validity of GEI was proven with all three conditions fulfilled. To measure discriminant validity, Hair et al. (2006) suggested that the square of the correlation between two factors should be less than AVE estimates for two factors. Table 8 shows the square of the correlation among the constructs and AVE for each construct. The divergent validity of GEI was proven by having all AVEs of each construct greater than any of the square of the correlation between two factors. Further, Table 8 also provides additional evidence of divergent validity as it shows that there is no cross-loading for all items in GEI. Hair et al. claimed that each item of a test should measure only one latent construct to add distinctiveness between constructs.

Table 8. Square of Correlation and Average Variance Extracted (AVE) of GEI (Third Version)

<table>
<thead>
<tr>
<th>Construc</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(.571)</td>
<td>.525</td>
<td>.318</td>
<td>.294</td>
<td>.209</td>
<td>.557</td>
<td>.316</td>
</tr>
<tr>
<td>2</td>
<td>(.522)</td>
<td>.388</td>
<td>.184</td>
<td>.270</td>
<td>.296</td>
<td>.403</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>(.502)</td>
<td>.441</td>
<td>.389</td>
<td>.371</td>
<td>.477</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>(.614)</td>
<td>.389</td>
<td>.514</td>
<td>.417</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>(.637)</td>
<td>.396</td>
<td>.531</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>(.567)</td>
<td>.480</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>(.576)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1=academic; 2=personal management; 3=leadership; 4=critical thinking; 5=teamwork; 6=human and social capital; 7=work and career resilience

3.2. Phase 3 of Scale Development: Confirmation

This session reports the last phase of scale development by using the 3rd Version of GEI amended thru the item analysis. The purpose of test revision in phase 3 was to enhance the quality of the measurement by revising the test of confirmatory and reliability analyses. Subsequently, we confirmed the validation and reliability of the instrument for further study. Amended GEI (3rd version) was tried out on 425 final-year undergraduate students from the HEI in the centre region of Peninsular Malaysia. The data was normally distributed is the skewness value of .005. As discussed earlier, the data was at least approximately normal with skewness value of -1 to 1 (Leech et al., 2011). For this main study, confirmatory factor analysis was run, and followed by reliability analysis.

