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Editor's Preface

Dear Contributors and Readers,

This special edition publication aims to highlight the current trends of studies in the context of education. This publication consists of research articles in the form of conventional and action study. The reported findings could provide information in enhancing current educational programs and policy.

The publication was also could serve as references in order to strategize the implementation of teaching and learning process not only in the context of primary and secondary school but also for tertiary education. The articles in this publication are not only focusing on the conventional mode of education but also include the online learning mode.

This special edition hopefully offers a great scientific platform to professors, academicians, researchers, instructors and scholars around the globe to share and synthesize the insightful issues and findings presented in the articles.

Collectively, the writing of the studies in this special issue were expected could contributed to our knowledge and understanding on current education related issues. This knowledge is expected to lead to the progress of quality education in the aspect of delivery, assessment and reflection.

Finally, it is appropriate that we record our thanks to all the editors in reviewing the paper and in ensuring the quality of the published articles. Appreciation and acknowledgement to the authors for their expert input and great contribution to this special edition publication.

With Best,
Dr. Aqeel Khan

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EI Rubrics for Preschool Children

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Abstract Many researchers have done extensive research on Emotional Intelligence (EI) part. There are many instruments that have been developed to serve as a measure of emotional intelligence. These include the Mayer-Salovey-Caruso EI Test (MSCEIT), the Multi Factor Emotional Intelligence Scale (MEIS) and several other Emotional Intelligence measures. However, it is found that the existing EI instrument does not measure children's emotional intelligence (EI). The Emotional Intelligence should be emphasized in children's development. Children who have a good level of emotional intelligence (EI) will be able to manage their lives in a more orderly and harmonious. Good emotional control is a very important aspect in the well-being of individuals. In this study, the researcher wanted to do a basic analysis of the children EI by building a pre-school children EI rubrics age group of four to six years. The study was conducted at a preschool in Kuala Terengganu district involving 20 children. The research data will be through the evaluation process by five academic specialists in the field using the Cohen Kappa Consensus Coefficient Rating Scale formula. Qualitative data were analysed using triangulation methods through qualitative categorization and thematic analysis. Quantitative data, on the other hand, will be analysed using the Rasch Model to see its validity and reliability. The implications of this study are expected to be a basic children's Emotional Intelligence study focusing on EI development in education to produce a competent, skilled, creative and innovative generation.

Keywords Children, Emotional Intelligence (EI), EI Rubrics, Preschool

1. Introduction

Since the emergence of a book entitled 'Emotional Intelligence' (EI), introduced by Denial Goleman in 1995, many researchers have done extensive research on it. There are many instruments that have been developed to serve as a measure of emotional intelligence. These include the Mayer-Salovey-Caruso EI Test (MSCEIT) (Mayer et al., 2002), the Multi Factor Emotional Intelligence Scale (MEIS) (Salovey & Mayer, 1990) and several other EI measures. However, according to a study conducted by Coskun, Oksuz and Yilmaz (2017), it is found that the existing EI instrument does not measure children's emotional intelligence (EI).

According to Gignac (2010), Tett, Fox and Wang (2005) measured emotional intelligence through self-report, assuming that participants in the sample had a deep and objective knowledge of their social and emotional skills, consistent and genuine in assessing those skills. However, childhood is an age where metacognitive awareness, abstract reasoning, and objective thinking are not influenced by events. Children can only think egocentric. They still cannot think inductive or deductive. Their concrete thinking and the use of expressive material can aid in the learning process.

2. Problem Statement

The rapidity of today's socialization world shows that individual success is not enough to have a good level of intellectual intelligence. In fact, they also need strength in terms of good emotional intelligence (EI) growth. This has been proven by numerous studies on the development of EI that show the individuals with good EI levels can have a positive impact on academic achievement, good social relationships and confidence in self-efficacy (Goroshit et al., 2012; Hogan et al., 2010; MacCann et al., 2011; Kotaman, 2016; Valente, 2020; Karkada, 2020).

In addition, every success, excellence, and happiness of life comes from individuals with good levels of emotional stability (Brackett et al., 2011; Berrocal et al., 2016; Paavola et al., 2017). Emotional stability at an early age is essential for them to grow up and become individuals who can realize the aspirations of Malaysia through the 11th Malaysia Plan and the 2050 National Transformation of Being a Developed Nation in all respects, covering economic, political, social, spiritual, and psychological and culture.

However, indicators for determining the level of EI in preschool children between the ages of four to six years are not yet known (Coskun et al., 2017; Peters et al., 2009; Rivers et al., 2012;). Teaching and learning the application of emotional elements to preschool children under the supervision of the Ministry of Education Malaysia (KPM) is also problematic. According to Nor Aizal Akmal, Azlina and Nora (2012), the lack of teaching aids or teaching and learning modules specifically for the purpose of applying emotional elements to children has caused teachers to have difficulty in teaching and learning because there is no guidance in providing information or available syllabus and systematic knowledge based on syllabus to facilitate their teaching. Most of the teaching and learning processes of emotional intelligence elements and other elements of social psychology are carried out only by speaking and telling, which makes it difficult for children to grasp the information they receive and reduce their interest in learning and attention in the classroom.

In support of the Ministry of Education's goal of producing value-based citizens in accordance with the Malaysian Education Development Plan 2013-2025 (in the third shift), this study identifies that the assessment of children needs to be developed not only in the psychological aspect, but also in the aspect of education which focuses more on unity and fostering closer understanding among children. This indicator is important for being a standard benchmark for determining the children EI level. In this study, an analytical study to identify the basic elements of children EI should be carried out empirically in order to determine the criteria in the construction of child EI rubric at the preschool level.

3. Literature Reviews

Emotional intelligence is defined as the ability to control, understand and use emotions as a guide for how we think and act (Salovey & Mayer, 1990). Emotions have a profound effect on every decision and action taken. Mayer and Salovey (1997) have developed the concept of emotional intelligence to explain the importance of emotion in life. They define emotional intelligence as knowing emotion, using emotion, understanding emotion and controlling emotions.

The findings of a study conducted by Jain (2015) and Gallagher and Vella-Brodrick (2008) found that there is a relationship between the level of emotional intelligence and the well-being of an individual's life. For Bar-On (2012) and Mavroveli, Petrides, Rieffe and Bakker (2007), individuals with good levels of emotional intelligence can easily adapt to new life and they also have good mental health.

Further, according to Dhani and Sharma (2017) and Van Rooy and Viswesvaran (2009), the findings of their study show that individuals with mental abilities and positive personality traits are those with good levels of emotional intelligence. Individuals with high levels of emotional intelligence are able to achieve good levels of academic achievement (Maraichelvi & Rajan, 2013; Schute et al., 1998). Based on the findings of the study conducted by Shaheen and Shaheen (2016) and Tsaousis and Nikolaou (2002), an individual will have a healthy physical and psychological level if he has a good level of emotional intelligence.

Therefore, emotional intelligence is necessary and important in the early childhood development. This is to prevent them from having any problems when they enter primary school. Such acts of quarrelling and hurting others occur due to the unstable development of children's emotions (National Preschool Standard Curriculum, 2010). The development of emotional intelligence is important to children, as this element is a rule, an encouragement to social behavior as well as positive learning behaviors (Fantuzzo, Bulotsky, McDermott, McWayne, Frye & Perlman, 2007; Izard, Trentacosta, King & Mostow, 2004; Khan, 2012).

Based on the results of a study conducted by Fantuzzo et al. (2007) and Raver and Knitzer (2002), emotional intelligence is important and is fundamental to the success of a preschool environment that produces successful individuals. According to Paavola and Evelin (2017) and Denham (2006), children with high levels of emotional intelligence are able to develop a learning environment that is able to follow instructions, pay attention and listen, able to solve problems and be patient. The importance of emotional intelligence has also been highlighted in the National Philosophy of Education (FPK, 1996) which shows efforts to create a balanced, harmonious physical, emotional, spiritual, intellectual and social people to

produce knowledgeable, capable, dignified, responsible and capable of achieving personal well-being (National Preschool Standard Curriculum, 2010).

The goals of the National Preschool Standard Curriculum (KSPK, 2010) have also set a target for developing the children potential of four to six years old in physical, emotional, spiritual, intellectual and social aspects. Emotional elements are still being considered and appreciated by the Ministry of Education Malaysia (KPM) which aims to equip individuals with positive skills, beliefs and concepts so that they can succeed in the current environment and be prepared to address challenges and responsibilities in primary school.

4. Research Objective

1. Identifying aspects of emotional intelligence (elements of identifying emotions, understanding emotions, controlling emotions and using emotions) at preschool age.
2. Study of emotional intelligence at preschool age.
3. Defining emotional intelligence indicators in the construction of emotional intelligence rubrics at preschool age.

5. Research Questions

To achieve the objectives of the study, the research questions are as follows:

Research question for objective 1:

- i What are the basic elements for identifying emotions at the preschool level?
- ii What are the basic elements for understanding the emotions at the preschool level?
- iii What are the basic elements for controlling the emotions at the preschool level?
- iv What are the basic elements for using the emotions at the preschool level?

Research question for objective 2:

- i How can emotional intelligence at preschool age be reflected in their learning process?

Research question for objective 3:

- i What are the indicators of emotional intelligence in the construction of emotional intelligence rubrics in preschool age?

6. Method

The main purpose of this study was to analyse the basic elements of children emotional intelligence (EI) at the ages

of four to six years. The analysis of EI basis element was performed to construct the preschoolers' EI rubrics. The study design that will be used in this study is qualitative design by conducting observations, interviews and expert evaluations to obtain valid and accurate findings. In addition, the researcher also used quantitative design to obtain the validity and reliability of the built in EI instrument. Participant observation sessions and semi-structured interviews will be held at a preschool in the Kuala Terengganu area.

The study participants were selected randomly based on the purpose of sampling. Researchers selected 20 children (10 boys and 10 girls) consisting of preschoolers (4 to 6 years). The selection of 20 study participants met the needs of the qualitative research in this study which clearly showed that the study participants were able to provide information up to a saturation point to avoid variant error.

The instruments used in this study are human-based, with researchers being the main tools. Researchers were also assisted by the instrumentation of the observation checklist and the interview checklist. This instrumentation is recognized by Creswell (2013) and Othman (2014) for obtaining accurate and stable data while understanding the true phenomena of the study. This checklist was constructed based on the domain of the EI indicator by Sullivan (1999), the EI indicator by Mayer, Salovey and Caruso (2002) and the EI indicator by Goleman (1996) which was modified to fit the research needs.

Through the concept of a two-day workshop, 10 groups of two study participants will be assigned the task to perform appropriate activities that can build their EI. The Child-Centered Game Development Approach (Moser, 2012) is used as a reference to ensure that this activity is appropriate for the classroom environment.

Subsequently, through the data collected, an expert evaluation session will be conducted in which five academic experts from all over Malaysia will be appointed to evaluate the identified EI elements. Cohen's Kappa Coefficient (Cohen, 1960) will be used as an analytical formula to determine the validity of the study findings.

Data analysis will use qualitative categorization and thematic analysis through triangulation and typology methods. Based on thematic analysis techniques as suggested by Braun and Clarke (2006), constructs that build on themes in instrumentation will be extracted based on the EI elements studied. Further, the researchers focused on thematic analysis of data obtained from observational checklists and interviews by more specific categories to determine the validity of the scale. The categories are given specific themes that are relevant to the research question. The data set will go through a triangulation and expert verification process to answer the questions and meet the objectives of the study. Data analysis was also carried out quantitatively to obtain the reliability of the instrument built using Rasch Model analysis.

7. Conclusion

Therefore, through this study, assessments based on the elements of analytical emotional intelligence need to be identified to look at children EI which are not only from a view of psychological but also in educational aspect. EI elements and analytical rubric sections can be used as the basis for children EI measurement. In turn, this generation is believed to consist of a versatile generation with appropriate education outcomes in line with the goals of PPPM 2013-2025.

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Conflict of Interest

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Done research committee.

REFERENCES

- [1] Berrocal, P.F., & Checa, P. (2016). Editorial: Emotional Intelligence and Cognitive Abilities. *Frontiers in Psychology*, 7.
- [2] Brackett, M.A., Rivers, S.E., & Salovey, P. (2011). Emotional Intelligence: Implications for Personal, Social, Academic, and Workplace Success. *Social and Personality Psychology Compass*, 5(1), pp.88–103.
- [3] Coskun, K., Oksuz, Y., & Yilmaz, H.B. (2017). Ten Years Emotional Intelligence Scale (TYEIS): Its Development, Validity and Reliability. *International Journal of Assessment Tools in Education*, 4(2), pp.122-133
- [4] Coskun, K., Oksuz, Y., & Yilmaz, H.B. (2017). Ten Years Emotional Intelligence Scale (TYEIS): Its Development, Validity and Reliability. *International Journal of Assessment Tools in Education*, 4(2), pp.122-133.
- [5] Dhani, P., & Sharma, T. (2017). Relationship between Emotional Intelligence and Personality; A Study in Indian Context. *International Business Management International Business Management*, 11(5), pp.1133-1139.
- [6] Fantuzzo, J., Bulotsky-Shearer, R., McDermott, P., McWayne, C., Frye, D. & Perlman, S. (2007). Investigation of Dimensions of Social-Emotional Classroom Behavior and School Readiness for Low Income Urban Preschool Children. *School Psychology Review*, 36, pp.44-62.
- [7] Gallagher, E. N. & Vella-Brodrick, D. A. (2008). Social support and emotional intelligence as predictors of subjective well-being. *Personality and Individual Differences*, 44, pp.1551-1561.
- [8] Goleman, D. (1995). *Emotional Intelligence: Why It Can Matter More Than IQ?* New York: Bantam Books. http://www.abe.villanova.edu/proc2000/nO_13.pdf [ZOOI, Dis. 1I].
- [9] Goroshit, M., & Hen, M. (2012). Emotional Intelligence: A Stable Change? *International Journal of Teaching and Learning in Higher Education*, 24(1), pp.31-42
- [10] Hogan, M.J., James D. A. Parker, J.D.A., Wiener, J., Watters, C., Wood, L.M., & Oke, A. (2010). Academic success in adolescence: Relationships among verbal IQ, social support and emotional intelligence. *Australian Journal of Psychology*, 62(1), pp.30–41.
- [11] Izard, C., Fine, S., Schultz, D., Mostow, A.J., Ackerman, B. & Young-Storm, E. (2001). Emotion Knowledge as A Predictor of Social Behavior and Academic Competence In Children At Risk. *Psychology Science*, 12, pp.18-23.
- [12] Jain, D. R (2015). Emotional Intelligence & its relationship with Life Satisfaction. *Journal of Management*, 8(1), pp.61-63
- [13] Karkada, IR., D'souza, UJA., & Mustapha, JA (2020). Relationship of Emotional Intelligence and Academic Performance among Medical Students: Systematic Review. *Universal Journal of Educational Research*, 8(3A), 72-79.
- [14] Khan, A. (2012). Sex Differences' in Educational Encouragement and Academic Achievement. *Psychological Reports*, 111, 1, 149- 155.
- [15] Kotaman, H. (2016). Turkish prospective early childhood teachers' emotional intelligence level and its relationship to their parents' parenting styles: An international journal of teachers' professional development, 20(1), pp.106-122.
- [16] MacCann, C., Fogarty, G.J., Zeidner, M., Roberts, R.D. (2011). Coping mediates the relationship between emotional intelligence (EI) and academic achievement. *Contemporary Educational Psychology*, 36, pp.60–70.
- [17] Maraichelvi, A., & Rajan, S. (2013). The Relationship between Emotional Intelligence and the Academic Performance among Final Year under Graduates. *Universal Journal of Psychology*, 1(2), pp.41-45.
- [18] Mavroveli, S., Petrides, K. V., Rieffe, C., & Bakker, F. (2007). Trait emotional intelligence, psychological well-being and peer-rated social competence in adolescence. *British Journal of Developmental Psychology*, 25, pp.263-275.
- [19] Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational*

implications (pp. 3-31). New York: Basic Books.

- [20] Mayer, J. D., DiPaolo, M. T., & Salovey, P. (1990). Perceiving affective content in ambiguous visual stimuli: A component of emotional intelligence. *Journal of Personality Assessment*, 54, pp.772-781.
- [21] Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). Mayer-Salovey- Caruso Emotional Intelligence Test (MSCEIT) user's manual. Toronto, ON: MHS
- [22] Nikolaou, I., & Tsousis. I. (2002). Emotional Intelligence In The Workplace: Exploring Its Effects On Occupational Stress And Organizational Commitment. *The International Journal of Organizational Analysis*. 10(4), pp.327-342
- [23] Paavola, L.E. (2017). The importance of emotional intelligence in early childhood. Bachelor's Thesis: Laurea University of Applied Sciences.
- [24] Peters, C., Kranzler, J.H., & Rossen, E. (2009). Validity of the Mayer- Salovey- Caruso Emotional Intelligence Test: Youth Version- Research Edition. *Canadian Journal of School Psychology*, 24(1), pp.76-81
- [25] Petrides, K.V. (2009). Psychometric Properties of the Trait Emotional Intelligence Questionnaire (TEIQue). *Assessing Emotional Intelligence*, pp.85-101.
- [26] Raver, C.C. & Knitzer, J. (2002). Ready to enter: What research tells policymakers about strategies to promote social-emotional school-readiness among three-and four-year old children. New York: National Center for Children in Poverty.
- [27] Rivers, S.E., Brackett, M.A., Reyes, M.R., Mayer, J.D., Caruso, D.R., & Salovey, P. (2012). Measuring Emotional Intelligence in Early Adolescence with the MSCEIT-YV: Psychometric Properties and Relationship with Academic Performance and Psychosocial Functioning. *Journal of Psychoeducational Assessment*, 30(4), pp.344- 366.
- [28] Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences*, 25, pp.167-177.
- [29] Shaheen, S., & Shaheen, H. (2016). Emotional Intelligence in Relation to Psychological Well-Being among Students. *The International Journal of Indian Psychology*, 3(4), pp.206- 213.
- [30] Valente, S., Veiga-Branco, A., Rebelo, H., Lourenço, A.A., Cristóvão, A.M (2020). The Relationship between Emotional Intelligence Ability and Teacher Efficacy. *Universal Journal of Educational Research Vol. 8(3)*, pp. 916-923.
- [31] Whitman, D.S., Rooy, D.L.V., Viswesvaran, C., & Kraus, E. (2009). Testing the Second-Order Factor Structure and Measurement Equivalence of the Wong and Law Emotional Intelligence Scale across Gender and Ethnicity. *Educational and Psychological Measurement*, 69(6), pp.1059-1074.

Application of Rasch Analysis in Measuring Teacher Collegial Supervisory Instrument's Reliability and Validity

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Abstract The concept of collegial supervision (CS) is defined as collaborative work beyond their professional sphere of relationships often offered by educators through feedback and sharing platform. However, there is still lack of studies and instruments that evaluated the CS practice within Malaysian context. In measuring the suitability of CS practice in secondary schools in Malaysia, a questionnaire with 26 self-developed items that represent five sub-dimensions/constructs namely, collegial relations, teacher's province, teacher growth, teacher collaboration, and reflective inquiry was developed from series of interviews with secondary teachers. The major aim of this paper is to validate and examined the psychometric elements through the application of Rasch analysis in measuring items'-person reliability, principal component analysis, items - person distribution, fit and dimensionality analyses. The analysis was performed based on feedback of 357 teachers from secondary teachers. Findings revealed on high values on person-items reliability, and the items' difficulty are significantly aligned or matched with teachers' ability. Also, principal component analysis revealed an acceptable value of raw variance explained, and that most teachers agreed with most of the items through structure measurement on the items' validity. Thus, it is concluding on the internal consistencies of the items within Malaysian CS which later contributed to the CS items for Malaysian secondary schools.

Keywords Collegial Supervision, Secondary Schools, Rasch Measurement Model

1. Introduction

Empirical evidence has defined collegial supervision (CS) through the lenses of instructional practice as collaborative efforts made by teachers in refining their instructional practices across knowledge sharing platforms and feedback for teachers' professional growth [1, 2, 3]. In defining the concept of CS, Singh and Manser (2002) [4] believed that it is a learning process towards the practice of shared responsibility and values among school community which includes principals and teachers. In another definition, CS is sometimes referred to as peer supervision [5, 6] for its emphasis on colleagues' assessments and feedbacks as 'informal' supervisors, with broader mechanisms to improve teachers' performance in the instructional practice which is highly concerned with teaching and learning. In the context of this study, CS is referred to as a consistent process of facilitation where colleagues (i.e. principles, administrators, and teachers) work together and offer one another feedback on their performances. According to Glatthorn (1984) [5], the approach is directed towards cooperative professional

growth. Furthermore, CS is deemed as a collective process beyond professional sphere of relationships [6], towards common vision, aiming for the school cultural based improvement and focusing on the teachers' growth and development, interpersonal relationship and collaborative approaches.

As mentioned by Khun-Ineree (2020) [32], the pertinent reason why CS is needed in secondary are based on the lack of knowledge on supervisee practices in helping teachers improve their teaching and learning activities. Thus, it will effect students' performances in their academic achievements. In addition, the trusted person in supervising teachers which is referring to the school's administrators are packed with meetings and bust schedules [32]. In addition, it is cautioned that not all teachers will accept comments and advices provided by their colleagues although the purpose of the CS is to improve other teachers' professional development [32, 33] due to differences in the professional and personal relationship. In addition, Aktas (2018) [34] also stressed although CS is provided to teachers especially to novice teachers, they need to be flexible and selective in choosing their instructional approaches. This is because through the mentoring and collegial assessment approaches, the novice teachers will be shadowed their mentor or their senior teachers who gave assessments towards the improvement in teaching and learning during the collegial supervisory approach.

Although the practice of CS in school context has begun as early as 1984 by the work of Glatthorn, due to no specific measure of collegiality (Sabharwal, 2011) [7], and the fact that most of the studies conducted are non-quantitative approaches [6], the complexity of collegial practice itself [8, 9, 10], led to the 'paucity' of studies on collegiality until there have been new developments on the collegiality measurement scale [11, 12]. It is apparent that the literature obtained on the CS practice in the context of Malaysia heavily emphasises direct supervision in its clinical mode [13, 14] and pays little attention or less indication to CS practice. Succinctly, clear standard framework, model and items that related to CS also seems to be unavailable within context of secondary schools in Malaysia. This is deemed as a claim that there is limited empirical evidence about the framework; model and instrumentation of CS meant for secondary schools still received little attention among local researchers. In other words, the standard framework and their measuring instrumentation of CS are arguably unknown in the context of secondary schools. This study therefore validates the psychometric - findings of CS scale -through the application of Rasch analysis in measuring items'-person reliability, principal component analysis, items - person distribution, fit and dimensionality analyses.

2. Objectives of the Study

This study was designed to addressed the following

research objectives:

- i To obtain the person and items reliability on CS items.
- ii To access the psychometrics of CS scaling based on principal component analysis, items -person distribution, fit and dimensionality analyses.

3. Conceptual Framework

Theoretical framework of this study is an adaption process from the Zepeda's framework (2007, p. 28) [15] which focuses on formative and cyclical approaches of the instructional supervision. In her framework, Zepeda defined the CS approach as a professional development meant for teachers' development which based in instructional supervision which consisted of formative supervision and evaluations. In this study context, the standard of CS was chosen to replace the professional development aspects due to its similar nature; the CS itself is a professional development's type of supervision [16, 17, 18]. In the formative supervision (observation), it is concerned with the on-going individual's professional development with what is carried out in the CS dimensions. The pre-observation conference, classroom observation and post-observation as formative supervision are elements highlighted by Zepeda (2007) [15] in the CS dimensions [2, 31].

4. Methodology

4.1. Sampling

A total of 357 teachers were selected to provide their feedback based on the listed items. Secondary school teachers were selected using the multistage cluster sampling technique known as multiple probability technique [19] used due to the difficulty in determining the entire population. This technique is appropriate for large populations that are geographically spread and naturally in the population [19] in order to ease the group's identification, locate lists [20] as well as reducing bias and representativeness issues.

4.2. Instrumentation

In this study, the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS) questionnaire was designed to assess the effective practice of CS in Malaysian secondary schools. The questionnaire consisted of 28 items which comprised two items on demographics, and 26 items that represent the six sub-dimensions of CS: namely, collegial relations (CR) (5 items), teacher's province (PR) (5 items), teacher growth (TG) (5 items), teacher collaboration (TC) (6 items), and reflective inquiry

(RI) (5 items). In the demographics, two items were constructed: teachers' gender and their years of experiences within the teaching profession.

The items were constructed and derived from transcripts of series of interviews with teachers related to the practice of CS. The senior teachers were purposely selected and asked to provide their comments to all items. Items were initially constructed in the Malay language. However, later, it was decided to provide an English translation given the suggestions from the English language teachers. The translation process from Malay language to English was conducted by a senior English language teacher with the assistance of a Malay language teacher. Later, the items were checked by senior teachers to assess the content validity of all 26 items. In terms of the scaling, SFCSMSS uses a five-point Likert scale: 1: strongly disagree, 2: disagree, 3: Neutral, 4: agree, and 5: strongly agree. The five-point scale was decided use based on the following justifications: (a) it is a common rating scale among social science researchers; (b) the scale provides equal opportunity for all respondents while providing their answers [21].

5. Results

5.1. Teachers' Demographics

The total number of teachers participated in this study was 357 which demonstrated a response rate of 59.01%, which exceed the suggested return rate (49%) as recommended by (Baruch & Holtom, 2008) [22]. Table 1 below illustrates the distribution of teachers' demographics according to their gender and years of experiences. In terms of teachers' experience, teachers were clustered into three major groups: the first group are teachers who had experience between 0 to 10 years of experience, followed by teachers who had 11 to 20 years and the final group of teachers who had experience between 21 to 30 years. Based on their experiences, majority of 149 teachers (41.7%) that participated were between 11 to 20 years of experience followed by 111 teachers (31.1%) with 21 to 30 years' experience, and only 97 teachers (27.2%) who had experiences between 0 to 10 years. Based on teachers'

gender, 98 teachers (27.5%) that participated in this study were male teachers and 259 teachers (72.5%) were female teachers, which is an indication of high numbers of female teachers in local secondary schools in Malaysia compared to their counterpart. Table 1 below indicates the data consisted of teachers' years of experience and gender.

Table 1. Teachers' Demographics

Variables	N	Per centage
<i>Gender</i>		
Male	98	27.5
Female	259	72.5
<i>Years of Experiences</i>		
0 to 10 years	97	27.2
11 to 20 years	149	41.7
21 to 30 years	111	31.1
Total	357	100

5.2. Items and Person's Reliability

The Rasch Person-Item Reliability tests were performed because of its capability in determining the internal reliability of items as well as respondents. As shown in Figure 1, the Rasch person reliability is 0.94, which is considered an acceptable value [23]. A person separation value indicates the value of 4.04 which indicates that the instruments are sensitive enough to distinguish between teachers with many years of experiences and teachers with less experience. Thus, there is no additional items that are needed [24]. Based on the analysis, teachers were categorised into four major classifications; teachers who always received supervision, teachers who received medium amount of supervision, teachers who received least amount of supervision and teachers who never received any type of supervision. In Figure 2 below, the item separation is higher than 3.0, which implies that the person sample is large enough to confirm the item difficulty hierarchy of the instrument [24]. In sum, both reliability values indicate a sufficient sample in determining the item difficulty index of each item [23, 25]. Items were classified into five classifications as too difficult, least difficult, answerable, easy and too easy to answer.

SUMMARY OF 357 MEASURED (EXTREME AND NON-EXTREME) PERSON									
	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT		OUTFIT		
					MNSQ	ZSTD	MNSQ	ZSTD	
MEAN	100.6	26.0	1.62	.42					
S. D.	12.2	.0	1.83	.15					
MAX.	130.0	26.0	8.78	1.84					
MIN.	130.0	26.0	-3.36	.27	.04	-6.4	.04	-6.3	
REAL RMSE	.50	TRUE SD	1.76	SEPARATION	3.50	PERSON RELIABILITY	.92		
MODEL RMSE	.44	TRUE SD	1.77	SEPARATION	4.00	PERSON RELIABILITY	.94		
S. E. OF PERSON MEAN = .10									

PERSON RAW SCORE-TO-MEASURE CORRELATION = .96
CRONBACH ALPHA (KR-20) PERSON RAW SCORE RELIABILITY = .95

Figure 1. Person's reliability

SUMMARY OF 26 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	1381.1	357.0	.00	.11	.97	-.9	1.00	-.8
S.D.	79.8	.0	.66	.01	.46	3.1	.60	3.4
MAX.	1482.0	357.0	1.84	.12	3.03	9.9	3.68	9.9
MIN.	1025.0	357.0	-1.04	.08	.65	-4.1	.59	-4.4
REAL RMSE	.11	TRUE SD	.65	SEPARATION	5.88	ITEM	RELIABILITY	.97
MODEL RMSE	.11	TRUE SD	.65	SEPARATION	6.13	ITEM	RELIABILITY	.97
S.E. OF ITEM MEAN = .13								

UMEAN=.0000 USCALE=1.0000
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.65

Figure 2. Items' reliability

5.3. The Person-Item Distribution Map

Using *Winsteps* application, the Rasch analysis was performed based on 357 feedbacks from secondary teachers. Given the Person-Item Distribution Map (PIDM), which illustrated in Figure 3, the person-item's distribution map has indicated teachers' abilities to response to the items' difficulty. Using the map which is produced by Rasch Measurement Model, 357 teachers were placed on the right side of the distribution map while all 26 items were plotted in the left side of the distribution map based on *logit* scale distribution. A "*logit*" scale was used to express item difficulty on a linear scale that extends from negative infinity to positive infinity [26]. Using the distribution map, $Mean_{item}$ was plotted and served as a threshold which indicates as zero value on the *logit* scale distribution. In this plot, items that are placed higher than the $Mean_{item}$ formally indicate that items were difficult items compared to items which plotted in lower than the $Mean_{item}$. On the left side, teachers' abilities are matched with item difficulty. If the right side of the map data showed higher than the left side, most of items were considered as difficult for teachers and vice-versa [27]. Based on item-person map, items that are labelled as CR5 and PR3 are considered as difficult items while four items, CR2, PR1, TC6 and TG3 are known as easy items. However, based on overall items and person distribution, the items' difficulties are matched with the teachers' abilities in answering all 26 items given in the questionnaire.

From Figure 3, data showed that Person mean value, $Mean_{person}$ was indicated at 1.62 threshold value while $Mean_{item}$ was indicated at 0.0 values. The highest teacher managed to score 8.78 logit and the lowest scored -3.32 logit. As for the item distribution, the most difficult item perceived by teachers is CR5 with 1.84 logit and the easiest item is noted at -1.04 logit. Based on the findings, a total of 11 items (PR3, RI2, RI4, CR3, RI3, RI5, TC2, TC1, TG2, and TG1) were found above the $Mean_{item}$ which indicated the secondary teachers' abilities in understanding and answering the given items in the questionnaires. Overall, it is assumed that the 26 items within the questionnaire were considered not that difficult

due to the teachers' abilities are above the items' difficulty. Based on the Rasch analysis, a total of 265 teachers (74.5 %) were above the $Mean_{item}$ and 37 teachers (10.5 %) were below the $Mean_{item}$. In conclusion, the items are aligned with teachers' abilities since most of 26 items were seen matching with teachers' abilities in responding and answering all items in the questionnaire. Thus, it is assumed that teachers could understand it well and answer all the questions correctly.

Based on the items-person distribution map which obtained from teachers' feedback towards the five constructs of CS concept, only 11 items were above the $Mean_{item}$ and another 15 items were located below the $Mean_{item}$. All findings which are related to items' plots and locations are presented in Table 2 below. From Table 2, most of items found difficult are related to reflective inquiry which has four items that scatted above the $Mean_{item}$ which are RI2, RI4, RI3 and RI5. As for collegial relations (CR) (CR3, CR5), teacher growth (TG) (TG1, TG2) and teacher collaboration (TC) (TC1, TC2) constructs, each construct has 2 items which fell above the $Mean_{item}$ and teacher's province construct has only one item which is PR3. There are 15 items that plotted below the $Mean_{item}$ which indicated that most items in the questionnaire were easy items compared to 11 items that situated above the $Mean_{item}$.

Table 2. Items' Plots

Constructs	Above the $Mean_{item}$	Below the $Mean_{item}$
Reflective inquiry (RI)	RI2, RI4, RI3, RI5	RI1
Collegial relations (CR)	CR3, CR5	CR1, CR2, CR4
Teacher collaboration (TC)	TC1, TC2	TC4, TC6, TC3, TC5
Teacher growth (TG)	TG1, TG2	TG3, TG4, TG5
Teacher's province (PR)	PR3	PR1, PR2, PR4, PR5
Total	items	15 items

5.4. Item's Fit and Dimensionality Analysis

Items' fit and misfit analyses were also conducted in this

section. In Figure 4, the findings show that one item from the questionnaire which did not fit with the measurement of RM. Item no 5 has min square (MNSQ) values outside the in-fit range of $0.4 < x < 1.5$ [24] which at 3.68 value. However, the remaining 25 items within this CS questionnaire were located within the acceptable range between 0.4 with 1.5.

Furthermore, items' dimensionality also was inspected and analysed using the principal component analysis

performed through *Winstep*. The expected values are obtained using Rasch measurement which require the measurement to explain at least 40% of raw variance, and that the unexplained variance in the first contrast should not be more than 15% [28, 29]. In Figure 5, the data disclosed a raw variance of 49.7% explained by measures. This value is low compared to the value of the model (51.7%). The 6.7 % of unexplained variance was accepted as it is less than the maximum value 15%.

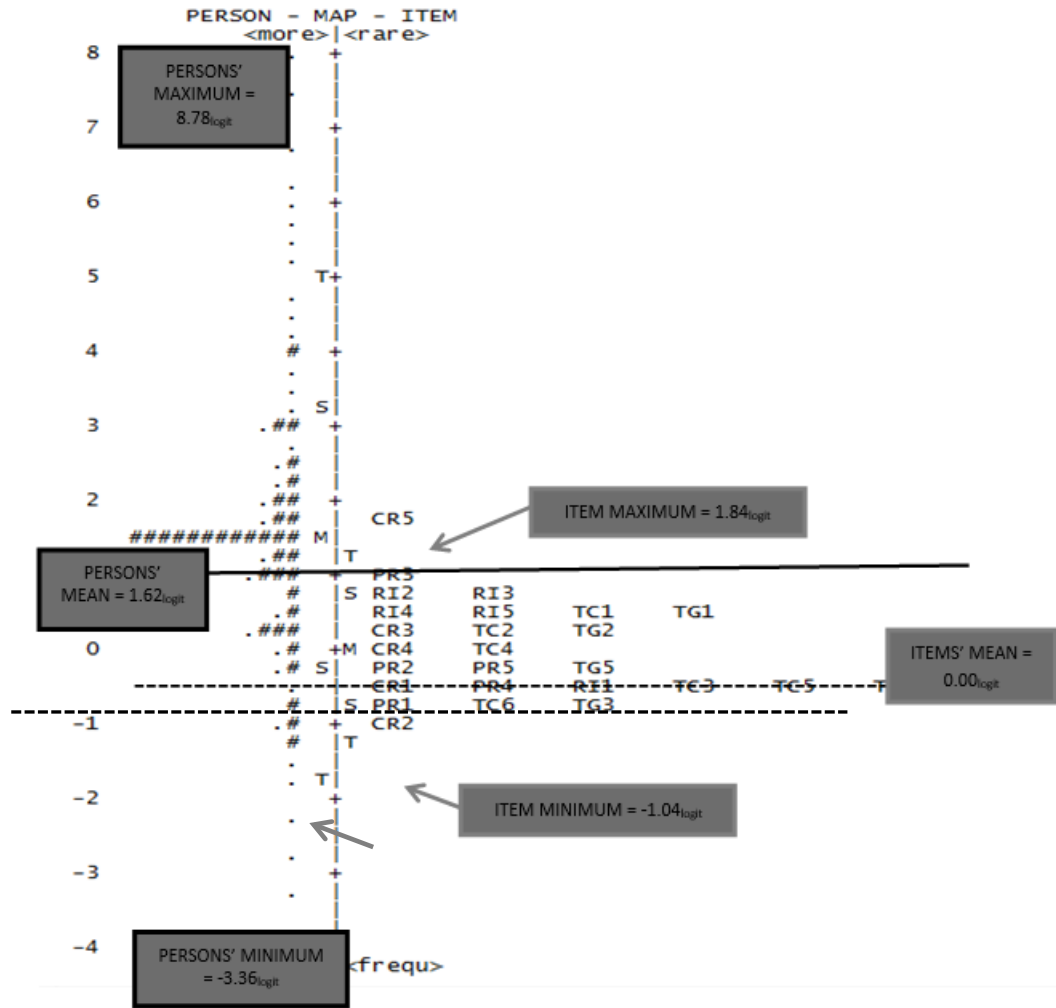


Figure 3. Person-Item Distribution Map.

ITEM STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL S. E.	INFIT		OUTFIT		PT-MEASURE		EXACT OBS%	MATCH EXP%	ITEM	G
					MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.				
5	1025	357	1.84	.08	3.03	9.9	3.68	9.9	.14	.74	28.0	54.8	CR5	0
8	1350	357	1.07	.10	.84	-1.9	.83	-1.8	.71	.65	77.1	70.5	PR3	0
24	1378	357	.72	.12	.71	-3.5	.65	-3.7	.75	.63	79.7	75.4	RI3	0
23	1375	357	.63	.11	.78	-2.7	.75	-2.9	.73	.65	78.8	72.0	RI2	0
11	1398	357	.51	.11	.76	-2.8	.70	-3.1	.73	.64	80.2	74.0	TG1	0
26	1380	357	.47	.10	1.19	2.3	1.18	2.0	.59	.66	64.4	67.5	RI5	0
25	1396	357	.43	.12	.72	-3.3	.62	-4.0	.74	.63	81.1	76.5	RI4	0
16	1407	357	.41	.12	.85	-1.6	.78	-1.9	.68	.63	81.6	78.2	TC1	0
17	1422	357	.34	.11	.65	-4.1	.59	-4.3	.76	.64	83.1	74.4	TC2	0
12	1422	357	.30	.11	.80	-2.1	.72	-2.7	.72	.64	80.5	75.9	TG2	0
3	1413	357	.23	.11	.98	-2	1.01	.1	.65	.64	74.0	72.7	CR3	0
19	1307	357	.07	.10	1.11	1.4	1.16	1.8	.61	.66	64.7	65.6	TC4	0
4	1443	357	-.02	.11	.83	-2.0	.79	-2.1	.69	.63	79.1	73.8	CR4	0
10	1352	357	-.16	.10	1.48	4.7	1.68	5.8	.48	.65	70.9	70.5	PR5	0
15	1349	357	-.19	.10	.92	-9	.94	-.6	.69	.66	75.7	68.6	TG5	0
7	1372	357	-.19	.09	1.03	.4	1.15	1.4	.64	.67	75.7	68.0	PR2	0
22	1394	357	-.40	.11	.75	-2.7	.68	-3.0	.72	.64	79.7	75.1	RI1	0
14	1365	357	-.47	.10	.93	-.7	.94	-.6	.68	.66	75.7	69.9	TG4	0
9	1373	357	-.48	.10	.76	-2.8	.70	-3.1	.74	.65	79.1	71.7	PR4	0
20	1388	357	-.56	.11	.73	-3.0	.66	-3.4	.74	.64	79.9	74.8	TC5	0
18	1418	357	-.60	.10	.67	-4.0	.60	-4.4	.76	.65	74.9	70.8	TC3	0
1	1452	357	-.60	.10	1.32	3.2	1.32	2.7	.55	.64	69.8	68.2	CR1	0
21	1409	357	-.72	.11	.79	-2.2	.75	-2.4	.71	.64	80.8	75.0	TC6	0
13	1417	357	-.78	.10	.68	-3.8	.62	-4.1	.76	.65	78.2	71.8	TG3	0
6	1422	357	-.81	.10	.99	-1	1.36	3.1	.64	.65	72.0	70.5	PR1	0
2	1482	357	-1.04	.11	.99	.0	1.03	.3	.61	.62	73.2	71.1	CR2	0
MEAN	1381.1	357.0	.00	.11	.97	-.9	1.00	-.8			74.5	71.4		
S. D.	79.8	.0	.66	.01	.46	3.1	.60	3.4			10.5	4.5		

Figure 4. Items' fit analysis

Table of STANDARDIZED RESIDUAL variance (in Eigenvalue units)

	Empirical	Modeled
Total raw variance in observations	51.7	100.0%
Raw variance explained by measures	25.7	49.7%
Raw variance explained by persons	17.0	32.8%
Raw variance explained by items	8.8	16.9%
Raw unexplained variance (total)	26.0	50.3%
Unexplned variance in 1st contrast	3.5	6.7%
Unexplned variance in 2nd contrast	2.3	4.4%
Unexplned variance in 3rd contrast	2.0	3.8%
Unexplned variance in 4th contrast	1.7	3.3%
Unexplned variance in 5th contrast	1.6	3.0%

Figure 5. Items' dimensionality

SUMMARY OF CATEGORY STRUCTURE. Model="R"
FOR GROUPING "0" ITEM NUMBER: 1 CR1

ITEM DIFFICULTY MEASURE OF -.60 ADDED TO MEASURES

CATEGORY LABEL	OBSERVED SCORE	OBSVD COUNT	SAMPLE %	INAVRGE	OUTFIT EXPECT	IN MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE
1	1	4	1	-.80	-2.19	2.58	4.65	NONE	(-3.81)
2	2	8	2	-.65	-1.08	1.46	2.10	-1.72	(-2.41)
3	3	43	12	.24	.15	1.07	1.11	-1.55	(-1.24)
4	4	207	58	1.32	1.32	.97	1.23	-.21	(1.07)
5	5	95	27	3.01	3.16	1.40	1.04	3.48	(3.99)

OBSERVED AVERAGE is mean of measures in category. It is not a parameter estimate.

Figure 6. Summary of the rating scale category structure

In addition, the communication validity which represents the structure calibration calculated from the rating scale used by the instrument (e.g. Likert scale) was examined. Rasch analysis helps to determine the validity of the scale used by 'zero setting' and calibrate the rating scale

used. Rasch analysis also verifies the probability of even spreading (i.e. equal interval) between the specified scale [30]. A summary of the rating scale category structure and structural measures at intersections are shown in Figures 6 and Figure 7.

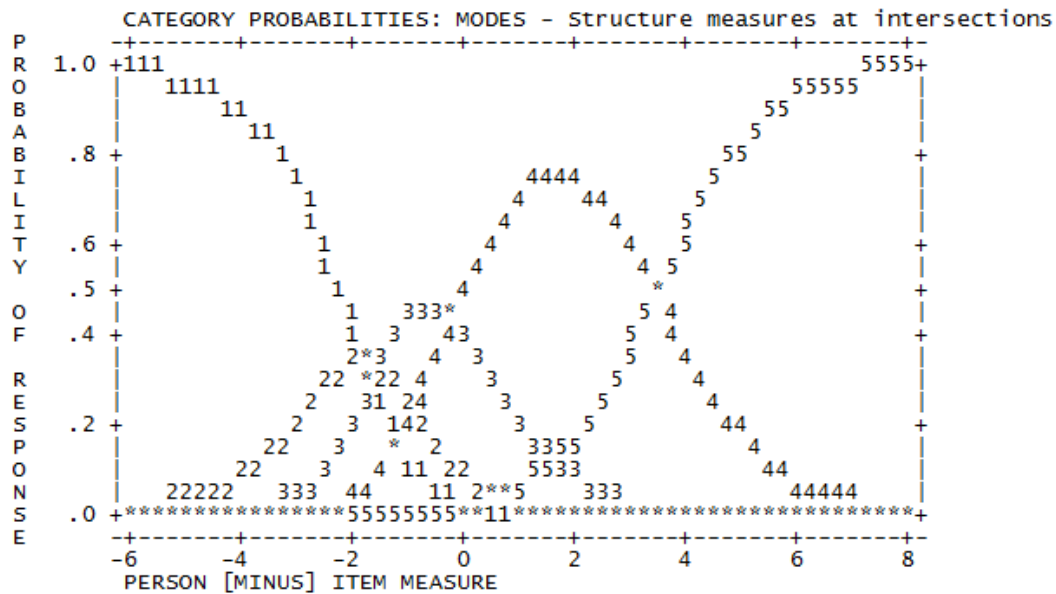


Figure 7. Structure measures at intersections.

Figure 6 demonstrates that the most answered response was rating scale 4, based on observed count of 207 (58%) which indicates that most teachers agreed on most of the 26 item statements within the questionnaire. On the contrary, the rating scale 1 had the lowest number of responses, with an observed count of 4 (1 %) which indicates least strongly disagree of teachers with reference to the 25 item statements.

Based on the findings, the pattern of the observed responses ranged between -2.19 *logit* and improved in one direction to +3.16 *logit*. This showed that the pattern of the teachers' responses is considered as normal due to the increase from negative to positive value. In this reliability analysis, the values of deviation between scale 1 and 2, 2 and 3, and 3 and 4 are 4.0, 4.0 and 4.5, respectively. These results confirmed the validity of the scales, indicating that items are differentiated by the teachers. In this sense, teachers clearly understood the difference between all scales. Also, they knew how to answer the questions by rating their answers through the given scales. This result confirmed that the validity of the structure calibration is rejected as the value of deviation is more than 1.4 and less than 5 ($1.4 < s < 5$) [23].

6. Discussion

In examining on the psychometrics elements of the collegial supervision practice items which are labelled as the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS), a total of 357 secondary teachers were asked to give feedback on the internal consistency of the SFCSMSS items. In the first phase, items were later analysed quantitatively using the Rasch analysis in determining the reliability of the items within the CS questionnaire. Later, secondary teachers' feedback was

analysed in measuring the items' internal consistency using the principal-component analysis, items -person distribution, fit and dimensionality analyses. In answering the objectives of the study, Rasch measurement model analysis was conducted throughout the study in determining the reliability analysis followed by principal-component analysis, items-person distribution, and later the fit and dimensionality analysis was performed and reported.

In determining the reliability analysis, the Rasch analyses indicated that items of the the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS) have indicated a suitable and acceptable values which are considered as acceptable, sufficient and have high consistency in measuring secondary teachers' collegial supervision practice. Based on the results, it showed that items from the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS) are considered acceptable and measuring the collegial practice among teachers in secondary schools in Malaysia. In fact, using the standard items of Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS), teachers' collegial practice can be examined and investigated. Based on the items' analysis, items analysis was separated into five three major classifications: Items were classified into five classifications as too difficult, least difficult, answerable, easy and too easy to answer items. As for the person separation, the Rasch analysis which was employed to analyse the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS) items has revealed that there are four major classification according the teachers' demographics; from senior teachers to novice or less experienced teachers. In addition, through the analysis, Rasch analysis also showed the segregation of teachers who have been supervised by their school administrators: teachers who always received supervision,

teachers who received medium amount of supervision, teachers who received least amount of supervision and teachers who never received any type of supervision. Through the analysis, results imply that the person sample is large enough to confirm the item difficulty hierarchy of the instrument [24]. In sum, both reliability values indicate a sufficient sample in determining the item difficulty index of each item [23, 25].

In investigating the second objective which is related to measurement of items psychometrics, these analyses were conducted which comprised the principal-component analysis, items-person distribution, and lastly inspecting the fit and dimensionality of the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS) items. From the Rasch's item and person distribution, 357 teachers were placed on the right side of the distribution map while all 26 items were plotted in the left side of the distribution map based on *logit* scale distribution. A "*logit*" scale was used to express item difficulty on a linear scale that extends from negative infinity to positive infinity [26]. Using the item-person distribution map, items and teachers' abilities in answering the items were matched in a distribution map. Through the logit scale, results indicated that only two items were classified as difficult items for teachers to provide feedback. Thus, items have higher abilities than teachers' abilities. In addition, four items are considered as easy items. Thus, 20 items are matched with teachers' abilities in answering the 26 items.

Additionally, a total of 11 items from the Rasch analysis were reported matched with secondary teachers' abilities in answering the items within the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS) items. Hence, it is assumed that items within the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS) items are considered as items that matched with teachers' abilities. Thus, it is assumed that teachers could understand it well and answer all the questions correctly. Through in-depth analysis on the items' descriptions, most difficult items were mostly from the reflective inquiry construct which has four items. However, another four constructs which are collegial relations, teacher growth, teachers' province and teacher collaboration have items that matched with teachers' abilities and items that below the teachers' abilities which are labelled as easy items. In measuring the items' fit and misfit analysis, only one item that reported did not matched with acceptable measurement of Rasch. Therefore, another 26 items are ranging within the acceptable values and range. Using the the principal component analysis, the variance that accounted are also reported the acceptable raw variance which also indicate the internal consistency of all 26 items on the Standard Framework of CS for Malaysian Secondary Schools' (SFCSMSS)

In this study, we are acknowledged on the limitation of the study. Firstly, the study is limited to the feedback provided by 357 secondary teachers. Therefore, the feedbacks are limited to the 357 secondary teachers which

did not represent the whole secondary teachers in Malaysian schools. In order to generalise the findings, it is suggested that future study to replicate the study with a larger sample size in order to obtain the overall perceptions of secondary teachers related to their practice of collegial supervision whether CS is considered beneficial their instructional tasks and enhance their competencies. The next limitation is related to the items used in the questionnaire which considered very simple and being analysed with descriptive statistics to determine the collegial practice within the secondary schools setting. As for future study, it is suggested to replicate the study with the other context of schools such as technical and vocational schools, religious-based schools, primary and even international schools which also practice the collegial supervision approach.