3.2.1. Confirmatory Factor Analysis

Confirmatory factor analysis was carried out to reassure that the seven factors of 33 items are appropriate to measure employability. As discussed earlier, reporting $\chi^2$ value, df, the CFI and the RMSEA would be enough to evaluate the model. The goodness-of-fit indices for the model were as follows: $\chi^2 = 1296.17$ (p<.000), df = 474, CFI= .919, and RMSEA = .063. According to Hair et al. (2006), $\chi^2$ value with significant p value of less than .05, CFI above .90 and RMSEA below .10 indicated good model fit. Hence, it could be concluded that the model of Employability is fit. Figure 3 shows the confirmatory factor analysis model for GEI.
To assess construct validity of GEI, both convergent and discriminant validity were conducted. For convergent validity, we referred to the values of standardized factor loadings, construct reliability (CR) and average variance extracted (AVE). Table 9 shows the standardized factor loadings, CR and AVE of amended GEI from CFA. Based on the results, all items in GEI showed ideal factor loadings were greater than .7 as suggested by Hair et al. (2006), except for item 5. These 32 items have factor loadings in the range of .7 and .9. Although factor loading for item 5 valued at .675 was not ideal but it still met the good rule of thumb of greater than .5 as recommended by Hair et al. (2006). The second evidence of convergent validity was that all constructs have CR value of .7 or greater (Hair et al., 2006). Referring to Table 9, the CR value of all the factors were in the range of .75 and .85. The last proof of convergent validity was AVE should be .5 or higher to indicate adequate convergence. Again, findings showed that AVE of all seven constructs was in the range of .55 and .72. Hence, convergent validity of GEI was proven with all three evidences provided.
Table 9. Factor Loadings, Construct Reliability (CR) and Average Variance Extracted (AVE) of GEI (Third Version, Main Study)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Factor Loading</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>1.</td>
<td>.853</td>
<td>.763</td>
<td>.652</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>.805</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>.769</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>.801</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal management</td>
<td>5.</td>
<td>.675</td>
<td>.791</td>
<td>.575</td>
</tr>
<tr>
<td></td>
<td>6.</td>
<td>.798</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.</td>
<td>.816</td>
<td></td>
<td></td>
</tr>
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<td>8.</td>
<td>.764</td>
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<td></td>
<td>9.</td>
<td>.729</td>
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<tr>
<td>Leadership</td>
<td>10.</td>
<td>.758</td>
<td>.754</td>
<td>.587</td>
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<td></td>
<td>11.</td>
<td>.702</td>
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<td></td>
<td>12.</td>
<td>.818</td>
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<td></td>
<td>13.</td>
<td>.782</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>14.</td>
<td>.763</td>
<td>.765</td>
<td>.662</td>
</tr>
<tr>
<td></td>
<td>15.</td>
<td>.817</td>
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<td></td>
<td>16.</td>
<td>.831</td>
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<td></td>
<td>17.</td>
<td>.842</td>
<td></td>
<td></td>
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<tr>
<td>Teamwork</td>
<td>18.</td>
<td>.797</td>
<td>.771</td>
<td>.714</td>
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<td></td>
<td>19.</td>
<td>.858</td>
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<td></td>
<td>20.</td>
<td>.892</td>
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<tr>
<td></td>
<td>21.</td>
<td>.829</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human and social capital</td>
<td>22.</td>
<td>.715</td>
<td>.788</td>
<td>.551</td>
</tr>
<tr>
<td></td>
<td>23.</td>
<td>.757</td>
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<td></td>
<td>24.</td>
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<td></td>
<td>25.</td>
<td>.740</td>
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<td></td>
<td>26.</td>
<td>.719</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work and career resilience</td>
<td>27.</td>
<td>.815</td>
<td>.846</td>
<td>.619</td>
</tr>
<tr>
<td></td>
<td>28.</td>
<td>.828</td>
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<td></td>
<td>29.</td>
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<td>30.</td>
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<td></td>
<td>31.</td>
<td>.754</td>
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<td></td>
<td>32.</td>
<td>.773</td>
<td></td>
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<td></td>
<td>33.</td>
<td>.809</td>
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</tbody>
</table>

Besides convergent validity, discriminant validity was also important for construct validity. To prove discriminant validity of a test, Hair et al. (2006) recommended to compare the square of the correlation between two factors and AVE estimates for two factors. It was suggested that AVE estimates for two factors should be greater than the square of the correlation between two factors. The results showed that none of the square of the correlation between two factors was greater than the AVE estimates for two factors. Thus, discriminant validity for GEI was proven. Table 10 shows the square of the correlation among the constructs and AVE for each construct.

Table 10. Square of Correlation and Average Variance Extracted (AVE) of GEI (Third Version, Main Study)

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>(.652)</td>
<td>.450</td>
<td>.560</td>
<td>.462</td>
<td>.393</td>
<td>.540</td>
<td>.421</td>
</tr>
<tr>
<td>Personal management</td>
<td>(.575)</td>
<td>.538</td>
<td>.413</td>
<td>.445</td>
<td>.445</td>
<td>.558</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td>(.587)</td>
<td>.507</td>
<td>.483</td>
<td>.510</td>
<td>.520</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>(.662)</td>
<td>.542</td>
<td>.527</td>
<td>.549</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>(.714)</td>
<td>.471</td>
<td>.605</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human and social capital</td>
<td>(.551)</td>
<td>.549</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work and career resilience</td>
<td>(.619)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

1=academic; 2=personal management; 3=leadership; 4=critical thinking; 5=teamwork; 6=human and social capital; 7=work and career resilience
3.2.2. Reliability

Reliability test was conducted and Cronbach’s Alpha (α) of GEI is .954. The value showed that the instrument was reliable according to Pallant (2001) recommendation of greater than .70, and the reliability level of the test was excellent based on Fisher’s (2007) rating. Comparing the Cronbach’s Alpha value of all the seven factors of employability to Fisher’s (2007) rating, all the constructs have good level of reliability (.80<α<.90). Table 11 shows the Cronbach’s Alpha of each factor of GEI.