7. Conclusions

Based on the comprehensive analysis using *Winstep*, this study has established evidence that items measured the secondary school CS practice exhibited acceptable values in measuring the practice of CS across the sampled secondary schools. From these analyses, teachers are classified according to their abilities in answering all items in the questionnaire which reflected their performance in understanding and providing responses to the items within the questionnaire. Rasch analysis reached the conclusion that there is a linkage between items' difficulty with teachers' understanding across the 26 items in the questionnaire. Thus, Rasch analysis is considered as suitable analysis in measuring items difficulty that matched with teachers understanding and probability of teachers in providing responses to the provided scales. As such, Rasch analysis potentially provides researchers with mechanisms in monitoring respondents' categorisation.

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REFERENCES

- [1] Darling-Hammond, L. (2005). Teaching as a profession: Lessons in teacher preparation and professional development. *Phi Delta Kappan*, 87(3), 237–240.
- [2] Greene, M.L. (1992). Teacher supervision as professional development: Does it work? *Journal of Curriculum and Supervision*, 7(2), 131–148.

- [3] Wanzare, Z. and da Costa, J.L. (2000). Supervision and staff development: Overview of the literature. *NASSP Bulletin*, 84(618), 47–54.
- [4] Singh, P. and Manser, P.G. (2002). Collegiality in education: a case study. *South African Journal of Education*, 22(1), 56–64.
- [5] Hopfengardner, J.D. and Walker, R. (1984). Collegial support: An alternative to principal-led supervision of instruction. *NASSP Bulletin*, 68(471), 35–40.
- [6] Shah, M. and Abualrob, M.M. (2012). Teacher collegiality and teacher professional commitment in public secondary schools in Islamabad, Pakistan. *Procedia - Social and Behavioral Sciences*, 46, 950–954.
- [7] Sabharwal, M. (2011). Job satisfaction patterns of scientists and engineers by status of birth, *Research Policy*, 10 (6), 853-863.
- [8] Barth, R.S. (2006). Improving relationships within the schoolhouse. *Educational Leadership*, 63(6), 8–13.
- [9] Kelchtermans, G. (2006). Teacher collaboration and collegiality as workplace conditions. A review. *Zeitschrift für Pädagogik*, 52(2), 220–237.
- [10] Kligyte, G. and Barrie, S. (2014). Collegiality: Leading us into fantasy – the paradoxical resilience of collegiality in academic leadership. *Higher Education Research and Development*, 33(1), 157–169.
- [11] Miles, M.P., Shepherd, C.D., Rose, J.M. and Dibben, M. (2015). Collegiality in business schools. *International Journal of Educational Management*, 29(3), 322–333.
- [12] Shah, M. (2011). The dimensionality of teacher collegiality and the development of teacher collegiality scale. *International Journal of Education*, 3(2), 1- 20.
- [13] Rasit, R.A. (2007). Teaching and learning practices at primary schools at central Malacca district. Unpublished master dissertation, Universiti Teknologi Malaysia.
- [14] Taib, M.R., Abdullah, Z., Mat Ail, N.M., Mat Jusoh, N., and Yahya, M.R. (2015). Clinical supervision of teaching Mara Junior Science College (MJSC) in northern zone of Malaysia. *Procedia-Social Behaviour*, (191), 452 – 458.
- [15] Zepeda, S.J. (2007). *Instructional Supervision: Applying Tools and Concepts*. Eye on Education. Routledge.
- [16] Glatthorn, A.A. (1984). *Differentiated Supervision*. Alexandria: ASCD.
- [17] Hammersley-Fletcher, L. and Brundrett, M. (2008). Collaboration, collegiality and leadership from the head: The complexities of shared leadership in primary school settings. *Management in Education*, 22(11), 11–16.
- [18] Sergiovanni, T. & Starratt, R.J. (2002). *Supervision: a redefinition*. Boston: McGraw-Hill.
- [19] Teddlie, C. and Yu, F. (2007). Mixed Methods Sampling: A Typology with Examples. *Journal of Mixed Methods Research*, 1(1), 77–100.
- [20] Creswell, J.W. (2012). *Educational Research: Planning, Conducting, And Evaluating Quantitative and Qualitative Research*. Boston: Pearson.
- [21] Dillman, D. A., Smyth, J. D. and Christian, L. M. (2009) *Internet, mail and mixed-mode surveys: The tailored design method*. Hoboken, N.J: John Wiley & Sons.
- [22] Baruch, Y. and Holtom, B.C. (2008). Survey response rate levels and trends in organizational research. *Human Relations*, 61(8), 1139–1160.
- [23] Bond, T. G., and Fox, C. M. (2015). *Applying the Rasch model: Fundamental Measurement in the Human Sciences (3rd ed.)*. Mahwah, NJ: Erlbaum.
- [24] Linacre, J. M. (2016). Winsteps® (Version 3.92.1) [Computer Software]. Beaverton, Oregon.
- [25] Kathy, E.G. and Catherine, G.F. (2002). Survey development and validation with the Rasch model. A paper presented at the International Conference on Questionnaire Development, Evaluation, and Testing, Charleston, SC, November 14-17.
- [26] Boone, W.J., Staver, J.R., and Yale, M.S. (2014). *Rasch Analysis in the Human Sciences*. Netherlands: SpringerLink
- [27] Rozeha, A. R., Azami, Z. and Mohd Saidfudin, M. (2007). Application of Rasch Measurement in Evaluation of Learning Outcomes: A Case Study in Electrical Engineering. Paper published at the Regional Conference on Engineering Mathematics, Mechanics, Manufacturing and Architecture (EM3ARC).
- [28] Azrilah, A.A., Azlinah, M., Azami, Z., Sohaimi, Z., Hamzah, A. G., and Mohd Saidfudin, M. (2008). Evaluation of Information Professionals Competency Face Validity Test Using Rasch Model. Paper presented at the 5th WSEAS / IASME International Conference on Engineering Education (EE'08). July 22-24.
- [29] Azrilah A.A., Nuraini, K., Khairul Anwar, Azami, Z. and Siti Hanani, M.Y. (2012). A Rasch Analysis on Total Learning Experience of UKM Engineering Students. *International Educational Studies*, 6(6), 202 – 212.
- [30] Perkins, H. W. (2002). Surveying the damage: A review of research on consequences of alcohol misuse in college populations. *Journal of Studies on Alcohol*, 14, 91–100.
- [31] Dixon-Houston, MI. (2012). Collegiality and instructional Supervision: A case study of relationships in the context of walkthrough observations in six rural South Carolina schools. Doctoral dissertation, University of South Carolina.
- [32] Hareesol Khun-Inkeeree, Mohd-Hibatul-Hakimie Mahmood, Siti-Saadiah Haji-Mohd-Noor, Muhammad Dzahir Kasa, Mohd Faiz Mohd Yaakob, M. S Omar-Fauzee, Fatimah Noor Rashidah Mohd Sofian. (2020). Increasing teachers' self-efficacy through regular teaching and learning supervision. *Universal Journal of Educational Research* 8(7): 3002-3013.
- [33] H. Khun-inkeeree. P. D. Dali. Y. Daud, M.S.B.O. Fauzee, R. Khalid. (2018). Effects of Teaching and Learning Supervision on Teachers Attitudes to Supervision at Secondary School in Kubang Pasu District, Kedah. *International Journal of Instruction*, 12(1), 1335-1350.
- [34] Aktas, B.C. (2018). Assessment of induction to teaching program: Opinions of novice teachers, mentors, school administrators. *Universal Journal of Educational Research* 6(10): 2101-2114.

The Relationship between University Lecturers' Behaviour and Students' Motivation

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Abstract Many studies reported that the way in which lecturers behave with the college-going students affects those students' overall development. Unfortunately, most of the studies related to the influence of lecturers' behaviour on students' development were conducted either in developed or developing countries. There were very limited studies focusing on the influence of lecturers' behaviour on students' development, conducted in developing countries, particularly a country which experienced prolonged war and instability. This quantitative study fulfilled this gap by examining the perceptions of lecturers on the relationship between the lecturer's behaviour and student's motivation. A 5-point Likert-scale questionnaire was used for data collection. The questionnaire was delivered to all lecturers in Takhar University, a very small university in Afghanistan. From a total of 180 questionnaires delivered, only 151 completed and usable questionnaires were returned for further analysis. The data were analysed using the SPSS. The analysis of data indicated that regardless of education levels and the country's rate of development and stability, lecturers' perceptions have a significant influence on lecturers' behaviour and students' motivation. The findings also revealed that the different age categories of the lecturers and their behaviours influenced tertiary education students' motivation differently. It can be concluded that higher education administrators must focus their attention on ensuring that the institutions hire lecturers from different age categories and outstanding behaviour to better influence students' motivation.

Keywords Lecturer's Behaviour, Student's Motivation, Student's Achievement, Academic Achievement

1. Introduction

Different individuals demonstrate different behaviours in a particular situation they are faced with. Positive behaviours can stimulate others to interact and change their low performance, while negative behaviour may cause people to avoid doing things and change the situation (Scheerens, 2016). Similarly, in higher education institutions, lecturers' attitudes and behaviours may influence students' motivation (Misbah et al., 2015). When the lecturers demonstrate positive attitudes, students may become motivated to learn. Similarly, when the lecturers behave aggressively, the students may be demotivated and stop learning (Bhat & Khandai, 2015).

As a role model, some characteristics of lecturers' behaviour influence their students. These lecturers' characteristics may include personality, character, manner of interaction, teaching methods frequently employed and way of life (Doménech-Betoret & Gómez-Artiga, 2014). The behaviours of lecturers may positively or negatively affect students' motivation and learning. This behavioural influence has different outcomes on students' motivation depending on their surroundings (Leoanak & Amalo, 2018).

Behaviour can be demonstrated in different forms

including professional behaviour, communicational behaviour, and physical behaviour. Professional behaviour is related to the workplace and profession. In higher education context, it focuses on how lecturers conduct their instructions and communicate with their students, colleagues and management (Etuk, Afangideh & Uya, 2013). Communicational behaviour relates to a psychological concept that influences a person's thinking and feelings through expression. It is the situation in which a person expresses his or her thought or idea by communicating and interacting with others. In higher education context, behavioural communication is the way lecturers interconnect and communicate with their stakeholders (Ampadu, 2012).

Physical behaviour refers to the actions and arrangements which a person individually performs in a certain scenario. These actions may include exercising, sleeping and any other interactions which are performed in the workplace. Explicitly, a lecturer's physical behaviour may involve the way of interaction, dressing up, being anxious, considering all students equally, and any other actions (Fuhrmann, 2014).

Finally, a lecturer's interpersonal behaviour refers to a psychological approach which directly influences students' motivation. Lecturers' behaviour in this category may include enthusiasm, reward, personal interest and experience, self-esteem, and way of interaction and involvement in educational programmes (Doménech-Betoret & Gómez-Artiga, 2014). In this category of behaviour, students may come to class with different levels of motivation. However, lecturers' teaching styles, attitudes and social skills may affect students' learning and motivation. Therefore, lecturers need to behave accordingly with students to improve their learning interests.

Behaviour is affected by the attitudes of the people. Motivation helps students to achieve their goals and improve their learning (Zeynali et al., 2019). There are two types of motivation: intrinsic and extrinsic motivation. Intrinsic motivation comes from the person himself; for example, a student might have the desire to learn something to achieve his or her life goal. Extrinsic motivation comes from what a student sees around himself or herself and that which affects his or her way of learning (Doménech-Betoret & Gómez-Artiga, 2014). Higher motivation increases satisfaction among the students while lack of motivation has negative consequences. Tygrest (2017) found that teacher's behaviour and teaching style affect students' motivation and way of learning. This indicates that motivation is a driving force for students to try harder. It may also provoke the students to work smarter in achieving their goals. Kuo et al. (2019) noted that motivation increases creativity, knowledge, skills, collaboration and learning.

Many studies have examined lecturers' behaviours and its influence on students' motivation. Rodabaugh (1994), for example, examined lecturer behaviours to create an

atmosphere of fairness in classroom teaching. The study explored misbehaviours of lecturers that were related to interactional fairness and procedural fairness. The study revealed that misbehaviours related to interactional fairness and procedural fairness were more damaging than giving excessive work or providing dull and boring lectures to the students. Friedman et al. (2005) examined student perceptions towards the ethics of professors and found that there was no difference between students who took a course in ethics and those who did not, in their perception towards ethical or unethical behaviours of professors. The study, however, found that male and female students have different perceptions with regard to ethical behaviours of professors. Frumkin and Murphy (2007) examined Eastern and Western students' perceptions of lecturers' classroom communication style. They found that lecturers' communication styles have differential effects on their students based on gender and culture. They noted that Eastern and Western students rated the same teachers as having different communication patterns.

Stork and Hartley (2009) found that lecturers' poor behaviours have serious consequences on the student's motivation and academic achievement. Some lecturers may choose easy ways to teach the students and do not involve them enough in the learning. Such attitudes badly affect students' motivation (Ali et al., 2009). Malaimak (2010) indicated that lecturers' behaviours can be improved through trainings and capacity building programmes.

Stork and Hartley (2011) examined the perceptions of Chinese and American students regarding lecturers' classroom behaviours. They revealed that Chinese students are more tolerant than American students towards offensive lecturers' behaviours. For American students, competence and respect towards individuals are behaviours important to them while for Chinese students, fulfilment of the role of lecturers' behaviours are important to them. This study indicated that students bring differing expectations and deep cultural foundations to the classroom.

Nambiar et al. (2011) examined Malaysian students' and lecturers' perceptions of good teaching behaviours. They found that students focused more on the lecturers' organization of lecture and the level of interactivity than other variables. Samian and Md Noor (2012) examined Malaysian university students' comments regarding the standards, quality, preparedness, and personality of the lecturers in addition to other usual rating criteria. They found that students' comments correlated with their overall assessment of lecturers' behavioural teaching performance and the ability to deliver lectures effectively. Rahman (2013) found that lecturers' positive behaviour and teaching style influence students' learning. Lecturers' good habits and attitudes inspire students to follow a proper map of learning and improve their achievement (Fuhrmann, 2014).

Britto (2018) investigated the impacts of nonverbal

behaviours of professors on multicultural students in the United States. She revealed that all students are impacted by the professors' nonverbal behaviours. Zeynali et al. (2019) found that the Iranian university lecturers' attitudes and behaviours affect students' intrinsic and extrinsic motivation. They commented that lecturers need to pay more attention to their behaviours and attitudes to improve students' achievement.

The aforementioned studies were conducted either in developed or developing countries with stable governments. With the exception of studies by Esmaily et al. (2010) and Sabri (2019), limited studies have been conducted in Afghanistan context that focused directly on lecturers' behaviour. This limitation is understandable as there are serious challenges facing higher education system in Afghanistan resulting from prolonged war and instability of the government (Roof, 2015; Kuek et al., 2014). Despite the progress it has made, Afghanistan lingers as one of the least developed countries in the world (Crane & Rerras, 2009), with very low enrolment ratios in higher education (Aturupane, 2013). The prolonged war and instability, low level of female participation, and high ethnic polarization, seriously impact the higher education system of Afghanistan (Aturupane, 2013; Barakat, 2002). Traditional teaching employed by Afghanistan lecturers intensified the influence of lecturers' behaviours towards students. Despite the low-quality instruction, Afghanistan lecturers still enjoyed high social status in the society and among students (Esmaily et al., 2010). Unfortunately, this cultural value oftentimes was abused by the lecturers. Lecturers employed rote learning and lecturer-centred education, thus taking full control of delivering the lessons (Sabri, 2019).

The current study fulfils these gaps by examining the lecturers' perceptions of the influence of their behaviour on students' motivation in an Afghanistan public university.

2. Methodology

This study was conducted at Takhar University, a small university located at Toloqan City, northern part of Afghanistan, with a total population of 180 lecturers. Like other universities, this university was closed during Taliban administration and was only re-established in 1995. Each lecturer is expected to teach between 15-20 hours per week. Due to the prolonged war and cultural issues, the quality of Afghanistan higher education is severely affected. After 1995 initiatives were put to reduce disparity among ethnic groups including accepting students and lecturers from different cultural and language groups, such as Tajik, Uzbek, and Pashton.

This study employed a questionnaire adapted from Shah (2009) for data collection. The questionnaire contains three sections: section A for demographic of the respondents,

and sections B and C with with 5-point Likert-Scale questions related to behaviours and student motivation. The questionnaire was piloted on 25 randomly selected lecturers from other universities in Afghanistan before conducting the actual research. These pilot study participants were not included in the actual study. The questionnaire was modified based on the comments received in the pilot study stage. The reliability index for the items in Parts B and C are $\alpha = 0.91$ and $\alpha = 0.81$ respectively, and overall questionnaire is $\alpha = .93$, which is a very high reliability value.

3. Results

The questionnaire was distributed to all 180 lecturers during several faculty meetings. Despite many calls, only 151 questionnaires were returned, completed and usable for analysis. The data analysis was carried out with the aid of SPSS version 25. Table 1 indicates the demographic of the respondents: gender, highest education level, age range, and length of teaching experience.

Table 1. Demographic Analysis of the Respondents

Demographic Information	Frequency	Percentage
Gender	Male	90%
	Female	10%
	Total	100%
Education	Bachelor	19%
	Master	79%
	PhD	2%
	Total	100%
Age	20-25	7%
	26-30	46%
	31-35	30%
	36 and above	18%
	Total	100%
Teaching Experience	0-5 Years	48%
	6-10 Years	34%
	11-15	7%
	16 and above	10%
	Total	100%

Table 1 shows that male lecturers are the big majority (90%) while female lecturers are the minority (10%). Nearly 80% possess a master's degree, 20% possess a bachelor's degree, while only 2% have a PhD degree. A huge majority of participants belong to the category of '26 to 35 years old' range and majority have less than 10 years of teaching experience.

Table 2. Descriptive Statistical Analysis for Lecturers' Behaviour

Behaviour of Lecturers	
Category of Behaviour	Mean
Professional Behaviour	4.03
Physical Behaviour	4.28
Communicational Behaviour	4.65
Overall Mean	4.41

Table 2 shows three categories of lecturers' behaviours. The overall mean of lecturers' behaviours is 4.41 which shows that all lecturers have positive attitude. Table 2 also shows that lecturers' communicational behaviour has the highest influence on students as compared to physical and professional behaviours.

Table 3. Motivation of the Students

Motivation	Mean
Student Motivation	4.55

Table 3 indicates the mean of student motivation from the perspective of the lecturers. The analysis shows that lecturers perceived that students have high motivation to learn.

Table 4 shows the result of Spearman correlational analysis. The analysis indicates that the significance level (Alpha value) is $p=.0001$ which is less than 0.05 (significance level) for both lecturers' behaviour and students' motivation. This study revealed that the lecturers perceive that their behaviours have a moderate significant correlation with their students' motivation.

4. Discussion

This study investigated the relationship between lecturers' behaviour and students' motivation from the

perspective of lecturers of a small university in Afghanistan, an underdeveloped country tormented by decades of war and instability of political situations. This prolonged war and government instability influenced the quality of higher education where lecturers have limited opportunities to further their studies and very small number of females admitted to the teaching positions (Baharustani, 2012; Taheryar, 2017). This evidence is clearly shown in Table 1 where this is only a very small fraction of lecturers with terminal degrees.

Lecturers' behaviours are the way the lecturers treat and interact with students, colleagues and anyone in higher educational institutions. Despite the low quality of instruction and diverse minority ethnic group issues, the lecturers have the perceptions that their professional behaviours, including the way they teach their students and treat them, affect the students' motivation to learn. The lecturers believed that when they go to lectures with a happy mood and adequate knowledge of subject matter, the students will be motivated and encouraged to learn. This indicates that despite the low-quality instruction, the lecturers may have changed the commonly rendered culture of teaching and learning approaches to produce knowledgeable and skilful graduates (Zakaria, 2017). This may include trying out a critical way of teaching pedagogy, including trying out one form of service-learning programmes which is evidently practical and useful for technical training colleges in Pakistan to employ (Said et al., 2015; Iqbal et al., 2019). The lecturers also believed that they must get themselves adjusted with the usual situation of the university and try to learn new knowledge and transfer it to their students. This perception shows that the lecturers may have indirectly played the role of academic advisors in dealing with minority ethnic groups of students as suggested by Van et al. (2015). With appropriate knowledge and skills in academic advising the lecturers will be better prepared to deliver their instructions.

Table 4. Inferential Statistical Analysis for Spearman Correlational Test

		Students' Motivation	Lecturers' Behaviour
Student's Motivation	Correlation Coefficient	1	0.568**
	Sig. (2-tailed)	.	0.000
	N	151	151
Lecturer's Behaviour	Correlation Coefficient	.568**	1
	Sig. (2-tailed)	0.0001	.
	N	151	151

The lecturers also perceived that the knowledge and the behaviour that they demonstrate affect on students' outcome. There is high possibility that the behaviour and knowledge they delivered became the motivators that provoked the students to regard their lecturers as role models. This is especially relevant when the lecturers reported that they make their teaching effective by employing diverse teaching techniques and methods. It is also possible that the lecturers have employed various assessment methods including self-assessment and peer-assessment as ways to enhance learning (Machera, 2017). The lecturers perceived that their effective teaching and positive behaviours inspire students to learn better and improve their performance (Sheerens, 2016). The lecturers' positive behaviours enhanced students' learning and development outcomes as proposed by Van et al. (2016a). Van et al. (2016a) reported that students who are clear regarding the learning and development outcomes of advising valued their education and advising programmes better.

The lecturers perceived that their professional behaviours help students to be motivated. The study showed that the lecturers are of the perception that they rendered advice to students regarding their academic problems, for example by giving valuable life examples and assistance in setting up learning goals. This behaviour of advising students matches with the academic advising standard proposed by Van et al. (2016b), which leads to students being motivated to continue learning. In addition, the lecturers also perceived that they demonstrated the behaviours of honesty, diligence, integrity, respect and good ethics which play a significant role in students' learning motivation. This indicates that lecturers perceived that their professional behaviours impact their students. This finding echoes of Orfan (2020) who stated that positive behaviour improves students' motivation. Thus, it can be concluded that professional behaviour of the lecturers plays an important role in the motivation of the students.

The prolonged war and violence make people behave aggressively. Thus, the lecturers are of the perception that negative behaviour may cause students to stop or reject learning, but in situations where respect and good environment are present, students are eager to learn. This perception coincides with the famous saying in Persian language that says: When the lesson of the teacher is whisper of love, children who regularly skip school will come to school even on Friday. This indicates that lecturers' behaviour affects students' motivation to learn.

As stated at the outset lecturers' physical behaviour is the way lecturers physically interact with students. In this study, the lecturers perceived that their physical behaviours play a very important role in student's motivation and learning outcome. They believed that good physical behaviours of the lecturers make the students feel welcome, important and valued, and in consequence, they will be

encouraged and motivated to work harder and improve their performance. The behaviours of the lecturers in less developed countries may be different as compared to developed countries. Nevertheless, the lecturers admitted that their negative behaviours may affect students' motivation negatively. It can be stated here that lecturers in Takhar University take disciplinary actions to instruct the students rather than to punish them. It is also possible the university management have shifted emphasis on entrepreneurship just like other universities in the world by asking lecturers to include entrepreneurship elements in their courses (Said et al., 2015a). With these changes then they are of the perception that their behaviours must be positive towards the students. In conclusion, lecturers' good physical behaviour encourages students to improve their learning outcome.

This study also revealed that the lecturers' communicational behaviour inspires the students to improve their academic achievement. Communicational behaviour of the lecturers is the way they verbally interact with the students and colleagues. It is how lecturers answer students' questions, present their lectures and how patient they are with the students. It is a psychological concept that influences students' way of learning, thinking and feeling. The finding of this study supports the study of Ampadu (2012) who indicated that lecturers' communicational behaviour affects students' thinking and motivation. The lecturers perceived that they listen to their students' questions and guide them with their problems. This kind of actions shows that lecturers have positive communicational behaviours with the students. In addition, lecturers perceived that they maintain students' attention and interest in the classroom through effective communication skills, by employing different motivational techniques to inspire their students and providing opportunities for students to ask questions in the class and improve their learning motivation. As a comparison of the perception of different categories of behaviour, lecturers' communicational behaviour is the most commonly demonstrated behaviours to students as compared to professional and physical behaviours. On average, lecturers' behaviour in Takhar University with regard to the students is positive.

The study also revealed that there is a positive significant correlation between lecturer's behaviour and student's motivation. This finding is in tandem with studies of Abdullah et al. (2015), Hein (2012), Loes et al. (2012), and Uluga and Eryilmaz (2011) which reported that there is high correlation between lecturers' behaviours and students' motivation. Lecturers' positive attitudes and teaching style improve students' outcome and learning motivation. In conclusion, lecturers believed that their positive behaviours have strong influence on students' motivation and way of learning.

The study found no significant difference in the perception of male and female lecturers regarding the

influence of their behaviour on students' motivation and on education levels. The study, however, revealed that there is a significant difference in the perception of lecturers regarding the influence of their behaviour on students' motivation across different age categories.

5. Conclusion

Higher education in Afghanistan has been badly affected by prolonged war and government instability. This prolonged war and government instability have caused developmental problems in the country's high education system particularly its quality. Thus, the current government of Afghanistan needs to pay more attention to the quality of higher education by ensuring that it is comparable with higher education in neighbouring countries and the rest of the world. This can be done if the government can render more autonomy to the university. Additionally, the university leadership must put much of their efforts on the internationalization of higher education (Said et al., 2015a).

This study investigated the perceptions of lecturers regarding the influence of their behaviour on students' motivation in Afghanistan. The study revealed that lecturers are of the perception that their behaviours have a strong effect on the students' motivation. Motivation helps students to engage in learning and improve their achievement. For this reason, in high-quality educational system, much attention must be paid to students' motivation and learning outcomes.

Future researchers may find this study significant since there were limited studies exploring the relationship between lecturers' behaviour and students' motivation in higher education in Afghanistan and the rest of the world. This study adds value to the Afghanistan context, since most studies were conducted either in developed countries or developing countries. Higher education administrators, lecturers and educators might find it useful to study the importance of lecturers' behaviours.

Higher education leaders should pay more attention to the improvement of lecturers' behaviours so that the students are engaged and motivated to learn. This study is important as it addressed categories of lecturers' behaviours namely professional, physical and communicational behaviours. The study revealed that students in higher education institutions are highly affected by the behaviours of their lecturers.

The finding of the study shows that lecturers' behaviours play an important role in improving students' motivation and academic achievement in Afghanistan universities. It is generalized that a lecturer's positive behaviour motivates the students to engage in the learning and improve their performance. In conclusion, some lecturers are regarded as role models for some students in higher education institution because of their positive behaviours.

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REFERENCES

- [1] Abdullah, M. C., Teoh, H. C., Roslan, S., & Uli, J. (2015). Student engagement: Concepts, development and application in Malaysian universities. *Journal of Educational and Social Research*, 5(2), 5–15.
- [2] Ahmad, I., Said, H., & Mohamad Nor, F. (2019). Exploring outcomes of service-learning participation: Evidence from Pakistan. *Malaysian Journal of Learning and Instruction*, 16(2), 125-154.
- [3] Ali, A., Tariq, R. H., & Topping, J. (2009). Students' perception of university teaching behaviours. *Teaching in Higher Education*, 14(6), 631–647.
- [4] Ampadu, E. (2012). Students' perceptions of their teachers' teaching of mathematics: The case of Ghana. *International Online Journal of Educational Sciences*, 4(2), 351-358.
- [5] Aturupane, H. (2013). *Higher education in Afghanistan: An emerging mountain scape*. Washington, DC: The World Bank.
- [6] Baharustani, R. (2012). *Comprehensive study of higher education in Afghanistan*. Research and Planning Department.
- [7] Barakat, S. (2002). Setting the scene for Afghanistan's reconstruction: The challenges and critical dilemmas. *Third World Quarterly*, 23(5), 801-816. doi: 10.2307/3993389
- [8] Bhat, Y. I., & Khandai, H. (2015). Academic achievements and study habits of college students of District Pulwama. *Journal of Education and Practice*, 6(31), 1-6.
- [9] Britto, J. (2018). The study of multicultural students' perception of professors' nonverbal behaviour in the classroom. Master of Arts Thesis. University of Rhode Island, USA.
- [10] Crane, M., & Rerras, T. (2009). It becomes a river: Afghanistan at a crossroads. *World Policy Journal*, 26(1), 95-104.
- [11] Doménech-Betoret, F., & Gómez-Artiga, A. (2014). The relationship among students' and teachers' thinking styles, psychological needs and motivation. *Learning and Individual Differences*, 2(9), 89–97.
- [12] Esmaeily, A., Pahwa, A., Thompson, J., & Watts, D. (2010). *AC 2010-2354: Challenges and opportunities in strengthening higher education in Afghanistan*. Kansas: American Society for Engineering Education.
- [13] Etuk, E. N., Afangideh, M. E., & Uya, O. A. (2013). Students' perception of teachers' characteristics and their attitude towards Mathematics in Oron Education Zone, Nigeria. *International Education Studies*, 6(2), 197-204.

- [14] Friedman, H. H., Fogel, J., & Friedman, L. W. (2005). Student perceptions of the ethics of professors. *Electronic Journal of Business Ethics and Organization Studies*, 10(2), 10-15.
- [15] Frumkin, L. A., & Murphy, A. (2007). Student perceptions of lecturer classroom communication style. *European Journal of Social Sciences*, 5(3), 45-60.
- [16] Fuhrmann, B. G. (2014). Students' perception of teaching behaviour and its effect on evaluation. *International Journal for Cross-Disciplinary Subjects in Education*, 5(1), 1557-1563.
- [17] Hein, V. (2012). The effect of teacher behaviour on students motivation and learning outcomes: A review. *Acta Kinesiologiae Universitatis Tartuensis*, 18, 9-19.
- [18] Kuek, J. C., Velasquez, R. J., Castellanos, J., Velasquez, D. R., & Nogales, E. (2014). Hunger for an education: A research essay on the case of South Sudan and the voices of its people. *FIRE: Forum for International Research in Education*, 1(2), 22-31.
- [19] Kuo, H. C., Tseng, Y. C., & Yang, Y. T. C. (2019). Promoting college student's learning motivation and creativity through a STEM interdisciplinary PBL human-computer interaction system design and development course. *Thinking Skills and Creativity*, 31(18), 1-10.
- [20] Leoanak, S. P. P., & Amalo, B. K. (2018). Teacher's behaviour towards students' motivation practice. *Global Conference on Teaching, Assessment, and Learning in Education (GCTALE 2017)*, 42, Article No. 00078.
- [21] Loes, C. N., Saichaie, K., Padgett, R., & Pascarella, E. (2012). The effects of teacher behaviours on students' inclination to inquire and lifelong learning. *International Journal for the Scholarship of Teaching and Learning*, 6(2), 1-20.
- [22] Machera, R. P. (2017). Teaching intervention strategies that enhance learning in higher education. *Universal Journal of Educational Research*, 5(5), 733 - 743. Doi: 10.13189/ujer.2017.050505.
- [23] Malaimak, M. N. (2010). Students' perception towards English teacher's interpersonal communication skill at SMP Negeri 3 Kupang. *Journal of Education and Learning*, 10(4), 382-389.
- [24] Mehdipour, Y., & Baramulu, D. (2013). The influence of teacher's behaviour on the academic achievement. *International Journal of Advancements in Research & Technology*, 2(5), 217-224.
- [25] Misbah, Z., Gulikers, J., Maulana, R. & Mulder, M., (2015). Teacher interpersonal behaviour and student motivation in competence-based vocational education: Evidence from Indonesia. *Teaching and Teacher Education*. 50, 79-89.
- [26] Mustafa, J., Mohammad Zayed, N., & Islam, S. (2018). Student's perception towards their lecturer's behaviour: A case study on the undergraduate students of Daffodil International. *International Journal of Development and Research*, 8(10), 23387-23392
- [27] Nambiar, R. M. K., Gill, S. K., Ibrahim, N. M., & Tan, K. H. (2011). Students and lecturers' perceptions of what constitutes effective teaching behaviour in a university. *The Journal of Asia TEFL*, 8(3), 29-53.
- [28] Orfan, S.N. (2020). Afghan undergraduate students' attitudes towards learning English. *Cogent Arts and Humanities*, 7(1), 2331-1983.
- [29] Rabae'i, S. (2014). Influence of personality on academic achievement and performance of teaching practices students in TVET. *Developing Country Studies*, 4(16), 60-65.
- [30] Rahman, M. M. (2013). Quality higher education and students' perception: A study on private universities of Bangladesh. *Global Disclosure of Economics and Business*, 2(1), 9-19.
- [31] Rodabaugh, R. C. (1994). College students' perceptions of unfairness in the classroom. *To Improve the Academy*, 319, 269-282.
- [32] Roof, D. J. (2015). Day-by-day: Higher education in Afghanistan. *FIRE - Forum for International Research in Education*, 1(3), 64-80.
- [33] Sabri, A. (2019). Afghan students' academic experiences and cultural adjustment in the United States. *Capstone Collection*. 3191.
- [34] Said, H., Ahmad, I., Hassan, Z., & Awang, Z. (2015). Service-learning as critical pedagogy: Implications for student community awareness and citizenship development. *Mediterranean Journal of Social Sciences*, 6(2), 471-478.
- [35] Said, H., Ahmad, I., Mustaffa, M. S., & Ghani, F. A. (2015a). Role of campus leadership in managing change and challenges of internationalization of higher education. *Mediterranean Journal of Social Sciences*, 6(4S1), 82-88.
- [36] Said, H., Ahmad, I., Yusof, M.A. M., & Jusoh, A. (2015b). Assessing the role of higher education in developing social entrepreneurship in Malaysia: A review of literature. *Mediterranean Journal of Social Sciences*, 6(2), 583-587.
- [37] Samian, Y., & Md Noor, N. (2012). Students' perception on good lecturer based on lecturer performance assessment. *Procedia - Social and Behavioural Sciences*, 56(2012), 783 - 790.
- [38] Scheerens, J. (2016). Theories on educational effectiveness and ineffectiveness. In J. Scheerens (eds.), *Educational effectiveness and ineffectiveness: A critical review of the knowledge base* (pp. 259-289). Dordrecht: Springer.
- [39] Shah, S. S. A. (2009). Impact of teachers behaviour on the academic achievement of university students. *Journal of College Teaching & Learning*, 6(1), 69-74.
- [40] Stork, E. & Hartley, N.T. (2009). Classroom incivilities: Students' perceptions about professors' behaviours. *The Journal of Contemporary Issues in Education Research*, 2(4), 13-24.
- [41] Stork, E., & Hartley, N. T. (2011). A comparison of Chinese and American college students' perceptions of professors' behaviours. *Journal of International Education Research*, 7(4), 1-10.
- [42] Taheryar, M. (2017). Perceptions of quality in higher education in Afghanistan: A case study of Shaheed Rabbani Education University. Master's Capstone Project, *University of Massachusetts Amherst, USA*.
- [43] Tygret, J. A. (2017). The influence of student teachers on

- student achievement: A case study of teacher perspectives. *Teaching and Teacher Education*, 66, 117–126.
- [44] Uluga, M., Ozdenb, M. S., & Eryilmaz, A. (2011). The effects of teachers' attitudes on students' personality and performance. *Procedia - Social and Behavioural Sciences*, 30, 738–742.
- [45] Van, N. T., Said, H., Awang, Z., & Khan, A. (2016a). Student perspective on learning and development outcomes of academic advising at Universiti Teknologi Malaysia. *Man in India*, 96(1-2), 675-688.
- [46] Van, N. T., Said, H., & Khan, A. (2016b). Component of an academic advising program standard for Malaysian public universities. *Man in India*, 96(6), 1691-1702.
- [47] Van, N. T., Said, H., Rameli, M. R. M., Karim, N. A., Tajuddin, N., & Chai, T. T. (2015). Role of academic advising in mitigating the challenges of ethnic minority students at University Teknologi Malaysia. *International Education Studies*, 8(13), 52-59.
- [48] Zakaria, S. (2017). The ever-challenging environment of producing knowledgeable and skilful graduates: Changing the culture of higher education of institutions in teaching and learning approaches. *Universal Journal of Educational Research*, 5(5), 705-709.
- [49] Zeynali, S., Pishghadam, R., & Fatemi, A. H. (2019). Identifying the motivational and demotivational factors influencing students' academic achievements in language education. *Learning and Motivation*, 8(2019), 1-12.

The Motivation of Arab EFL University Students towards Using MALL Applications for Speaking Improvement

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Abstract MALL could be applied to improve English speaking of EFL students. One of the important issues related to the use of MALL applications is the motivation towards using these applications by learners. The main aim of this study is to identify the motivation of using MALL applications by Arab EFL students for English speaking improvements. A conceptual model was proposed based on Technology Acceptance Model (TAM). The proposed model presents seven research hypotheses to test the relationship among three layers of variables. The independent variables include the external reasons to use MALL applications such as accessibility, availability, and variety of learning styles. The motivational factors of using MALL applications (mediating variables) include such as usefulness and ease of use. The third model layer is the actual use of MALL applications (dependent variables) such as the attitudes toward using MALL applications. A questionnaire survey was conducted with 152 students at Al-Anbar University in Iraq. The data analyzed using SEM through AMOS tool. The results showed that the students are motivated to use MALL application for speaking improvements due to the ease of use and the usefulness of these applications. The students' motivation is supported by many reasons such as MALL accessibility, availability, enjoyment, variety of learning styles, and flexibility in learning.

Keywords MALL (Mobile Assisted Language

Learning), English Speaking, Motivation, Arab EFL Students, TAM

1. Introduction

Improving the speaking skills of EFL learners is in the core focus of many studies. It has been proven by researchers that the success in language learning is measured by the ability to speak the language and to carry out a conversation "(Gou, 2013; Leong & Ahmadi, 2017; Sheppard, 2004). Therefore, speaking could be considered of a high priority to EFL learners (Flores, 1999) as it has the potential to increase the overall learners' motivation and to help making the language learning as a fun and dynamic experience (Nunan, 1999: cited in Fauzan, 2016 & Celce-Murcia, 2001). Furthermore, speaking can also promote other language skills (Farabi et al. 2017)."

Many previous studies have shown that Arab EFL learners are encountering serious problems in speaking (Al Hosni, 2016; Al-Jamal & Ghadeer, 2014; Al Nakhlah, 2016). Al Hosni (2014) argued that speaking skills of Arab EFL students should be improved effectively due to its direct implementation in oral communication. However, the speaking skills of Arab EFL learners are still below the expectations of what? (Alrabai, 2016; Alrashidi & Phan,

2015; Fareh, 2010). Pathan, Aldersi, & Alsout (2014) and Lukitasari (2003) concluded that Arab EFL students are de-motivated to learn the mastering of speaking skills due to difficulty of learning the English speaking (i.e. the mother tongue interference difficulty). Al-Jamal & Miqdadi (2013) concluded that at an EFL setting, speaking disability refers to problems such as mother tongue communication, big classes, and shortage of class time.

Ramamurthy (2019) believes that there is a strong relationship between speaking skills and language anxiety. His study has proven that there is undeniable impact of speaking skills on the language anxiety of students which lead to a low language proficiency. The more anxious the learners became, the lower grades they achieved. On the other hand, some other studies have shown the readiness of students to use the web-based speaking skills resources as a way to improve the speaking skills (Fuad, N. I. M., Shah, P. M., & Mohamad, M., 2019). Among the instruments of the study the motivation and the technology accessibility were used as in this research.

The above mentioned challenges of speaking learning raises the importance of Arab EFL students' motivation to allocate more time and efforts to improve their speaking skills through practicing communication activities. This justifies the importance of motivating the self-directed learning activities outside the classrooms (Hadriana et al., 2013; Thanh Pham & Renshaw, 2015). Marzuki et al (2016) conducted a study on improving EFL learners' speaking ability. The findings revealed that self-directed learning strategy has a big impact on improving the learners' motivation to speak which in a certain way will lead to improve the EFL learners' speaking competence.

The advent of mobile technologies in applications assisting language learning process seems to be generally accepted and growing. "The wide use of smartphones and other portable devices have been significantly changing the ways of learning in many contexts, including language learning (Kukulkska-Hulme, 2009). MALL is a key aspect of language learning and it is regarded as one of the most pertinent application areas. As far as MALL is concerned, many studies have investigated the impact of using smart phones on language learning and language skills improvement (Alemi, 2012; Al-Jarf, 2012 (Cited in Jenny, Nasser, and Reddy 2016); Chinnery, 2006; Demouy, V., Eardley, A., Shrestha, P., & Kukulkska-Hulme, 2011; Hui Guo, 2013; Kim & Kwon, 2013). In most of the studies the participants expressed their satisfactions and they have shown their motivations towards using current mobile apps for English language learning, and for improving certain

language skills."

In summary, the studies have proven that mobile applications have encouraged exciting opportunities for personal and autonomous learning environments with flexibility and reliability of access to learning materials anytime and anywhere. The innovative and interesting ways of learning have a potential to increase the learners' motivation and to encourage permanent learning habits. Based on the above, the current study is aiming to identify the motivation of using the MALL applications to enhance the speaking skills among Arab EFL university students.

2. Theoretical Considerations

There are many theories supporting the standpoint of this research (improving the English speaking skills of EFL students using MALL environment). VARK theory was developed by Fleming in 1987, is one of the important related theories which describes four modalities of student learning. VARK stands for (Visual, Aural, Read/Write, and Kinesthetic learning styles). Based on VARK, the effective learning activities would be conducted based on the combination of two or more learning styles, and these styles are visual, aural, read/write, and kinesthetic (Brown et al., 2008). The visual style includes the learning events such as images, posters, videos, and diagrams. The aural style includes the learning events such as audio, music, discussion, and guest speakers. The read/write style includes events such as instructions, handbooks, and handouts. The kinesthetic style includes events such as drama, moving around, and artifacts. Therefore, the learning activities based on various learning styles and events could be effective to enhance the English speaking learning performance of EFL students according to their preferred styles.

Technology Acceptance Model (TAM) is another theory which suggests the measuring aspects of acceptance the use of technology facilities (infrastructures and services) (Davis, 1985). In 1985, Fred Davis develops TAM to measure the users' technology acceptance (Davis, 1985). The main factor of TAM is the user motivation, which consists of two variables; the technology usefulness and the ease of use. Davis measured the technology acceptance by analyzing the motivation of using systems features and capabilities and evaluated the measurement through the actual use of the systems. Figure 1 illustrates Davis' proposed model."

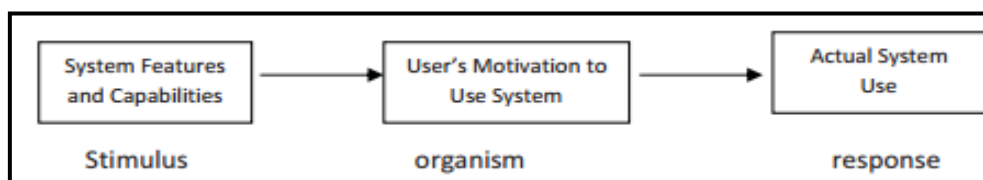


Figure 1. Aspects of Technology Acceptance Theory (Davis, 1985)

3. Method

The study collected a quantitative data using a questionnaire survey due to usability of the questionnaire in collecting data from large number of respondents in short time and less efforts. The purpose of the data collection is to explore the motivation of using MALL applications by Arab EFL students. The questionnaire items were adapted from various resources (Aqda et al., 2011; Chau & Hu, 2002; Davis, 1989; Henesey, 1991; Ku et al., 2009; Slyke et al., 2007; Vlachos & Vrechopoulos, 2008). Furthermore, many of the questionnaire items were adapted from models such as TAM and VARK. However, some of the questionnaire items were developed to fulfill the need of the study objective. Thus, the initiated questionnaire was reviewed by five experts in the English speaking domain, and the given comments are updated in order to finalize the final questionnaire draft.

Arab EFL university students represent the main area of this research. AL-Anbar University in Iraq is the scope of the research study. The population of this research is EFL students in the English department in the Faculty of Education for Humanities at Al-Anbar University. According to the formal site of this university, the population of English department is composed of 384 undergraduate students. A population is defined as "a collection of individuals or objects that form the main focus of a scientific enquiry" (Castillo, 2009), while the study sample is the targeted respondents from the population.

According to Yount (2006), the percentage of study sample should be 10% at minimum for the size of population between 101-1000 respondents. The population of this study is 384 undergraduate EFL students. Hence, the minimum sample number that should be collected is about 40 students. However, the researcher will try to collect at minimum 150 questionnaire responses from the study population in order to meet effective research requirements.

The sampling method adopted in this study is the non-probability sampling, which is also referred to as the quota sampling. This type of sampling was chosen owing to confidentiality policies in the universities, which prevented the researcher from obtaining data about the students due to privacy issues. Convenience sampling is suitable to draw samples from convenient sampling units (readily available).

As for the sampling technique, the sample selection was conducted depending on the sample segment's usefulness and was based on a distinct proportion. The study questionnaire used a sampling technique namely quota sampling. The justification behind using the quota sampling method is due to the fair of data collection from EFL students (Heeringa, 2004). Based on the quota technique, the collected sample in this research will be from different academic years of undergraduate EFL students; first, second, third, and fourth academic years. It

is expected to collect about 35-40 responses from EFL students in each academic year.

3.1. Measurement

Table 1 presents the measurement variables of the questionnaire in this study. The total of the constructed measurement items is 28 distributed on three sub-models (i.e. second order factors). The first sub-model is the external factors, which are represented by five first order dimensions; availability of MALL applications (3 items), accessibility of MALL applications (2 items), flexibility of MALL features (3 items), Variety of learning styles using MALL applications (4 items), and enjoyment of using MALL applications in learning processes (4 items). This sub-model represents the independent factor in the measure construction.

The second measurement construction is the motivational model, which is the second order that contains two main variables of first order; usefulness of using MALL applications (4 items), and ease of use of the MALL applications (4 items). This sub-model represents the mediating factor in the measurement construction.

The third measurement construction is the actual use model, which is the second order that contains one variable of first order that is the attitudes toward using MALL applications in improving the English speaking skills (4 items). This sub-model represents the dependent factor in the measurement construction.

Table 1. Orders of measurement variables and items

Second order	First order	Number of Items
External factors	Availability of MALL resources.	3
	Accessibility of MALL resources.	2
	Flexibility of MALL features.	3
	Variety of learning styles	4
	Enjoyment of using MALL applications.	4
Motivational factors	Usefulness of MALL applications	4
	Ease of use MALL applications.	4
Actual use factors	Attitudes toward using MALL applications to improve speaking	4
Total		28

3.2. Analysis Method

In this study, Structured Equation Modeling (SEM) using AMOS software was conducted to test the overall hypotheses due to the mediating structure of the theoretical model. SEM is a very general and very powerful multivariate analysis technique. SEM is often used to assess unobservable 'latent' constructs. The links between constructs of a structural equation model may be estimated with independent regression equations or through more involved approaches. In specifying pathways in a model, the modeler can posit two types of relationships: (1) free

pathways, in which hypothesized causal (in fact counterfactual) relationships between variables are tested, and therefore are left 'free' to vary, and (2) relationships between variables that already have an estimated relationship, usually based on previous studies, which are 'fixed' in the model. SEM includes confirmatory factor analysis, path analysis, partial least squares path analysis, LISREL and latent growth modeling. Thus, SEM will be effective to test the developed hypotheses in this research (Bennett, 2004).

4. Results Discussion

This section presents the discussion of the study results including the demographic analysis, confirmatory Factor Analysis (CFA), descriptive Analysis, and the Structural Equation Model (SEM).

4.1. Response Rate and Demographic Data

The questionnaire data was collected from Iraqi EFL students in the English department faculty of Education of Al-Anbar University. The questionnaire was distributed to 200 EFL students. Out of 200 distributed questionnaires, 37 questionnaires were not returned and 11 questionnaires were not used due to incomplete answers. Thus, 152 questionnaires were considered as valid for data analysis purpose. The response rate of the collected data was 76%, and it indicated a good responses rate. This indicates the effective time that offered the students to complete the questionnaire and the students' awareness of the study importance to enhance the learning activities of the English speaking.

Depending on the valid 152 collected responses, the respondents' demographic data were analyzed to assure their validity in providing useful data to support the questionnaire study. The demographic analysis is to confirm the usefulness of the collected data. The respondents should match with the targeted characteristics of the study scope such as gender, ages, and academic year

in the university. On the other hand, the respondents should have the experiences in using mobile applications for learning purposes in order to be able to understand the questionnaire items.