Table 11. Cronbach’s Alpha of Each Factor of GEI (Third Version, Main Study)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Cronbach’s Alpha (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work and career resilience</td>
<td>.897</td>
</tr>
<tr>
<td>Human and social capital</td>
<td>.840</td>
</tr>
<tr>
<td>Teamwork</td>
<td>.881</td>
</tr>
<tr>
<td>Personal management</td>
<td>.840</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>.863</td>
</tr>
<tr>
<td>Academic</td>
<td>.857</td>
</tr>
<tr>
<td>Leadership</td>
<td>.823</td>
</tr>
<tr>
<td>Overall</td>
<td>.954</td>
</tr>
</tbody>
</table>

4. Conclusions and Recommendation

In this study, an instrument was developed to measure the employability of undergraduate students who are going to join the workforce soon. They are expected to be equipped with sufficient knowledge and skills to face the real-life working environment. With this instrument, employability of final-year undergraduate students from the individual or the students’ perspective can be analysed. The analysis can be compared with the demand of the labour market and industries to find out whether the supply from tertiary education matches the demand. The ministry or the institutions of tertiary education can then use this information to improve or decide the education direction and blueprints. For this study, employability was defined as undergraduate students’ perception of attributes that they possess which enable them to obtain employment after they graduate and undergo continuous development in their career. Employability was explored from individual perspective, more specifically, undergraduate students’ perspective of their own employability.

The procedure of developing the GEI was sequentially followed according to Brown (1983) and Cohen et al. (2013). In the pilot study, exploratory factor analysis was conducted to determine whether the proposed constructs and the large items pool in GEI (second version) measure employability. There were three steps to follow sequentially in exploratory factor analysis. With that, 3rd version of GEI proposed which consisted of 33 items grouped in seven constructs, namely work and career resilience, human and social capital, teamwork, conscientiousness, critical thinking academic, and leadership. For the main study, data was analysed through confirmatory factor analysis. Goodness-of-fit indices again showed that the proposed model for employability had a good model fit. Evidence in the result confirmed the validity and reliability of the final version of GEI (3rd version). Since the instrument had been developed and validated following psychometric test construction, the researcher believes that GEI could be used to measure self-perceived employability of final-year undergraduate students. The data could be useful for higher education institutes to assess the quality of these soon-to-be graduates.

This study has produced a sound instrument to measure employability of undergraduate students. The educators and the management of the universities can use this test to measure their undergraduate students’ employability skills, thus predict their readiness or success for a job employment after they graduated. The results could reflect the effectiveness of higher education institutions in preparing undergraduate students with expertise as well as employability skills to fit in competitive working environment. The domain with lower score would indicate the weakness of most students. HEIs could use this finding to plan some interventions to improve the employability of undergraduate students. This is vital to produce graduates that fulfil the job market demands and resolve the unemployment issue among graduates especially in Malaysia. Besides, undergraduate students, whether in their final year or not, could use this instrument to assess their employability. This enables them to identify their strengths and weaknesses so that they could put in more effort to deal with their weaknesses before they graduate. University is a place for students to explore and develop their potential and learn from their mistakes. As compared to workplace, employers may have less tolerance towards mistakes as employers expect employees to solve but not create problems.

In this study, GEI was developed and validated to measure self-perceived employability of final-year undergraduate students. Results showed that it has ideal factor loadings to prove its validity and good internal consistency reliability. However, replication of GEI is recommended for future research with larger sample size and different populations as any given sample would never reflect its population perfectly. Replication of the factor analysis procedures would demonstrate that the constructs result in this research were not peculiar to this sample population. Moreover, this research discussed employability from the individual perspective. Economic-social and organizational perspectives of employability were excluded. Future researchers are suggested to include either of the perspective excluded in this study or both perspectives. Input from the industries or experts would further determine the effectiveness of higher
education in producing employable graduates. Students may also use the test to find out whether they have the quality required in workplace environment and put some effort into self-enhancement before they graduate.

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