The questionnaire includes seven demographic variables that are: (1) gender, (2) age, (3) university academic level, (4) challenges in improving the speaking skills, (5) possession of mobile devices, (6) experience in using the mobile applications, and (7) purpose of using the mobile applications. Table 2 summarizes the demographic analysis of the 152 respondents in this study.

In the above Table, the percentages reflect the balance between male and female students in providing their opinions about the motivation of using MALL applications to improve the speaking skills. The respondents' ages represent the realistic ages of university students, which is usually between 18-24 years. Moreover, the analysis of academic year variable confirms the researcher applying of quota technique in selecting the questionnaire respondents. From each academic year of the university study (first, second, third, and fourth) 38 students provide their responses. Furthermore, the analysis of the speaking challenges variable confirms the importance of this study in utilizing MALL applications to enhance the speaking skills of English language by university EFL students. Additionally, the analysis of fifth demographic variable indicates the familiarity of the respondents with using supporting facilities of MALL applications, which allow the respondents to provide useful data to support this study. Also, the sixth demographic variable reflects the good experience of the respondents in using the mobile applications. Thus, they are able to provide data about the use of MALL application based on their understanding of the features of mobile applications. Lastly, the seventh demographic variable shows the respondents' awareness in using the mobile applications for purposes such as learning activities. The provided data from the respondents would be useful to determine their motivation in utilizing MALL applications in their learning activities to improve their English speaking skills.

Table 2. Analysis of Demographic Data

Variable	Items	Frequency	Percentage
Gender	Male	65	43%
	Female	87	57%
Age	<21 years	34	22%
	21-25 years	107	70%
	26-30 years	7	5%
	31-35 years	4	3%
	> 35 years	0	0%
University academic year	First year	38	25%
	Second year	38	25%
	Third year	38	25%
	Fourth year	38	25%
Having challenges in improving your English speaking skills?	Yes	119	78%
	Yes, but not critical	16	11%
	No	5	3%
	No, but I need more effective learning processes	12	8%
How many mobile devices do you own?	0	0	0%
	1	95	62%
	2	41	27%
	3	10	7%
	4	0	0%
	More than 4	6	4%
How long have you been using the mobile applications?	Never	0	0%
	Months	0	0%
	Months	9	6%
	1-2 years	39	26%
	Above 2 years	104	68%
For what purpose do you use your mobile device?	Phone calls	0	0%
	Messaging and Phone calls	0	0%
	Gaming	0	0%
	Social Network Communication	5	3%
	Learning services	50	33%
	All services	97	64%

4.2. Data Screening and Data Normality

The data screening processes aim to confirm that the respondents completed their responses effectively. For this purpose, the responses of missing values should be excluded from the data analysis. On the other hand, the outlier data or responses should be removed. The outlier data is the responses that does not match with the total scale of the responses. This section explains the missing values and data outliers' tests.

The first data screening process is the removing of the missing values. The collected 152 responses were entered carefully to SPSS to perform the data screening tests. According to Tabachnick and Fidell (2007) the acceptance missing values is 0.05 for each first order variable in the questionnaire. The first order variables of missing values more than 0.05 should be excluded from the data analysis. Based on this percentage, there is no need to exclude any responses from the collected 152 questionnaires. The research assures that the used 152 responses are completely responding to all of the questionnaire items that distributed on eight first order variables. All 152 respondents have answered about all items in the questionnaire, and there are no blank answers are founded in this test.

The second data screening process is removing the outliers. Hair et al., (1998) argued that the responses that are not adding meaning to the variables should be removed in order to assure useful data analysis. In other word, the outlier responses are the data that are not matching with the normal distribution of the total collected data. One of the most known outliers' tests is the univariate (Hair et al., 1998; Tabachnick and Fidell 2007). The outliers' tests were applied on the 152 acceptable responses based on the missing values processes. The univariate outlier test was conducted based on Z-score technique using SPSS tool, whereby the Z-score should be in the boundary between -4 to 4 (Hair et al., 1998; Tabachnick and Fidell 2007). The Z-score test on the 152 responses in this study shows that all responses to the 28 items are acceptable (in the range between -4 to 4).

The data normality is another conducted analysis to confirm the data validity. The data normality aims to estimate the normal distribution of the questionnaire responses. The normal distribution of the data indicates the good relationship between the item responses in order to support the validity of the study variables. By using AMOS, two normality assessments were conducted; (1) Skewness, whereby the average of the data normal distribution should fall in the range -3 to 3; and the Kurtosis, whereby the average of the data normal distribution must fall in the range -7 to 7. Both Skewness and Kurtosis tests were accomplished using AMOS tool. The two normality tests confirm that all item responses belong to the normal distribution of the applied tests. Hence, the collected data are interrelated to support the modeling of the study variables, which allow the next analysis steps such as CFA.

4.3. Confirmatory Factor Analysis and Descriptive Analysis

According to Hair et al., (2006), the data CFA test focuses on the measurement of data scales based on the model construction. The collected data must be integrated accurately with the study factors that comprise the proposed model. The weak representation of the study factors through the collected data may lead to a failure in model construction.

One of the known accuracy tests of the data scales is the Confirmatory Factor Analysis (CFA), which considers as the first stage of the SEM analyses (Hair et al., 2006). CFA aims to measure several accuracy directions such as the fitness of the model factors, the factors reliability, and the relationships within/among the study factors. This section presents the CFA analysis for the three main study factors; external factors of MALL applications (such as availability and enjoyment), motivation of MALL applications (ease of use and usefulness), and the actual use of MALL applications (attitudes). The CFA conducted using AMOS tool due to the effectiveness of AMOS to perform the several accuracy tests of CFA.

The CFA model is performed based on 28 items distributed on eight main variables of first order construction; There are many CFA analyses conducted to assure the reliability and validity of the model data such as the factor loading, goodness of fit indices, reliability and convergent validity, and discriminant validity.

Based on all 28 items that are included in the overall CFA model analysis, the validity test (factor loading test) is applied to determine the correspondence level between the items in each factor. The validity test aims to assure the interrelation between the items of the model dimensions. The validity could indicate if there are strong connections between the responses to represent the model dimensions. According to Nunnally and Bernstein (1994), the acceptance level of the factor loading (validity) should be more than 0.5.

Based on the factor loading –in Appendix A- there are 5 items should be removed from the model due to unacceptable loading i.e. less than 0.5 (FL3, VLS1, EJ2, EJ4, UF2). The factors loading of the entire 23 items are acceptable to include in the next step of CFA analysis. The MALL accessibility factor is represented by 2 items (AC1 and AC2), the MALL availability factor is represented by 3 items (AV1-AV3), the MALL flexibility factor is represented by 2 items (FL1 and FL2), the variety of learning styles represented by 3 items (VLS2-VLS4), and MALL enjoyment contains 2 items (EJ1 and EJ3). On the other hand, the Ease of use factor stills is represented by 4 items (EOU1-EOU4), and the MALL usefulness is represented by 3 items (UF1, UF3, and UF4). Furthermore, the attitude toward using MALL applications is represented by four items (AT1- AT4).

Based on the entire 23 items in the modified model, the

reliability and convergent validity tests were conducted. The reliability coefficients (Cronbach alpha) are 0.92 for the accessibility dimension, 0.851 for the availability dimension, 0.743 for the flexibility dimension, 0.922 for the variety of learning styles, 0.816 for the enjoyment dimension, 0.937 for the ease of use, 0.74 for the usefulness, and 0.813 for the attitudes dimension. Hence, the reliability is acceptable for all included dimensions in the modified model. Furthermore, the composite reliability of each dimension is strong (> 0.7) based on the related path with other dimensions. In conclusion, the reliability of the modified model is very good and indicates the careful data filled by the respondents. On the other hand, the convergent validity based on AVE test shows that all dimensions are above the acceptable cut point of the valid relationships between the dimensions (> 0.5). This indicates the good interrelation between the items of all dimensions.

Hair et al. (1995) mentioned that the in-acceptable fit coefficient of the indices requires the retest of the correlation paths between the model items to improve the model fit through reducing the indirect or hidden relationship between the items (i.e. to enhance the χ^2 value). The first sub-model includes the independent or external factors of using MALL applications; accessibility, availability, flexibility, variety of learning styles, and enjoyment. Based on the recommended tests values, the model records acceptable corresponding among all 12 items that represent this sub-model.

The results of goodness of fit indices confirm the good interrelationships among the data of all 12 items that belong to first-sub model. The GFI coefficient is 0.927, whereby the acceptable cut value of the GFI should be more than 0.8 (Hoyle, 1995). The cut value of the Adjusted GFI (AGFI) records 0.914, and regarding to Chau and Hu (2001) this cut value is acceptable fit indicator (i.e. > 0.8). On the other hand, the acceptable value of the CFI, TLI, and IFI indices should be more than 0.9 (Bagozzi & Yi., 1988; Hair et al., 2006). All of these test record acceptable fit values, the CFI coefficient 0.925, the TLI coefficient is 0.941, and the IFI coefficient is 0.937. Furthermore, the RMSEA is one of the most important tests to assure the fitness of the model, and the coefficient of RMSEA must be below 0.1 (Schumacker & Lomax, 2010). The RMSEA test records 0.03, which is acceptable coefficient that indicates the fitness among the model items. The results of all conducted tests are matched with the adequacy of χ^2/df (3.32), which is below the cut value of 5. In summary, the modified CFA for the first sub- model is fit. Hence, the model data would be adopted for further SEM analysis such as research hypotheses tests.

In order to test the relationship between the model factors, the discriminant validity is conducted on the overall model. The discriminant validity test is important to assure the interrelation between the dimensions of the modified model. The discriminant validity is different of

the correlation test; it estimates the relationship between the dimensions and the square root of the average variance that extracted for each dimension (Fornell & Larcker, 1981). Kline (2005) mentioned that the accepted discriminant correlations among the dimensions should be below 0.85, and the discriminant correlations among the items in the same dimension should be near to 1. Table 3 presents the discriminant validity of the first sub-model.

Table 3. Discriminant Validity of the First Sub-model

	AC	AV	FL	VLS	EJ
AC	0.881				
AV	0.841***	0.905			
FL	0.751***	0.818***	0.898		
VLS	0.676***	0.755***	0.791***	0.921	
EJ	0.581***	0.684***	0.562***	0.622***	0.873

Based on the above Table 3, it can be noticed that the inter-correlations are valid in/among all dimensions in the modified model, which indicates strong interrelation level between the model factors. The inter-correlation is less than the r^2 of the average variance extracted from each dimension (0.881, 0.905, 0.898, 0.921, and 0.873 respectively for accessibility, availability, flexibility, variety of learning styles, and enjoyment), whereby the discriminant validity of the modified sub-model is confirmed. In conclusion, the CFA of the first sub- model (goodness of fit, reliability and convergent validity, and discriminant validity) confirms the construction usefulness of model. On the other hand, the CFA tests are conducted for the second sub-model in this study, which includes the mediating or motivational factors of using MALL applications; ease of use and usefulness. Based on the recommended tests values, the model records acceptable corresponding among all 7 items that represent this sub-model.

The results of goodness of fit indices confirm the good interrelationships among the data of all 7 items that belong to second-sub model. The GFI coefficient is 0.85, the AGFI records 0.834, the CFI coefficient is 0.911, the TLI coefficient is 0.920, and the IFI coefficient 0.935. The RMSEA test records 0.045, which is acceptable coefficient that indicates the fitness among the model items. The results of all conducted tests are matched with the adequacy of χ^2/df (3.05), which is below the cut value of 5. In summary, the modified CFA for the second sub- model is fit. Hence, the model data would be adopted for further SEM analysis such as research hypotheses tests.

Table 4 presents the discriminant validity of the first sub-model. The inter-correlations are valid in/among all dimensions in the modified model, which indicates strong interrelation level between the model factors. The inter-correlation is less than the r^2 of the average variance extracted from each dimension (0.901 and 0.917 respectively for ease of use and usefulness, whereby the

discriminant validity of the modified sub-model is confirmed.

Table 4. Discriminant Validity of the second Sub-model

	EoU	UF
EoU	0.901	
UF	0.822***	0.917

In conclusion, the CFA of the second sub-model (goodness of fit, reliability and convergent validity, and discriminant validity) confirms the construction usefulness of model.

The third sub-model in this study is the actual use of MALL applications to improve the speaking skills and this model represented by only one factor (attitudes). Thus, the CFA for this sub-model is not needed. The CFA is important when the sub-model includes two factors or more.

The above CFA tests confirm the fitness of the sub-models in this study in order to assure the effective relationships among the variables and items within the factors (i.e. external factor or motivational factor). In section 4.6 the SEM tests are conducted based on the 23 items that represent the overall model in this research.

Based on the modified model, the descriptive analysis is conducted using 23 items that are distributed on eight main

variables that are related to the uses of MALL applications to improve the English speaking skills; accessibility, availability, flexibility, variety of learning styles, enjoyment, usefulness, ease of use, and attitudes. The main aim of the descriptive analysis is to analyze the directions of the respondents' motivation of using MALL application in their learning activities. The items were analyzed based on the 5-likert scale; 1 for Strongly Disagree (SD), 2 for Disagree (D), 3 for Neutral (N), 4 for Agree (A), and 5 for Strongly Agree (SA).

Table 5 summarizes the descriptive analysis of the responses about the accessibility of MALL application in speaking. In this study, MALL accessibility belongs to the independent (external) factors, which represent the characteristics of MALL applications for speaking. In total, the respondents see that MALL applications allow them to perform their learning processes in any place and based on self-directed learning.

Table 6 shows the descriptive analysis of the availability of MALL applications resources to improve the speaking skills. This variable is independent and represents one of the main characteristics of MALL applications. The respondents are strongly agreeing with AV1 and AV2 items and Agreeing with AV2 item. Therefore, the respondents understand the availability characteristic of MALL application in the activities of speaking learning.

Table 5. Descriptive Analysis of MALL Accessibility

Item#	Item	SD	D	N	A	SA	Mean	Agreement Level
AC1	I can use the mobile applications in any place.	0	0	0	41	111	4.73	Strongly Agree
AC2	Using mobile applications allow me to do self-directed learning for English speaking.	0	0	0	76	76	4.50	Strongly Agree

Table 6. Descriptive Analysis of MALL Availability

Item#	Item	SD	D	N	A	SA	Mean	Agreement Level
AV1	Mobile applications are available at any time.	0	0	1	48	103	4.67	Strongly Agree
AV2	Mobile applications provide real-time and updated information about English learning I am willing to use	0	0	1	80	71	4.46	Agree
AV3	The available mobile application help me to improve my speaking skills informally (without teacher support)	0	0	0	51	101	4.66	Strongly Agree

Table 7 presents the descriptive analysis of the flexibility of MALL applications to improve the speaking skills. MALL flexibility is one of the main factors that are considered as independent variables in this study. The respondents are strongly agreeing with FL1 item and Agreeing with FL2 item. Hence, the respondents could be motivated to use MALL applications due to flexible features of these applications in performing the learning activities.

Table 8 shows the descriptive analysis of the variety of learning styles of MALL applications. MALL applications would present the speaking improving based on various learning styles such as videos, audio, images, and texts. In this study, the variety of learning styles is considered as independent variable. The respondents are strongly agreeing with all items in this variable (VLS2, VLS3, and VLS4). In total, the respondents would be motivated to use MALL applications in their speaking activities due to the variety of learning styles, whereby every student can improve his/her speaking skills based on customized and preferred learning style(s).

Table 9 shows the descriptive analysis of the enjoyment

of MALL applications to improve the speaking skills. This variable is independent and represents one of the main characteristics of MALL applications. The respondents are strongly agreeing with EJ1 item and agreeing with EJ3 item. Therefore, the enjoyment of using MALL applications may motivate the students to use these applications to improve their speaking skills.

The Tables 5-9 show the descriptive analysis of the independent or external variables in this study. In summary, the respondents believe that MALL applications offer many characteristics to improve the speaking skills. MALL applications allow the students to perform their learning activities from anyplace and in anytime (accessibility and availability). MALL applications would provide flexible functionality to perform the learning activities in effective ways (flexibility). Moreover, MALL applications offer the learning materials based on various learning styles (i.e. variety of learning styles), whereby the students can customize the preferred learning style(s) in their learning processes. Additionally, the students see that using MALL applications is enjoyable and fun to improve their speaking skills.

Table 7. Descriptive Analysis of MALL Flexibility

Item#	Item	SD	D	N	A	SA	Mean	Agreement Level
FL1	The mobile applications can be used effectively to enhance my English speaking skills.	0	0	0	63	89	4.58	Strongly Agree
FL2	Mobile applications offer a good variety ways to improve my English speaking.	0	0	10	65	77	4.44	Agree

Table 8. Descriptive Analysis of Varsity Learning Styles of MALL

Item	Item#	SD	D	N	A	SA	Mean	Agreement Level
VLS2	I prefer to improve my English speaking skills based on mixed learning styles.	0	1	3	50	98	4.61	Strongly Agree
VLS3	Mobile applications offer the learning style(s) that I prefer to improve my English speaking skills	0	1	3	62	86	4.53	Strongly Agree
VLS4	The various learning styles that offered by mobile application help me to improve my speaking skills outside the classroom.	0	0	2	59	91	4.58	Strongly Agree

Table 9. Descriptive Analysis of MALL Enjoyment

Item#	Item	SD	D	N	A	SA	Mean	Agreement Level
EJ1	Using the mobile applications is enjoyable to improve my English speaking skills.	0	0	0	71	81	4.53	Strongly Agree
EJ3	It is Fun to improve my English speaking skills through the use of various mobile applications and facilities.	0	2	6	65	79	4.45	Agree

In terms of the motivational factors (mediating variables) of using MALL application, the descriptive analysis is conducted for 2 variables; MALL ease of use and MALL usefulness. Table 10 presents the descriptive analysis of the ease of use of MALL applications. The respondents are strongly agreeing with EOU2 and EOU4 items and agreeing with EOU1 and EOU 3 items. This analysis indicates the students' motivation to use MALL applications for improving the speaking skills due to the ease of use of these applications. The students haven't concerns toward the difficulty of using MALL applications to improve their speaking skills.

Table 11 presents the descriptive analysis of usefulness of using MALL applications to improve the speaking skills. The respondents are agreeing with all items in this variable. In total, the students believe that using MALL applications would be useful to improve the speaking skills. Thus, the students could be motivated to use MALL applications for speaking improvement.

In terms of the actual use (dependent factor) of MALL

applications to improve the speaking skills, the descriptive analysis is conducted for the attitudes toward using MALL applications by EFL students (Table 12). The respondents are agreeing with items AT1 and AT2 and strongly agreeing with items AT3 and AT4. In total, the respondents have positive attitudes toward the actual use of MALL application to improve English speaking skills.

In conclusion, the descriptive analysis of the questionnaire reflects the opinions of the university EFL students about the use of MALL applications to improve the speaking skills. The respondents see that MALL applications have many characteristics to support the learning activities. The respondents are motivated to benefit from MALL characteristics due to other motivational factors such as the ease of use and usefulness of MALL applications. Thus, the respondents provide positive attitudes toward the actual use of MALL in order to improve their English speaking learning. The next section discusses the structural equation model and the hypotheses testing.

Table 10. Descriptive Analysis of MALL Ease of Use

Item#	Item	SD	D	N	A	SA	Mean	Agreement Level
EOU1	It is easy to operate the mobile applications for learning purposes.	0	0	9	64	79	4.46	Agree
EOU2	I think it easy to get the mobile applications to do what I want to do.	0	0	2	64	86	4.55	Strongly Agree
EOU3	The mobile applications are flexible to interact with.	0	0	10	59	83	4.48	Agree
EOU4	It is easy for me to improve my speaking skills using mobile applications.	0	1	5	47	99	4.60	Strongly Agree

Table 11. Descriptive Analysis of MALL Usefulness

Item#	Item	SD	D	N	A	SA	Mean	Agreement Level
UF1	Using mobile applications give me greater control over my learning processes.	0	0	15	82	55	4.26	Agree
UF3	Using mobile applications increase my learning productivity.		5	72		75	4.46	Agree
UF4	Using mobile applications enhances my learning activity.	0	0	1	79	72	4.47	Agree

Table 12. Descriptive Analysis of Attitudes toward using MALL

Item#	Item	SD	D	N	A	SA	Mean	Agreement Level
AT1	I am willing to use mobile applications in the future (i.e. next year) to improve my English speaking skills.	0	0	5	81	66	4.40	Agree
AT2	I am willing to use the mobile applications soon to improve my English speaking skills.	0	0	6	70	76	4.46	Agree
AT3	I will try to use more kinds of mobile applications to improve my English speaking skills.	0	0	5	64	83	4.51	Strongly Agree
AT4	I will strongly recommend others to use mobile applications to improve their English speaking skills.	0	0	0	65	87	4.57	Strongly Agree

Table 13. Direct Paths Test

Path	Unstandardized Estimate		Standardized Estimate	c.r.	P-value	Sub Hypotheses Results	Overall Hypotheses results
	Estimate	S.E.	Beta				
AC→EoU	0.247	0.092	0.26**	2.215	0.005	H1a: Supported	H1: Supported
AC→UF	0.234	0.081	0.24**	2.113	0.005	H1b: Supported	
AV→EoU	0.231	0.081	0.41**	2.326	0.009	H2a: Supported	H2: Supported
AV→UF	0.252	0.065	0.30**	2.876	0.008	H2b: Supported	
FL→EoU	0.226	0.079	0.35**	2.861	0.005	H3a: Supported	H3: Supported
FL→UF	0.098	0.051	0.19*	2.553	0.013	H3b: Supported	
VLS→EoU	0.133	0.049	0.18*	2.534	0.016	H4a: Supported	H4: Supported
VLS→UF	0.112	0.045	0.21**	2.811	0.008	H4b: Supported	
EJ→EoU	0.145	0.091	0.17*	2.122	0.019	H5a: Supported	H5: Supported
EJ→UF	0.207	0.086	0.31**	2.854	0.006	H5b: Supported	
EoU→AT	0.172	0.059	0.19*	2.416	0.014	H6a: Supported	H6: Supported
UF→AT	0.135	0.042	0.23**	2.919	0.007	H6b: Supported	

4.4. Structural Equation Model (SEM)

The SEM is conducted based on 8 variables of 23 items; accessibility of 2 items, availability of 3 items, flexibility of 2 items, variety of learning styles of 3 items, and enjoyment of 2 items; 4 items for ease of use, usefulness of 3 items, and attitudes of 4 items. Figure 2 illustrates the SEM of overall model in this study. The next two sub sections present the testing of six direct effect hypotheses and the one mediating hypotheses.

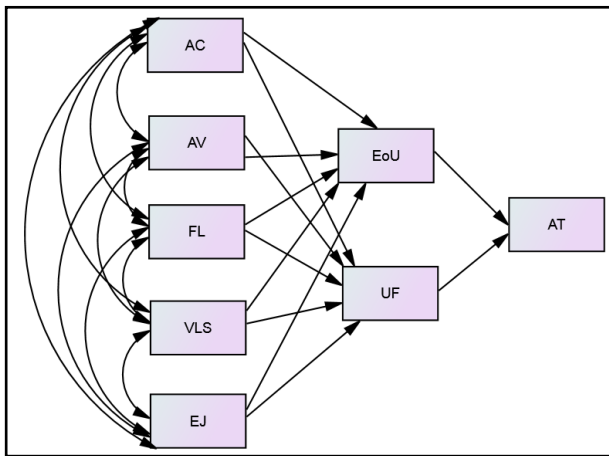


Figure 2. Structural Equation Model

4.4.1. Direct Effect Hypotheses

This study is directional relationship using a significance level p-value of 0.05 to test the effect for the possibility of the relationship in one/direct direction. The relationship of P-value that ≤ 0.05 represents the supporting of the research hypotheses, while the P-value that > 0.05 represents the rejection of the research hypotheses. Table 13 summarizes the direct paths test among all factors in this study.

Based on the above Table 14, the six direct research hypotheses can be judged based on the P-value. The direct

research Hypotheses are as the following:

H1) there is a positive relationship between the accessibility of MALL applications and the motivation of English speaking improvement (ease of use and usefulness): In terms of relationship between MALL accessibility (AC) and the ease of use (EoU), the C.R. and p-value are 2.215 and 0.005 respectively. It indicates that the probability of getting C.R. as large as 2.215 in absolute value is 0.005. Furthermore, the relationship between the AC and usefulness (UF), the C.R. is 2.113 and the p-value is significant at 0.005. Thus hypothesis H1 is supported due to significant relationship between the AC and motivational factors of MALL applications (EoU and UF). This means that the accessibility of MALL resources plays an important role in motivating the use of MALL applications to improve speaking skills.

H2) there is a positive relationship between the availability of MALL applications and the motivation of English speaking improvement (ease of use and usefulness): In terms of relationship between MALL availability (AV) and the ease of use (EoU), the C.R. and p-value are 2.326 and 0.009 respectively. Also, the relationship between the AV and usefulness (UF) records C.R. as 2.876 and the p-value is significant at 0.008. Therefore, hypothesis H2 is supported. The availability of MALL resources plays an important role in motivating the use of MALL applications to improve the speaking skills.

H3) there is a positive relationship between the flexibility of MALL applications and the motivation of English speaking improvement (ease of use and usefulness): The C.R. is 2.861 and the P-value is 0.005 for the relationship between MALL flexibility (FL) and the ease of use (EoU). On the other hand, The C.R. is 2.553 and the P-value is 0.013 for the relationship between MALL flexibility (FL) and usefulness (UF). Hence, hypothesis H3 is supported. This indicates that the flexibility of MALL applications plays an important role in motivating the use of MALL applications to improve the speaking skills.

H4) there is a positive relationship between the learning styles of MALL applications and the motivation of English speaking improvement (ease of use and usefulness): The C.R. is 2.534 and the P-value is 0.016 for the relationship between the learning styles of MALL (VLS) and the ease of use (EoU). On the other hand, The C.R. is 2.811 and the P-value is 0.008 for the relationship between the VLS and usefulness (UF). Hence, hypothesis H4 is supported. This indicates that the variety of learning styles of MALL applications plays an important role in motivating the use of MALL applications to improve the speaking skills.

H5) there is a positive relationship between the enjoyment of MALL applications and the motivation of English speaking improvement (ease of use and usefulness): In terms of the relationship between MALL enjoyment (EJ) and the ease of use (EoU), the C.R. and p-value are 2.122 and 0.019 respectively. Also, the relationship between the EJ and usefulness (UF) records C.R. as 2.854 and the p-value is significant at 0.006. Therefore, hypothesis H5 is supported. The enjoyment in using MALL applications plays an important role in motivating the use of MALL applications to improve the speaking skills.

H6) there is a positive relationship between the motivation of using MALL applications (ease of use and usefulness) and the actual use of MALL applications (attitudes) to improve English speaking skills: The C.R. is 2.416 and the P-value is 0.014 for the relationship between the ease of use (EoU) and the attitudes (AT). On the other hand, The C.R. is 2.919 and the P-value is 0.007 for the relationship between the usefulness (UF) and AT. Hence, hypothesis H6 is supported. This indicates that the motivational factors of MALL applications are significant to encourage the students' attitudes toward using MALL applications to improve the speaking skills.

In conclusion, all directed hypotheses in this research are supported, whereby the EFL students are motivated for the actual use of MALL applications to improve their speaking skills. The high motivation level is due to various characteristics of MALL applications such as accessibility, availability, flexibility, variety of learning styles, and enjoyment. To confirm this conclusion, the next sub section discusses the indirect (mediating) research hypothesis (H7).

4.4.2. Mediating Effect Hypotheses

According to Browne et al., (1993) and Garver and Mentzer (1999), SEM approach is preferable to regression techniques for testing mediation effect. This is because SEM technique allows modeling of both measurement and structural relationship and generates overall fit indices. This study used bootstrapping approach as recommended by Bagozzi and Yi (1988) to test the research hypothesis #7. Table 14 summarizes the paths analysis of the mediating effects between the study variables, which reflect the test of research hypothesis #7. The paths analysis shows that all

mediating paths are significant (P-value < 0.05). This represents the strong supporting of H#7.

Table 14. Paths test for research hypothesis #7

Specific Indirect effect	Standardized total effect	P-value
AC-> EoU-> AT	.188	.004**
AC-> UF-> AT	0.131	.008**
AV-> EoU-> AT	.124	.009**
AV-> UF-> AT	.167	.019*
FL-> EoU-> AT	.192	.005**
FL-> UF-> AT	.152	.016*
VLS-> EoU-> AT	.181	.006**
VLS-> UF-> AT	.179	.005**
EJ-> EoU-> AT	.146	.016*
EJ-> UF-> AT	.190	.007**

Based on the above Table 14, all indirect paths in the study model records significant relationship among the study variables. For examples, there is a significant relationship at P-value < 0.05 in terms of the relationship between MALL accessibility (AC) and Attitudes toward using MALL (AT) through MALL usefulness (UF). This means that the hypotheses #7 is strongly supported.

5. Conclusion

In total, the testing of the research hypotheses addresses the first research objective, which is to determine the motivation behind using MALL applications among Arab EFL university students for speaking improvement. The results of the collected questionnaire data show that EFL students have positive attitudes toward the use of MALL applications to improve the English speaking skills. The positive attitudes are due to the motivational factors such as ease of use and usefulness of MALL applications. The students are motivated to use MALL applications because they believe that these application are easy to be used and useful to improve the speaking skills based on self-directed learning. In addition, there are many external factors motivating EFL students to use MALL applications such as the accessibility and availability of MALL resources, flexibility of MALL applications in performing the speaking activities, variety of learning styles to deliver the learning materials using MALL applications, and the enjoyment of using MALL applications by EFL students. In the future, a specific MALL application(s) will be applied in speaking learning in order to determine the impact of MALL applications in improving the speaking skills of the EFL university students. The motivation of using MALL reflects the students' attitudes toward the actual use of MALL applications in the future. The contribution of this study is the exploring of various variables that could motivate the use of MALL applications by EFL students for speaking improvements. This indicates the importance of the effective use of MALL applications to improve the speaking skills of EFL students in the Arab world universities.

Appendix A: Factor Loading

Items Label	Construct name	Estimate Loading	Item reference code
T1	Accessibility	0.710	AC1
T2	Accessibility	0.712	AC2
T3	Availability	0.52	AV1
T4	Availability	0.61	AV2
T5	Availability	0.679	AV3
T6	Flexibility	0.772	FL1
T7	Flexibility	0.649	FL2
T8	Flexibility	0.021	FL3
T9	Variety of learning styles	-0.16	VLS1
T10	Variety of learning styles	0.809	VLS2
T11	Variety of learning styles	0.628	VLS3
T12	Variety of learning styles	0.731	VLS4
T13	Enjoyment	0.560	EJ1
T14	Enjoyment	-0.363	EJ2
T15	Enjoyment	0.812	EJ3
T16	Enjoyment	-0.313	EJ4
T17	Ease of Use	0.882	EOU1
T18	Ease of Use	0.813	EOU2
T19	Ease of Use	0.860	EOU3
T20	Ease of Use	0.503	EOU4
T21	Usefulness	0.902	UF1
T22	Usefulness	0.247	UF2
T23	Usefulness	0.60	UF3
T24	Usefulness	0.628	UF4
T25	Attitudes	0.690	AT1
T26	Attitudes	0.541	AT2
T27	Attitudes	0.553	AT3
T28	Attitudes	0.567	AT4

REFERENCES

- [1] Al Hosni, S. (2014). Speaking difficulties encountered by young EFL learners. *International Journal on Studies in English Language and Literature (IJSELL)*, 2(6), 22-30. www.arcjournals.org
- [2] Al Nakhalah, A. M. (2016). Problems and Difficulties of Speaking That Encounter English Language Students at Al Quds Open University. *International Journal of Humanities and Social Science Invention ISSN*. Volume 5 Issue 12/ PP.96-101
- [3] Al-Jamal, Dina A., and Ghadeer A. Al-Jamal. (2013). An investigation of the difficulties faced by EFL undergraduates in speaking skills. *English Language Teaching*, 7(1), 19.
- [4] Alrabai, F. (2016). Factors underlying low achievement of Saudi EFL learners. *International Journal of English Linguistics*, 6(3), 21.
- [5] Alrashidi, O., & Phan, H. (2015). Education context and English teaching and learning in the Kingdom of Saudi Arabia: An overview. *English Language Teaching*, 8(5), 33.
- [6] Aqda, M. F., F. Hamidi & F. Ghorbandordinejad 2011. The impact of constructivist and cognitive distance instructional design on the learner's creativity. *Procedia computer science* 3: 260-265.
- [7] Azli, W. Shah, P. M., & Mohamad, M. (2018). Perception on the Usage of Mobile Assisted Language Learning (MALL) in English as a Second Language (ESL) Learning among Vocational College Students. *Creative Education*, 9(01), 84.
- [8] Brown, T., Cosgriff, T., & French, G. (2008). Learning style preferences of occupational therapy, physiotherapy and speech pathology students: a comparative study. *Internet Journal of Allied Health Sciences and Practice*, 6(3), 7.

- [9] Bennett, A. (2004). Case study methods: Design, use, and comparative advantages. *Models, numbers, and cases: Methods for studying international relations*, 19-55.
- [10] Chau, P. Y., & Hu, P. J. H. (2001). Information technology acceptance by individual professionals: A model comparison approach. *Decision sciences*, 32(4), 699-719.
- [11] Farabi, M., Hassanvand, S., & Gorjian, B. (2017). Using Guided Oral Presentation in Teaching English Language Learners' Speaking Skills. *Journal of Applied Linguistics and Language Learning*, 3(1), 17-24.
- [12] Farez, S. (2010). Challenges of teaching English in the Arab world: Why can't EFL programs deliver as expected?. *Procedia-Social and Behavioral Sciences*, 2(2), 3600-3604.
- [13] Fauzan, U. (2016). Enhancing speaking ability of EFL Students through debate and peer assessment. *EFL journal*, 1(1), 49-57. vol. 1 no. 1 www.efljournal.org
- [14] Florez, M. A. C. (1999). Improving Adult English Language Learners' Speaking Skills.
- [15] Fuad, N. I. M., Shah, P. M., & Mohamad, M. (2019). ESL Pupils' Acceptance towards Web-based Speaking Skills Resource: Sub-urban and Rural Context. *Universal Journal of Educational Research*, 7(10A), 60-65.
- [16] Garver, M. S., & Mentzer, J. T. (1999). Logistics research methods: employing structural equation modeling to test for construct validity. *Journal of business logistics*, 20(1), 33.
- [17] Guo, H. (2013). Analyzing and Evaluating Current Mobile Applications for Learning English Speaking. *University of London. Recuperado de*.
- [18] Hadriana, H., Ismail, M. A., & Mahdum, M. (2013). The relationship between motivations and self-learning and the English language achievement in secondary high school students. *Asian Social Science*, 9(12), 36.
- [19] Hair, J. F. (1995). *ua (1995): Multivariate Data Analysis with Readings. Englewood Cliffs*.
- [20] Heeringa, S. G., Wagner, J., Torres, M., Duan, N., Adams, T., & Berglund, P. (2004). Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). *International journal of methods in psychiatric research*, 13(4), 221-240.
- [21] Hwang, W. Y. et. al. (2014). Improving English as a foreign language writing in elementary schools using mobile devices in familiar situational contexts. *Computer Assisted Language Learning*, 27(5), 359-378.
- [22] Kabilan, M. K., Ahmad, N., & Abidin, M. J. Z. (2010). Facebook: An online environment for learning of English in institutions of higher education?. *The Internet and higher education*, 13(4), 179-187.
- [23] Kim, C., Mirusmonov, M., Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior*, 26(3), 310-322.
- [24] Kim, H., & Kwon, Y. (2012). Exploring smartphone applications for effective mobile-assisted language learning. *Multimedia-Assisted Language Learning*, 15(1), 31-57.
- [25] Kline, R. B. (2005). Methodology in the social sciences.
- [26] Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, 21(2), 157-165. *European Association for Computer Assisted Language Learning*.
- [27] Kukulska-Hulme, A., Pettit, J., Bradley, L., Carvalho, A. A., Herrington, A., Kennedy, D. M., & Walker, A. (2011). Mature students using mobile devices in life and learning. *International Journal of Mobile and Blended Learning (IJMBL)*, 3(1), 18-52.
- [28] Leong, L. M., & Ahmadi, S. M. (2017). An analysis of factors influencing learners' English speaking skill. *International Journal of Research in English Education*, 2(1), 34-41.
- [29] Lukitasari, N. (2003). Students' Strategies in Overcoming Speaking Problems in Speaking Class. University of Muhammadiyah Malang.
- [30] MacCallum, R. C., & Browne, M. W. (1993). The use of causal indicators in covariance structure models: Some practical issues. *Psychological bulletin*, 114(3), 533.
- [31] Marzuki, M., Prayogo, J. A., & Wahyudi, A. (2016). Improving the EFL learners' speaking ability through interactive storytelling. *Dinamika Ilmu*, 16(1), 15-34..
- [32] Meldrum, K. (2010). Structural equation modelling: tips for getting started with your research.
- [33] Miqdadi, R., & Al-Jamal, D. (2013). Difficulties in Content and Language Integrated Learning: The Case of Math. *Jordan Journal of Educational Science*, 9(4), 449-459.
- [34] Orme, J. G., & Combs-Orme, T. (2009). *Multiple regression with discrete dependent variables*. Oxford University Press.
- [35] Pathan, M., Aldersi, Z., & Alsout, E. (2014). Speaking in their language: An overview of major difficulties faced by the Libyan EFL learners in speaking skill. *International Journal of English Language & Translation Studies*, 2(3), 96-105.
- [36] Ramamurthy, V. (2019). The Effects of Task-based Approach on Speaking Anxiety among ESL Low Proficiency Diploma Students. *Universal Journal of Educational Research*, 7(6), 1363-1375.
- [37] Shahrokhi, M., & Kamyabi, M. (2016). The Impact of Mobile Assisted Language Learning (MALL) on Phrasal Verbs of Iranian Intermediate EFL Students. *In Handbook of Research on Mobile Learning in Contemporary Classrooms* (pp. 217-239). IGI Global.
- [38] Slyke, C.V., Ilie, V., Lou, H., Stafford, T. (2007). Perceived critical mass and the adoption of a communication technology. *European Journal of Information Systems*, 16(3), 270-283.
- [39] Xu, Q., & Peng, H. (2017). Investigating mobile-assisted oral feedback in teaching Chinese as a second language. *Computer Assisted Language Learning*, 30(3-4), 173-182.
- [40] Yount, W. R. (2006). Research design and statistical analysis for Christian ministry.

Student Teachers' Attitude and Self-esteem towards Online Learning: Application of Rasch Measurement Model

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Abstract The spread of the COVID-19 epidemic has changed the education delivery system. Educators are encouraged to continue the online teaching process to ensure that students can continue to learn whereby a program or course which is designed intentionally to be carried out fully online through some platforms that include Skype, Zoom, Google meet, Webex, and Kahoot. Thus, there is a need in conducting a study to identify the attitude and self-esteem towards online learning especially among student teachers. Therefore, this study aims to investigate student teachers' attitude towards online learning, student's teacher's self-esteem towards online learning and also the relationship between attitude and self-esteem towards online learning among student teachers. A total of 143 student teachers who undergo their teaching practicum are involved in this study. There are two instruments used in this study which are self-developed (Questionnaire measuring Attitude) and adopted instrument from the Rosenberg Self-Esteem Inventory (RSES). All the collected data were analysed by using Rasch Measurement Model. Based on the result, the student's teachers show better attitude in the aspect of cognitive but negative attitude in the aspect of affective and behaviour. Meanwhile, the overall student teachers have moderate level of self-esteem. Findings showed that the self-esteem was significantly positive and moderately

related with attitude towards the correlation coefficient .500. In conclusion, attitude and self-esteem are the important aspect for an educator in order to maintain a good teaching and effective learning process to the students even in facing an emergency situation.

Keywords Student Teachers, Attitude, Self-esteem, Online Learning

1. Background of Study

The spring of the COVID-19 outbreak has changed education dramatically, with the distinctive rise of online learning, in which learning and teaching are undertaken on digital platforms, which is among the physical distancing policies to help slow down the transmission of the coronavirus disease and ease burden for the health systems. With the sudden shift away from the classrooms in most parts of the globe, the online form of learning is whereby a program or course which is designed intentionally to be carried out fully online through some platforms that include Skype, Zoom, Google meet, Webex, Microsoft teams, Slack, and Kahoot (Tseng, Cheng & Yeh, 2019; Zhang & Qin, 2018). Online learning encompasses some

variety of study, coursework and learning which is facilitated or conducted via the internet usage and some electronic gadgets such as the computer or phone whereby the students and the educator are staying separately in different venues which supplement the normal class learning (Lubis, Ritonga, Hia & Nasution, 2020; Nachimuthu, 2020).

The rise of the global pandemic forced a bump into online courses and learning plans for student teachers and educators, where their attitude toward the online learning is a powerful influencer for the online learning behaviour and becomes a great thing of concern (Mulenga & Marban, 2020). Student teacher's attitude is concerned with their way of thinking, behaving and acting which has a serious effect on the learner, which is developed in consequence of their experience toward online learning. To optimise the online learning, student teachers require the right infrastructure and support which will boost a good attitude toward the online learning which contributes to a positive self-esteem toward online learning. Without these, the online learning will be wasteful (Bao, 2020). For those who are capable and have the capital as well as the resources can utilize the online platforms for learning, but for those who are unable are further deprived (Zhong et al., 2020). This will eventually lead the way to more division among the privileged and fewer privilege individuals.

Concerning online learning therefore, the student teacher's self-esteem is an important variable that plays a crucial role in an individual behaviour which enables students to be positive and have a self-assurance toward online learning. A powerful sense of self-esteem aggrandizes human personal well-being and accomplishments in many ways (Bandura, 1998). According to a psychologist Albert Bandura in Adalsteinsson, Frimannsdottir and Konradsson, (2014), self-esteem is seen as the personal judgment of how well an individual can perform a course of action required to deal with some prospective situations. This involves perseverance and determination to overcome any difficulty that can interfere with utilizing the innate abilities to be achieved (Gulsen, 2017). Due to coronavirus pandemic and the rapid change of learning styles from the traditional to online learning, high self-esteem trends among student teachers will support their autonomy and confidence. Student teachers with high self-esteem will probably

determine the appropriate course of action to enhance and support their online learning outcomes independently other than the students with a low self-esteem (Prior, Mazanov, Meacheam, Heaslip & Hanson, 2016). Having a good self-esteem toward online learning will motivate, guide and support the student teachers learning processes. With the self-directed approach, the students are expected to succeed and have a goal-satisfying approach in executing the online learning tasks which include downloading/uploading learning materials, contributing to the discussion boards, viewing documents and also enhances their self-directed online learning.

Based on the above-mentioned issues, this study aims to investigate student teachers' attitude towards online learning, student's teacher's self-esteem towards online learning and also the relationship between attitude and self-esteem towards online learning among student teachers.

2. Methodology

This quantitative approach research study specifically employed correlational research design. A total of 143 student teachers who were undergoing their teaching practice under the supervision of certified teachers and also monitored by university lecturer involved as the sample of this study. A set of questionnaires serve as the measuring tools for this study. Student teachers' attitude was measured through 12 items which was developed based on the ABC model of attitude. Each of the subconstructs of attitude (Affective, Behavior and Cognitive) was measure through 4 items respectively. Meanwhile, the 10 items on self-esteem were adopted from the Rosenberg Self-Esteem Inventory (RSES).

Rasch measurement model was applied to measure the level of student teachers' attitude and self-esteem. The distribution of all items was analysed based on the measure value, and person-item map. Item with low measure value (placed lower in the person-item map) implies that the particular item is easier to be executed by the sample and vice versa (Figure 1). Meanwhile, spearman rho correlation analysis was applied to identify whether there is significant relationship between student teachers' attitude and self-esteem.

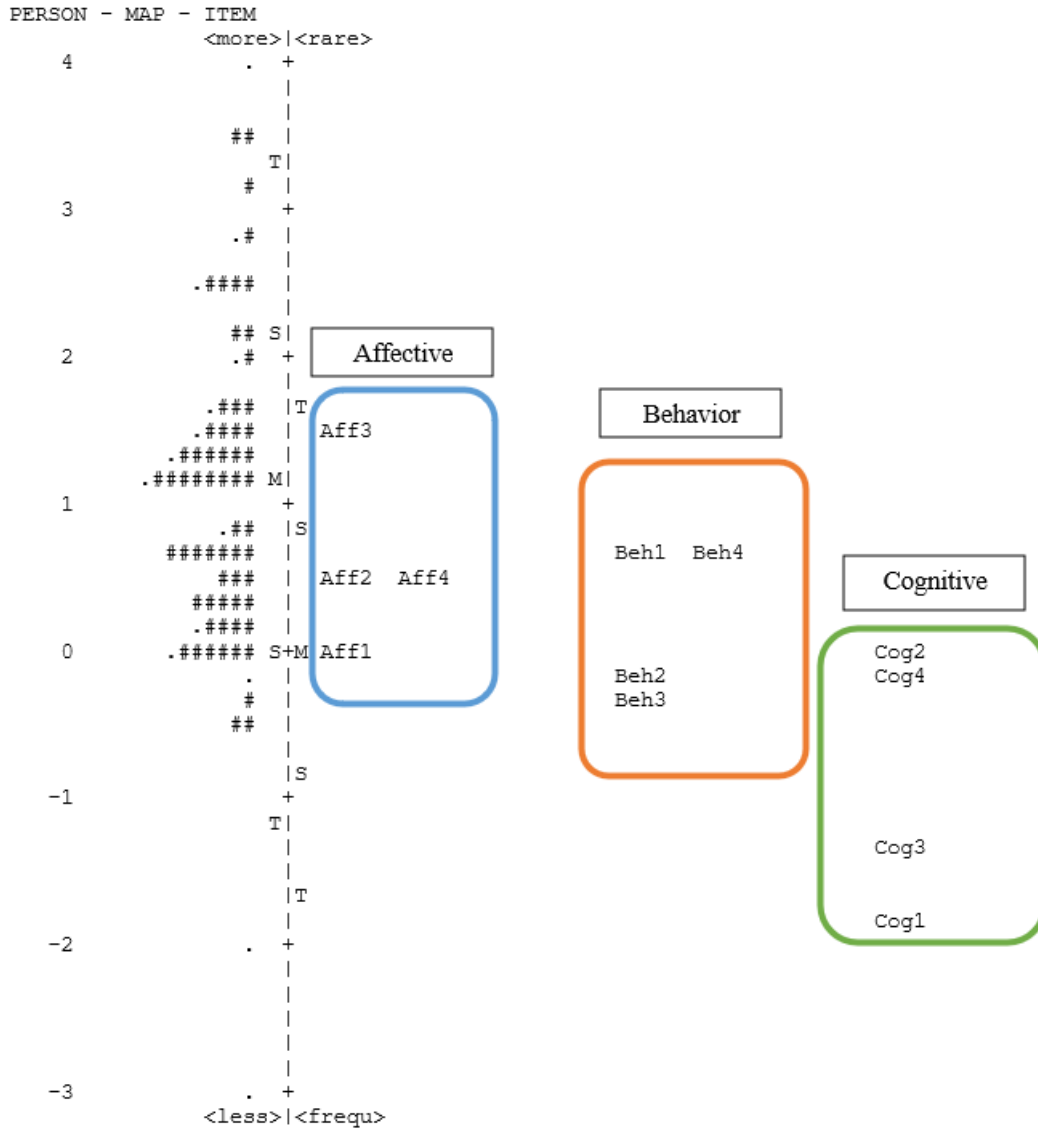


Figure 1. Person-Item Map for Student Teachers' Attitude

3. Results

Table 1 shows the measure value, average measure and rank for the three subconstructs of attitude. For the subconstruct affective, three of the items showed a positive measure value. Specifically, one of the items is more than 1 measure value (A3) which indicated that respondents feels

that online teaching is less viable than conventional learning. Meanwhile, among the four items on this subconstructs, item A1 showed a negative measure value (measure=-0.08). This implies that respondents have a confident feeling in making mistakes in giving instruction through online platform. Overall, the average measure for affective subconstruct is 0.63 at moderate level.

Table 1. Measure Value for Student Teachers' Attitude

Subconstructs	Measure Value	Rank (Level)
Affective		
A1: I am not afraid of making mistakes in giving students online instructions because it is part of the learning process	-0.08	Average Measure: 0.63 Rank 3 (Moderate)
A2: I feel confident about using online platforms for teaching	.56	
A3: I feel online teaching is a viable learning approach compared to conventional learning	1.44	
A4: I feel that online teaching offers the possibility to efficiently manage my time	.58	
Behaviour		
B1: I will use online teaching platforms regularly when teaching students	.71	Average Measure: 0.23 Rank 2 (Moderate)
B2: I will use online teaching platforms that offers many functions to support teaching and learning	-.18	
B3: I will adapt online communication techniques through various online networks because it is a fun way to communicate with my students	-.31	
B4: I will transition into online teaching methods as it assures schedule flexibility	.71	
Cognitive		
C1: I believe that using online systems requires a lot of mental effort	-1.90	Average Measure: -0.86 Rank 1 (High)
C2: I believe that the time commitment for developing distance education courses is comparable to those in face-to-face classes	-0.08	
C3: I believe that online learning enhances my teaching experience	-1.28	
C4: I believe that online learning will improve the quality of knowledge attained	-0.17	

For the subconstruct behaviour, both two of the items showed a positive and negative measure value respectively. Based on the measure value for item B2 and B3, respondents are willing to use online teaching platforms (measure=-0.18, high level) and adapt online communication techniques (measure=-0.31, high level). However, result for B1 and B4 showed a moderate measure value (.71) which indicated that respondents still not willing to use online platform regularly and make transitions into online teaching method.

For the last subconstruct of attitude which is cognitive, all the items showed negative value. Results indicated that respondents believe that online learning could enhance their teaching experiences (C3: measure=-1.28) and will

improve the quality of knowledge attained (C4: measure=-0.17). However, item C1 showed the lowest measure value (-1.90) which implies that respondents strongly believe that using online systems requires lots of mental effort.

For the variable self-esteem, the measuring items could be classified into three main levels as illustrated in Figure 2 and Table 2. Item SE2 showed the highest measure value (1.07) which means majority of respondents disagree with this item (low level of self-esteem). Meanwhile, 5 items classified as moderate level of self-esteem with measure value range from .11-.83. Lastly, 4 items fall under high measure value which majority of respondents agree with these items (value range: -0.48--1.21).

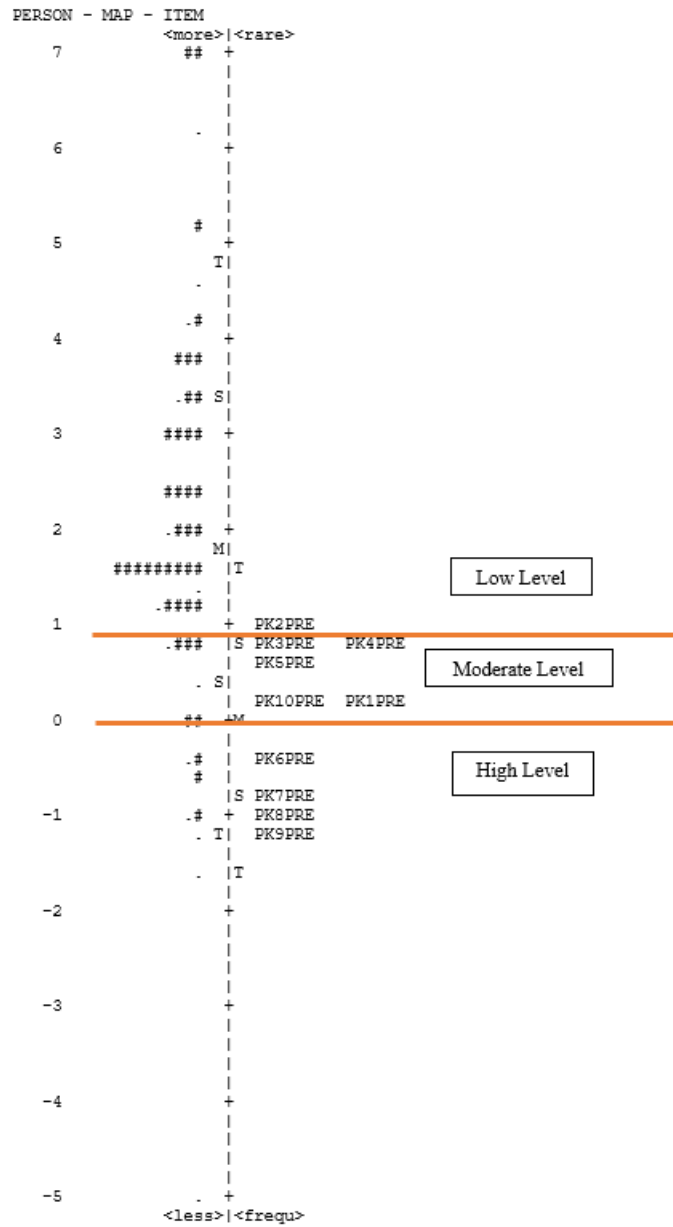


Figure 2. Person-Item Map for Student Teachers' Self-esteem

Table 2. Measure Value for Student Teachers' Attitude

Subconstructs	Measure Value	Level
(In the context of online teaching and learning)		
SE2: I think I am great person as a whole	1.07	Low
SE3: I feel that I have a number of good qualities	.83	Moderate
SE4: I am able to do things as well as most other people	.71	
SE5: I am proud of myself and my achievements	.57	
SE1: On the whole, I am satisfied with myself	.29	
SE10: All in all, I am inclined to feel that I am a successful person	.11	
SE6: I feel that I bring a certain value to the society	-.48	High
SE7: I feel that I am person of worth, at least on an equal plane with others	-.82	
SE8: I am able to practice self-respect	-1.07	
SE9: I take a positive attitude toward myself	-1.21	

Spearman Rho correlation analysis was done to identify the inter correlation between the Self-esteem with attitude in implementing online learning. Findings in the Table 3 showed that the self-esteem was significantly positive and moderately related with attitude with the correlation coefficient .500.

Table 3. Correlational Analysis between Student Teachers' Attitude and Self-esteem

			Attitude	Self-esteem
Spearman's rho	Attitude	Correlation Coefficient	1.000	.500**
		Sig. (2-tailed)	.	.000
		N	143	143
	Self-Esteem	Correlation Coefficient	.500**	1.000
		Sig. (2-tailed)	.000	.
		N	143	143
**.		Correlation is significant at the 0.01 level (2-tailed).		

4. Discussion on Student Teachers' Attitude and Self-esteem towards Online Learning

Student teachers' success toward online learning entirely depends on their attitudes towards online learning activities. Attitude toward online learning plays an important role in the processes of online learning among the student. Attitude is a variable that is usually concerned with students' perception about the online learning, their way of thinking, acting and behaving which affects the learner, the teacher and the immediate mingling group of the learner, which are developed as a result of the student experience in learning (Mumford & Dikilitas, 2020). Therefore, findings of the present study indicate that the affective subconstruct has a moderate measure of 0.63, behaviour subconstruct also show a moderate measure of 0.23 while the cognitive subconstruct recorded a high measure of 0.86 respectively. The student-teachers' attitudes toward online learning are explained based on the ABC model, which states that the structure of attitude is described with the consideration of three components (Affect, Behavior and Cognitive); these three components assist the researcher in measuring the attitude aspects comprising of the student teachers self-confidence in their ability toward online learning, perception of the importance of online learning and enjoyment of the online courses. However, by examining the three specific components of the ABC Model of attitude, the acquired results will contribute to the existing literature by providing data on each of the model components.

Rasch analysis has been applied to determine the measure for each subconstruct. The first subconstruct is

labelled "Affective" which is an emotional component measuring student teachers feeling and emotions that are associated with their attitude toward online learning, this encompasses their self-confidence and enjoyment toward the online causes (Chatterjee & Correia, 2020). The affective subconstruct indicates a moderate level of affective in attitude among the student teachers. This implies that respondents have a confident feeling in making mistakes in giving instruction through online platforms. Students experience and skills in using technologies are among the factors that can influence the student teacher's perspectives and attitude toward distance and online learning (Birbal, Ramdass & Harripaul, 2018). Lack of skill is another element that can result in technological barriers which will lead to demotivation and weaker intentions toward online learning as well as their confidence. On the other hand, good skills in working with digital technologies will pave a way to a positive attitude towards online learning (Salloum, Alhamad, Al-Emran, Monem & Shaalan, 2019).

The second subconstruct is labelled "behaviour", it comprises all kind of actions which are displayed by the learner's attitude toward online learning, and it shows the extent to which the student teachers can or cannot excellently perform online giving tasks. For the behaviour subconstruct, two of the items showed a positive measure which includes item B2 and B3 which indicate that the respondents are ready to accept the use of online teaching. This goes together with the findings of Mulenga and Marban (2020) which shows students have good skills toward the online learning platforms. However, results for B1 and B4 showed a moderate measure value which shows how respondents are not willing to participate in online learning regularly. The present study is also in line with the study of Nachimuthu (2020), stated that if a negative attitude is exhibited toward the online learning, it can lead to developing frequent uninterested online learning session. According to Zhong et al., (2020), online learning can be less reliable than the traditional learning style in terms of collaborative activities assessment and peer feedback.

The third subconstruct is labelled "cognitive" it is an aspect that deals with the knowledge and information the student teachers can know about their ability toward online learning as well as its usefulness. All the four items on the cognitive component show a negative value, which implies that the respondents have confidence and believe that online learning can augment their experience in teaching and learning on the online platforms and they believe the online courses required a lot of mental effort. This finding is in support of the work by Prior, Mazanov, Meacheam, Heaslip and Hanson (2016) where it was found a positive attitude among students toward online learning. Cognitive encompass some processes that involve thinking or memory and it is a section that store and organizes information for an individual (Garrison & Cleveland-Innes, 2005). If student teachers have a strong cognitive belief,

they can perform successfully the online task and despite the high cognitive belief, a student behaviour toward online courses can be less positive.

Online learning has been intensified in order to support learners' learning processes. Online learning self-esteem is an influential factor that enhances academic performance which has become an important element of success in learning and teaching activities, and this involves the student's judgements of their abilities in organizing and executing a course of action required in order to achieve a designated type of performances (Khalid, 2019). The findings of the present study based on the constructs of self-esteem in the context of online teaching and learning are divided into three, some of the items show a high level, some show a moderate level and some are showing a low level of self-esteem among the student teachers. There are some issues to an individual degree of self-esteem which is associated with successful adaptation to different learning styles, self-control, ability to accept criticism and positive emotions. Consequently, an individual with positive thoughts about himself toward learning online his self-esteem is high; if thoughts about oneself is negative then self-esteem will become low (Sungur, 2015).

For the variable self-esteem, Item SE2 showed the highest measure value which means the majority of respondents disagree with this item and it indicates a low level of self-esteem. Meanwhile, 5 items show a moderate level of self-esteem among student teachers. This indicates that in one way or another the respondents are sometimes not confident enough with the online courses. Adalsteinsson, Frimannsdottir and Konradsson (2014) stated that low self-esteem related to online teaching and learning can lead to undesirable adaptation of the online courses and different kind of cognitive problems which include lack of self-confidence, lack of motivation and afraid to express different Ideas or opinion on the online platforms. 4 items fall under high measure value which the majority of respondents are showing confidence and agree with the item contents. Individuals with high self-esteem make an effort to become successful in their endeavours, as assessed by others and themselves. The category of individuals showing high self-esteem toward the online courses focuses themselves on their strengths to be exceptionally good toward online platforms (Yokoyama, 2019).

5. Discussion on Relationship between Student Teachers' Attitude and Self-esteem towards Online Learning

Spearman Rho correlation analysis was conducted for this study in order to determine the relationship between the total scores of Self-esteem and attitude in implementing online learning. Spearman Rho correlation for the findings of this study indicate a positive significant relationship

which is moderately related between attitude and self-esteem with a correlation coefficient of .500 and a significance level of .000. Based on the results obtained from the study, the result acquired is a proof providing evidence on the existence of a relationship between attitude and self-esteem. It is assumed that a teacher with high self-esteem will likely develop a positive attitude toward online learning (Wasserman & Migdal, 2019). The influence of correlating attitude and self-esteem can be related to a previous study by Kim, Hong and Song (2019). They explained that high self-esteem can be correlated positively with student's attitude toward online learning because self-esteem is directly related to the learner's feelings of autonomy, high motivation level and the ability to self-regulate the online learning process which is important in the online learning environment. Due to the coronavirus pandemic, the integration of technology into the educational system is the most effective and efficient way of providing distance education in order to do away with the spread of the virus (Kucharski et al., 2020).

Spearman Rho correlation result shows that the strength of the correlation between attitude and self-esteem is at a medium level. This could be because the previous study shows that other factors can correlate with the student teacher's attitude. In a study by Peytcheva-Forsyth, Yovkova and Aleksieva (2018), they explained that lack of experience in working with a variety of ICT in a specific educational context and deficiency in using technologies in the everyday life can be some of the variables that can influence the attitude of individuals toward learning online. Possibly, high self-esteem may lead to a positive attitude towards online teaching because Nwoye, Akpom and Hwang (2019) explain that student's attitude is the actual measure of behaviour intensions and the intensions are the factors that pilot an individual to develop a positive or negative attitude (Chatterjee & Correia, 2020).

REFERENCES

- [1] Adalsteinsson, R. I., Frimannsdottir, I. B., & Konradsson, S. (2014). Teachers' Self-esteem and Self-efficacy. *Scandinavian Journal of Educational Research*, 58(5), 540–550. <https://doi.org/10.1080/00313831.2013.773559>
- [2] Bandura, A. (1998). Encyclopedia of mental health. In *Encyclopedia of human behavior* (Vol. 4, pp. 71–81). <https://doi.org/10.5860/choice.36-0036>
- [3] Bao, W. (2020). Covid -19 and Online Teaching in Higher Education: A Case Study of Peking University. *Human Behavior and Emerging Technologies*, 2(2), 113–115. <https://doi.org/10.1002/hbe2.191>
- [4] Birbal, R., Ramdass, M., & Harripaul, C. (2018). Student Teachers' Attitudes Towards Blended Learning. *Journal of Education and Human Development*, 7(2), 9–26. <https://doi.org/10.15640/jehd.v7n2a2>

- [5] Chatterjee, R., & Correia, A. P. (2020). Online Students' Attitudes Toward Collaborative Learning and Sense of Community. *American Journal of Distance Education*, 34(1), 53–68. <https://doi.org/10.1080/08923647.2020.1703479>
- [6] Garrison, R. D., & Cleveland-Innes, M. (2005). Facilitating Cognitive Presence in Online Learning: Interaction Is Not Enough. *International Journal of Phytoremediation*, 21(1), 133–148. https://doi.org/10.1207/s15389286ajde1903_2
- [7] Gülşen Büyükşahin Çevik (2017). The Roles of Life Satisfaction, Teaching Efficacy, and Self-esteem in Predicting Teachers' Job Satisfaction. *Universal Journal of Educational Research*, 5(3), 338 - 346. DOI: 10.13189/ujer.2017.050306.
- [8] Khalid, F. (2019). Students' Identities and its Relationships with their Engagement in an Online Learning Community. *International Journal of Emerging Technologies in Learning*, 14(5), 4–19. <https://doi.org/10.3991/ijet.v14i05.8196>
- [9] Kim, H. J., Hong, A. J., & Song, H. D. (2019). The roles of academic engagement and digital readiness in students' achievements in university e-learning environments. *International Journal of Educational Technology in Higher Education*, 16(1). <https://doi.org/10.1186/s41239-019-0152-3>
- [10] Kucharski, A. J., Russell, T. W., Diamond, C., Liu, Y., Edmunds, J., Funk, S., & Eggo, R. M. (2020). Early Dynamics of Transmission and Control of COVID-19: A Mathematical Modelling Study. *The Lancet Infectious Diseases*, 20(5), 553–558. [https://doi.org/10.1016/S1473-3099\(20\)30144-4](https://doi.org/10.1016/S1473-3099(20)30144-4)
- [11] Lubis, A., Ritonga, A., Hia, Y., & Nasution, A. A. (2020). Online Learning Design at Higher Education: An Example from Mathematics Classroom. *Journal of Physics: Conference Series*, 1462(1). <https://doi.org/10.1088/1742-6596/1462/1/012004>
- [12] Mumford, S., & Dikilitaş, K. (2020). Pre-service Language Teachers Reflection Development Through Online Interaction in a Hybrid Learning Course. *Computers and Education*, 144 (September 2019), 1–13. <https://doi.org/10.1016/j.compedu.2019.103706>
- [13] Mulenga, E. M., & Marban, J. M. (2020). Prospective Teachers' Online Learning Mathematics Activities in the Age of COVID-19: A Cluster Analysis Approach. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(9), 1–9. <https://doi.org/10.29333/ejmste/8345>
- [14] Nachimuthu, K. (2020). Student Teacher's Attitude Towards Online Learning During Covid-19. *International Journal of Advanced Science and Technology*, 29(6), 8745–8749.
- [15] Peytcheva-Forsyth, R., Yovkova, B., & Aleksieva, L. (2018). Factors Affecting Students' Attitudes Towards Online Learning - The Case of Sofia University. *AIP Conference Proceedings*, (December), 1–9. <https://doi.org/10.1063/1.5082043>
- [16] Prior, D. D., Mazanov, J., Meacheam, D., Heaslip, G., & Hanson, J. (2016). Attitude, Digital Literacy and Self Efficacy: Flow-On Effects for Online Learning Behavior. *Internet and Higher Education*, 29, 91–97. <https://doi.org/10.1016/j.iheduc.2016.01.001>
- [17] Salloum, S. A., Alhamad, Q. M., Al-Emran, M., Monem, A. A., & Shaalan, K. (2019). Exploring Students' Acceptance of E-learning Through the Development of a Comprehensive Technology Acceptance Model. *IEEE Access*, 7, 128445–128462. <https://doi.org/10.1109/ACCESS.2019.2939467>
- [18] Sungur, G. (2015). The Effect of Online Self-Esteem and Awareness Training Program on University Students. *Procedia - Social and Behavioral Sciences*, 197(February), 476–481. <https://doi.org/10.1016/j.sbspro.2015.07.171>
- [19] Tseng, J. J., Cheng, Y. S., & Yeh, H. N. (2019). How Pre-service English Teachers Enact TPACK in the context of Web-conferencing Teaching: A Design Thinking Approach. *Computers and Education*, 128(September 2018), 171–182. <https://doi.org/10.1016/j.compedu.2018.09.022>
- [20] Wasserman, E., & Migdal, R. (2019). Professional Development: Teachers' Attitudes in Inline and Traditional Training Courses. *Online Learning Journal*, 23(1), 132–143. <https://doi.org/10.24059/olj.v23i1.1299>
- [21] Yokoyama, S. (2019). Academic Self-Efficacy and Academic Performance in Online Learning. *Educational Psychology*, (January), 373–378.
- [22] Zhang, W., & Qin, S. (2018). A Brief Analysis of the key Technologies and Applications of Educational Data Mining on Online Learning Platform. *2018 IEEE 3rd International Conference on Big Data Analysis, ICBDA 2018*, 83–86. <https://doi.org/10.1109/ICBDA.2018.8367655>
- [23] Zhong, B.-L., Luo, W., Li, H.-M., Zhang, Q.-Q., Liu, X. G., & Li, W.-T. (2020). Knowledge, Attitudes, and Practices Towards Covid-19 Among Chinese Residents During the Rapid Rise Period of the Covid-19 Outbreak: A Quick Online Cross-Sectional Survey. *International Journal of Biological Sciences*, 16(10), 1745–1752. <https://doi.org/10.7150/ijbs.45221>

Online Collaborative Learning via Astronomy Online Lab: A Cross-cultural Communicative Experience for Malaysian and UK Students

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Abstract Communication poses several problems, particularly to English second language (ESL) learners. In overcoming these problems, some ESL learners employ communicative strategies. This study reports the efforts undertaken by Malaysian ESL learners in enhancing their communication with the native speakers during collaborative cross-cultural online activities through Astronomy Online Lab (AOL). This AOL module was utilized to achieve twofold objectives namely enhancing students' communication skills and promoting knowledge exchange during the live discussions. 29 undergraduate students from a Malaysian public university and a UK university explored the Astronomy topics online and experienced the simulation during the two live sessions conducted for one month. Data were collected from a face-to-face interview with all the Malaysian students. The

students' expectations before the live sessions, difficulties confronted when communicating with the native speakers, the communicative strategies and experience during the interactive activities were explored. The findings revealed that conversational issues such as the native's accent and the challenge in formulating strategies for solving communication problems during the conversations posed difficulties to the students. A general pattern of indirect and interactional communicative strategies as promoted by Dörnyei and Scott (1997) was evident during the interactions.

Keywords Collaborative Learning, Astronomy Online Labs, Online Platform, Communication Strategies, ESL Learners, Cross-cultural Activities

1. Introduction

A communicative strategy is a significant element in second language learning. Larry Selinker, a prominent linguist who coined the term 'interlanguage' acknowledged communication strategy as one of the major undertakings involved in second language learning (Selinker, 1972). A communicative strategy is defined as "a systematic technique employed by a speaker to express his [or her] meaning when faced with some difficulty" (Corder, 1981: 103). Such definition tallied Tarone's (1980:419) who denoted communicative strategy as "a mutual attempt of two interlocutors to agree on meaning in situations where requisite meaning structures do not seem to be shared".

In Malaysia, the second language learners (ESL) perceive English as a challenging communicative skill to master (Shumin, 2002). This is because when communicating, the ESL learners feel that they are required to have proper linguistic, sociolinguistic and rhetorical competencies (Nunan & Bailey, 2009; Mukminin et al., 2015). English is a compulsory subject to pass for students who sit for the national examination known as the Malaysian Certificate of Examination (SPM). SPM is equivalent to the General Certificate of Secondary Education (GCSE) in the United Kingdom. Not only that, students pursuing their undergraduate degree in Malaysian public higher learning institutions are also required to undertake the Malaysian University English Test (MUET) – a compulsory test to be taken during their pre-university programs, for enrolment into undergraduate courses. Despite learning English from as young as seven years old in Malaysia, many Malaysians still have difficulties in processing and expressing themselves in English. The possible reason behind the lack of English language proficiency is that it requires complex skills, beyond the understanding of grammatical and semantic rules (Abrar et al., 2018). Such difficulties are intensified by learners' lack of understanding of the meaning in multiple contexts or situations. In this regard, communicative strategies are the answer to the problem. ESL speakers expect themselves to be able to demonstrate minimal proficiency through their vocabulary, grammar, and sociolinguistics abilities when communicating with native speakers.

Communicative strategies became popular in the 1980s when Canale and Swain (1980) introduced the term 'strategic competence' – one of the important elements in their communicative competence model. Strategic competence was defined by the authors (1980: 30) as comprising "...verbal and non-verbal communication strategies that may be called into action to compensate for breakdowns in communication due to performance variables or to insufficient competence." Dörnyei and Scott (1997) further spelled out the term 'strategy' to include a conscious technique used to achieve a goal during communication.

When confronted with problems during communication, Faerch and Kasper (1980) claimed that language users employed two types of strategies in solving the communication problem; 1) avoidance behavior - users solve the communication problem by changing the communication goal or 2) achievement behavior – users develop an alternative plan in tackling the communication problem. Faerch and Kasper (1984) further elaborated that it is common for language users to confront communication problems that require the activation of a particular strategic communicative plan as the solution. Similarly, Dörnyei and Scott (1997) introduced a taxonomy of communicative strategies which was attributed to problem management in communication. The taxonomy comprises three major categories namely direct strategies, indirect strategies, and interactional strategies. Direct strategies present alternative meaning structures to the ESL learners; indirect strategies facilitate the message to be conveyed; interactional strategies involve learners' approach to fixing the problem. Examples of direct strategies are message abandonment, message reduction, message replacement, circumlocution, approximation, literal translation, code-switching, omission, mime, and self-rephrasing. On the contrary, indirect strategies are not meaning-related through the usage of fillers, repetitions and verbal strategy markers. Interactional strategies promote successful communicative methods by engaging in appeals for help, own comprehension check, asking for repetition and clarification, guessing and expressing misunderstanding.

Such taxonomy was reported by Romadlon (2016) who studied three Indonesian students' strategies when communicating with an American. He recorded 306 turns and listed multiple strategies adopted during the one-hour conversation; circumlocution (38.98%), language switch (15.3%), topic avoidance (14.6%), literal translation (6.8%), mime (8.5%), word coinage and message abandonment (6.8%), appeal for assistance (5.6%) and approximation (3.39%). The communicative strategies were adopted when the Indonesian students identified deficiency in meaning, cultural differences, speech, voice, and fluency issues.

On a similar front, Wang et. al (2017) revealed that there was a communication breakdown between the Americans and the non-native students studying in the United States. Such breakdown related to each other's perceptions and their decision to interact. The non-native students identified their concerns in communicating with the Americans which include the perceived causes of their concerns, and the strategies they would employ to address these concerns. These communication concerns were social-psychological related, cultural-related and language-related. The non-native students applied the avoidance, interaction and self-improve English language skills strategies in dealing with their communicative concerns. It was an interesting study that revealed

non-native students' avoidance in continuing conversations with the Americans if he/she sensed a bias perception. The Americans, on the contrary, perceived that non-native speakers with heavy and mild accents as more intelligent, more educated, and even expressed more interest in engaging in social interactions with them.

This highlights the importance of communicative strategies in solving communication problems confronted by ESL learners. These strategies help ESL learners to be autonomous in constructing self-strategy and solving communication problems to enhance their English language proficiency. The present paper aims to investigate an interesting topic on how ESL learners strategize their communication when communicating with native speakers. Three questions define the following sections;

- 1) What were the students' expectations before the collaborative activities?
- 2) What were the strategies adopted by the students when communicating with native speakers during the collaborative activities?
- 3) What was the students' experience after the collaborative activities?

This research involves Malaysian undergraduate students and their communication exchanges with native English speakers in a cross-cultural collaborative online learning platform. A majority of these first-year students never established direct contacts with native English speakers nor visited countries where English is the mother tongue. This study was conducted to analyze the expectations and strategies undertaken by Malaysian students during the collaborative learning activities with native English speakers.

2. Collaborative Learning via Astronomy Online Lab

Online learning has become an interesting tool for learning activities. The Astronomy online labs (AOL) module was designed to expose Malaysian and UK students to computer-supported audio and visual communications via the BigBlueButton (BBB) software. The objectives of the project were twofold; to enhance the students' communication skills and to promote knowledge exchange during the live discussions. Astronomy was chosen as a part of this research since it is a special branch of Science, Technology, Engineering and Mathematics disciplines (STEM) that pushes the boundaries of science and technology, while promoting economic and social development.

Through the AOL module, learners were engaged in a common task where each individual depended on and was accountable to each other. Students participated in a small group, so that every student could maximize their learning skills with the help of their peers. It is a process of sharing knowledge between two or more interacting individuals, to

share the understanding of a concept, area or discipline of practice that none previously possessed or could have come across themselves. This is a constructivist educational approach involving groups of students working together to solve problems, complete tasks or generate products (Kumi-Yeboah et al., 2017). According to Baruah & Paulus (2018), cultural differences in advancing creative endeavors may complicate the collaborative creative process. Interestingly, this study involves cross-cultural collaborative activities and the claim made by Baruah & Paulus (2018) warrants further investigation, which unfortunately is beyond the scope of this paper.

Online collaborations promote significant benefits in respect to theoretical underpinning (knowledge building); environmental opportunities (ICT opportunities and mix of media) and constraints (ICT uptake constrained by environment); approaches (rewards and structures including PBL); benefits (fit with information society and 21st-century skills); and methods of evaluation (mix of approaches) (Hammond, 2017). Such advantages offered by online collaborative exercise were earlier deliberated by Yang et al. (2014) who classified the five key elements of collaborative learning into students' interdependence, individual accountability, online interaction opportunities, social skills development, and group work completion.

Why do we engage students in collaborative learning? Haythornthwaite (2019:10) characterized collaborative learning as fostering "active construction of knowledge, enhanced problem articulation, and benefits in exploring and sharing information and knowledge gained from peer-to-peer communication." Collaborative learning allows students to construct their knowledge by becoming autonomous learners through active teamwork activities. The activities emphasized the sense of "togetherness" which can be transformed into learning from individual contributions to group work activities (Teng, 2007).

Despite the advantages, there are several challenges of collaborative learning through online platforms. Hadwin, Bakhtiar & Miller (2018) listed five categories of challenges faced by groups across a variety of settings namely motivational, socio-emotional, cognitive, metacognitive, and environmental challenges. Motivational challenges relate to an individual's goals and participation in the group; socio-emotional challenges promote positive vibes relating to communication and relationship in the group; cognitive challenges highlight issues in performing the shared tasks; metacognitive challenges involve problems in overseeing group's undertakings and development; and environmental challenges revolve around external conditions such as technology, resources, task complexity, etc.

Collaborative activities are very much dependent on the group members and the formation of the group. Olivera et.al. (2011) reported the distinctive characteristics of a successful and less successful group. Successful groups demonstrate a clear focus, practice collaborative work,

define work responsibilities, reflect over outcomes, establish the final output, outline assessment requirements and revise the work. These patterns elaborate on the collaborative nature of the group. The less successful group, on the contrary, shows patterns of struggle, manifest undecisive directions, indicate lack of cooperation, display multiple views of experts and demonstrate anxiety towards the outcomes. Such patterns indicate a lack of trust and difficulties in developing group harmony.

Garrison (2019) maps the impact of the difficulties in completing tasks on the performance of a group. He addressed the gap by promoting the principles of online collaboration. Those principles were primarily aimed at engaging the students in an online learning environment and creating a community of inquiry. The community of inquiry provides support and connection, framed towards promoting students to collaboratively construct meaningful knowledge in achieving the learning outcomes. This community of inquiry is outlined by its social, cognitive and teaching presence. Social presence looks into the students' personal ability to connect with the community, cognitive presence demonstrates the students' process of knowledge construction via collaborative inquiry whereas teaching presence identifies the pedagogical elements which promote the collaborative process.

Nevertheless, the process of collaborative online learning certainly requires practice and takes time to be developed. The AOL project addresses a timely and impactful goal that was officially developmental assistance compliant. It has a strong commitment towards supporting capacity building in young adults in Malaysia for their data analysis skills and key 21st-century competencies such as communication, collaboration, creativity, and critical thinking through collaborative learning activities enabled by technologically and pedagogically sound AOL. It involves selected undergraduate students in Malaysia and the UK.

3. Methodology

The data was obtained from Malaysian students' communication via an Astronomy online project with native speakers from a UK-based university. Two 2-hour live sessions were conducted for such purpose. 15 undergraduate Physics students from a Malaysian public university who studied Astronomy as an elective subject participated in the research. This study explored the students' feelings before the communication with native

speakers as well as the obstacles faced and the strategies utilized by them during the AOL collaborative learning activities.

Data were collected through face-to-face interviews where a series of semi-structured interview questions were conducted to elicit the participants' responses. The interview was audio-taped and lasted between 30 to 40 minutes for each participant. Data were also collected through reflective writing via WordPress, a microblogging platform. Participants were briefed about the procedures of the collaborative learning project, and interactions with them were carried out before the live sessions. This act as a pre-introduction to the project as well as a demonstration session of technological tools using the BBB software and WordPress. Students were given a series of reflective questions consisting of challenges anticipated before the collaborative activities. After the live sessions, another interview session was conducted to explore the strategies adopted by the participants during the collaborative activities, and their experiences after.

Participants' responses were qualitatively analyzed to obtain useful insights regarding the challenges during the live sessions, strategies applied in communicating with the native speakers, and their feelings before and after participating in the live sessions. A qualitative software, NVivo 12, was employed in organizing and analyzing the data as proposed by Miles and Huberman (1994) and Braun and Clarke (2006). The data coding was carried out using thematic analysis – an analytic method for identifying, analyzing and reporting patterns within data. NVivo software was selected because it enhanced the validity of the analyzed data (Singh, 2016).

4. Findings and Discussions

In this section, each of the research questions will be addressed. Four themes were identified from the interview data. The themes were namely 1) expectations before the collaborative online activities; 2) difficulties experienced during the live sessions; 3) strategies adopted when communicating with native English speakers; and 4) experience after the collaborative online activities.

Expectations Before the Collaborative Online Activities

The respondents' feelings before the live sessions were analyzed and illustrated in Figure 1.

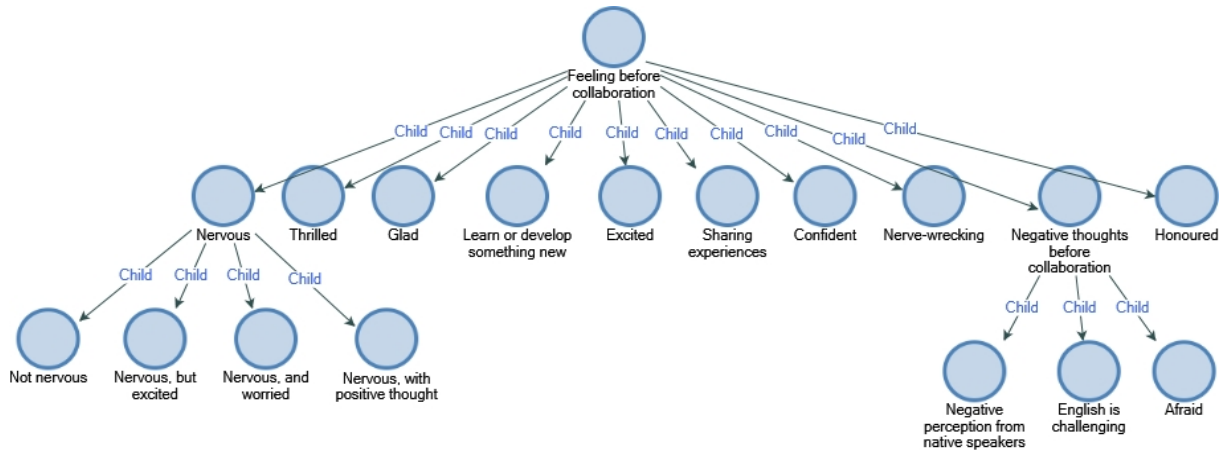


Figure 1. Feelings before the live sessions

A number of the participants were thrilled about the opportunities to participate in the project as expressed by the participants below;

“I am very excited to know what is the benefit if I joined this project and how this project can go far.” (R9)

Participant R5 revealed that it was a dream-come-true to be able to collaborate with the UK students, while R9 claimed that it was a new experience to participate in an international project. She also anticipated many benefits she would gain during the collaborative activities. Several of the respondents highlighted the positive impact of the project on them as individuals. One participant, R7 expected the project to help increase his self-confidence and improve his communication skills. Meanwhile, participant R9 stated that the English language did not pose a huge challenge for her and she would be able to understand the native speakers. Her positive vibes tallied with participant R3 who explained the networking and cultural advantages posed by the project:

“I can see that this project will be a great platform for us to expand our networking. I also believe that this project will help me to see the world from a wider perspective because the collaboration between students from two different countries that are culturally and geographically different, will encourage us to understand the different cultures in a better way.” (R3)

However, several respondents nursed negative feelings before collaborative activities;

“Knowing that I will be collaborating with students from the UK, I am thrilled and anxious at the same time.” (R1)

“I never had a chance to working with anyone who is from overseas countries until I came to this University. Furthermore, communicating in English will be so much challenging to me.” (R2)

“I thought they would look down on us and make me feel not confident before the live session.” (R4)

“It is not easy for us to communicate with the people who are not using our lingua franca as the base of communication, so for me, it is a great experience to take part.” (R5)

“At first I feel very confident to speak with them because before this I am doing part-time as an English teacher. But, later on, I remember that every country has its own slang in speaking English, so this may be a bit challenging for me.” (R6)

Difficulties Experienced during the Live Sessions

Respondents confronted several difficulties during the live sessions namely conversational issues and technical issues, to name a few. Figure 2 illustrates the students’ difficulties during the live sessions.

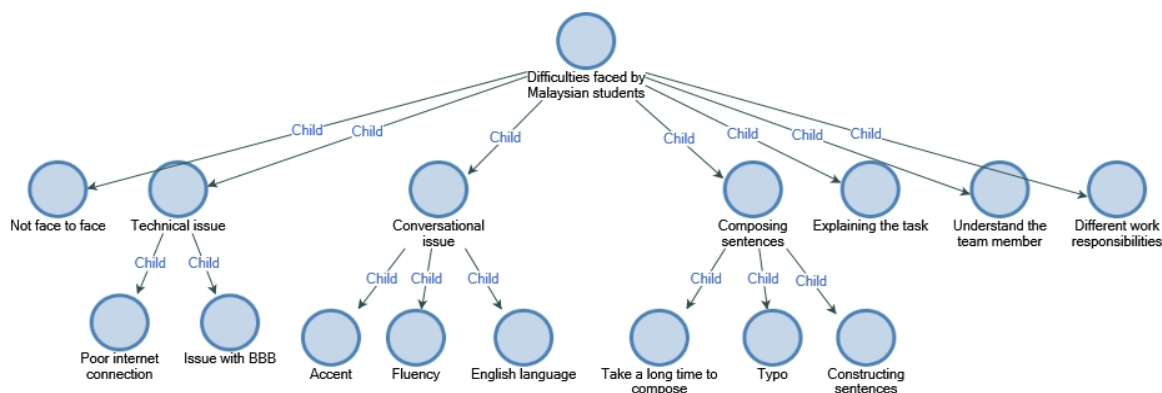


Figure 2. Difficulties experienced during the live session

The major difficulty involved conversational issues related to UK students' accents. The following respondents revealed problems in understanding the heavy accent of their UK team members.

“The first difficulty that I feel is their accent because we all know that even we are just said, that even we talk in English but not the original accent from theirs.” (R2)

“The second one [difficulty] is obviously their accent, they speak very fast with a good accent of British so it is quite hard for me because I am not familiar with English with that accent.” (R3)

“When it comes to this project, I can tell that the challenge is the first language English, so they speak more fluent and fast and with their accent, actually it is catchy and hard to understand.” (R4)

Another difficulty was work responsibilities among the team members. R5 voiced the misunderstanding between students in completing tasks, while R6 highlighted the lack of cooperation with regards to the division of responsibilities among team members.

“When doing group assignment, in our understanding, we have to do this and that, but in their [UK students'] understanding, they understand differently. For example, when they show their reports, their reports and our reports are a little bit different in terms of the format.” (R5)

“So, when we dividing the task, they ask us to do the conclusion, and so on. But we didn't agree with them. So, I think cooperation and agreement are difficulties.” (R6)

Technological glitches were another difficulty which added to the challenges experienced by the participants. Respondents R3, R6 and R8 disclosed the technological problems in using BBB during cross-cultural online collaborative activities.

“Based on the e-learning also, when the speaker sounds not good, and then we cannot hear the other side [UK students], and then the echo and the wave, so when we have the mic on together, we cannot manage which mic we want to turn on.” (R3)

“The difficulties while doing this project actually is, I have difficulty to speak through the BBB platform. It is because my speaker is not clear to hear from the other side, and the other side does not hear my voice. So, this is difficult for me to speak.” (R6)

“During the live session, we don't have any chance to talk with them [UK students], because the first live session, the server is not stable. So noisy, so we can't hear them, and for the second live session, we also have accounted problem too, because my partner in the UK, David, he has problem with the audio.” (R8)

Some respondents reported the challenging experience in structuring sentences during the interactions. They took a long time to compose their sentences, struggled to construct those sentences, made typographical errors when in the chat room and encountered difficulty in understanding and explaining the task to other team members. Failure to ‘see’ their team members' facial expressions when speaking added to the problem as they were unable to gauge the words spoken by their teammates during the conversations.

Strategies Adopted when Communicating with Native English Speakers

The participants adopted several strategies to optimize communication with native speakers during the live sessions. Figure 3 depicts the ten different strategies used by the students namely; writing down the phrases or words, electing a team leader, communicating through social media i.e. WhatsApp.

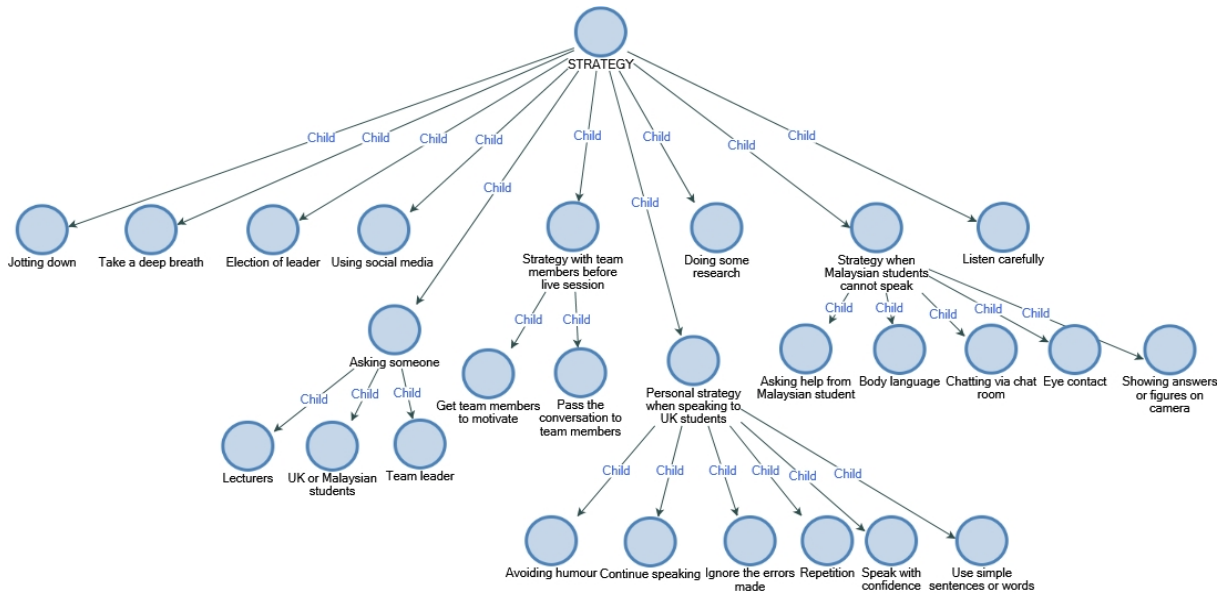


Figure 3. Strategies adopted by Malaysian students during the live sessions

Technical problems i.e. inability to communicate using the video element caused the participants to opt for the chat room in BBB web-conferencing system. The respondents below highlighted their typing strategy in the chat room:

“Strategies that I use... in Big Blue Button applet there is a chat setting so, maybe we can spell out what we want to say.” (R2)

“When I make errors, I will type back in the chat setting what I want to re-correct (R3).

My strategy is, I do not really speak when I want to describe something... I'm more on type what I want to explain the task.” (R5)

“The communication around with us is not very clear through the speaker, so we have a strategy, which is we write, we rewrite the things we want to explain to them.” (R6)

“If they don't understand what I'm trying to say, or speak, I used the chatting room to express my explanation. So, I think they can understand more when we write instead of [when] we speak.” (R7)

The respondents also adopted the following strategies in maintaining the conversations amid the technological glitches; trying to proceed with the conversation despite the technical problem, ignoring grammar mistakes or errors, repeating words or phrases, speaking with confidence, and using simple or short sentences when conversing. There were also instances when the respondents struggled to express the right words or sentences during the interactions. Below are their strategies;

“As we know that we all are in a group, so maybe if I

don't get what they want to say, maybe I'm getting nervous, so I will pass to my members to handle the problem and maybe because we are Malay, so maybe they understand what I just want to say.” (R2)

“I will ask my lecturer, Sir Wan, what do they really want... and then when the live session begins, I will ask the UK students whether they know what the task is given. If they do not know, so I will explain to them what the task. And then I will ask the leader to divide the task.” (R3)

“I will speak whatever I want, it doesn't matter if it right or wrong, I just speak with confidence. Because when you talk in confidence, people don't realize what is mistakes we actually did.” (R4)

“When I did some error while speaking, I just pass through and I just like 'okay', and if I have a mistake while speaking, I just be confident and try to talk whatever I want to talk. I don't care about the grammar. So, I think that is the way on how to overcome this problem.” (R6)

“Strategies I use is eye contact, body language, and try to use simple words, to make them understand what I'm trying to say.” (R7)

Experience after the Collaborative Online Activities

This section presents the students' feelings after participating in the live sessions. The analysis of the interview data indicated that students expressed both positive and negative feelings as illustrated in Figure 4.

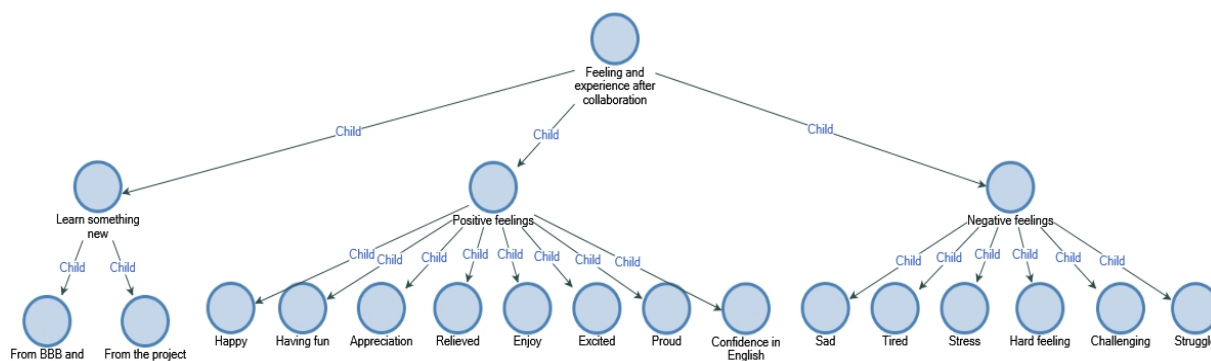


Figure 4. Feelings after the live sessions

The respondents' positive feelings were recorded below:

“So glad had join this project. I hope to have another opportunity like this because for me, it can help students to expose and approach outsiders with high confidence level.” (R4)

“I learned a very sophisticated and very useful learning tool for the future. I will share with other friends about BigBlueButton. For me, this is an application very useful to all people. Maybe one day, when I become a teacher, I can use this application when I am not around in a school or can help students to revise, which is only use this application to see each other.” (R5)

“At the same time, the BigBlueButton app is very awesome and advanced for me, as I couldn't use this kind of application before this. My feeling while using this apps such like “Wahhh”, it is so powerful. For me, the person who created this application was awesome and adorable. Then, this application helps us a lot to finish the task given. By using this application, it is much easier for me to collaborate with the people who are far away from me.” (R6)

“It is hard to understand them since they [UK students] are English speakers, so I had a struggle a bit in completing my work together [with] the tasks in this project.” (R6)

“I must say I did enjoy it. I have learned quite a lot about stellar evolution, thanks to this project. However, due to my busy schedule, it was quite hard for me to finish the tasks given on time, which actually has given me an insight about my time management so that's all on me.” (R7)

Nonetheless, the participants also voiced some negative feelings after their collaborative activities which include fatigue - probably because the 2-hour live sessions required very focused attention as they were involved in several non-stop activities from 5 pm-7 pm, stress – having to complete the tasks in a very limited time and hard feeling – due to the technological glitches which had affected their team's focus and performance.

5. Conclusions

This paper presents the results of a cross-cultural analysis by exploring the difficulties, strategies, and feelings experienced by Malaysian undergraduate students during collaborative online activities with native English speakers. Results from the qualitative analysis reported the positive sentiments of Malaysian students on online collaborative activities. This has increased their self-esteem to a certain degree, particularly for those who have never spoken with a native English speaker prior to the engagement of the project. In addressing the communication problems that occurred during the synchronous activities with the UK students, they applied multiple communication strategies. With regard to this, Mimi Nahariah et. al (2020) revealed that the perception of the discrepancies between cultures influences how people of different cultural backgrounds interact. This paper has interestingly captured such inter-cultural differences through the online communication exchanges. The authors also stressed that such inter-cultural communication performance is determined by the flexibility of the interlocutors and behavioural adaptation of each other's cultural context.

During the online activities, Malaysian students faced difficulties predominantly due to the natives' accent and own limited English vocabulary. The second challenge involved technical issues posed by the online platform – the BBB web conferencing system as well as a poor internet connection. Hence, the respondents adopted a few strategies to tackle these technological issues namely chatting and jotting down words/phrases when they were unsure of the pronunciation or unable to communicate due to the technological glitches.

There appears to be some strategic resemblance between the strategies adopted by Malaysian students with Dörnyei and Scott's (1997) taxonomy of communicative strategies. A general pattern of indirect and interactional strategies was evident during the interactions. The participants formulated indirect strategies in achieving mutual understanding and keeping the dialogues open by repeating words/phrases. They also continued the discourse by

ignoring their grammatical errors despite consciously realizing that their sentences may or may not be understood by the UK team members. Besides, the interactional strategy was performed through their appeal of help from fellow Malaysian team members, team leaders, and instructors. Such requests were sought when they confronted problems searching for suitable words to say, consumed too much time in constructing sentences, failed to translate words from Malay to English, spelled certain words wrongly, faced problems explaining the tasks due to limited astronomical knowledge or when they requested further explanations on specific individual tasks.

Those strategies were adopted in solving the communication problems they encountered during the live sessions. The students were concerned with their performance and were positive that the project could enhance their communication skills as well as improve their confidence levels when communicating in English. Independent self-study, engaging in research about UK students' culture before the live sessions, using social media as means of discussing the project after the live sessions, attentive listening and building self-confidence were important strategies adopted in the project.

Garrison's (2019) community of inquiry namely social presence and cognitive presence were significantly addressed in the research project. The social presence was obvious when a climate of trust was established namely the election of the group leader and the effort taken in understanding the different work responsibilities of each member. Similarly, multiple instances of cognitive presence were evident when students engage and collaborate with their peers on academic matters; 1) the students' effort to connect with the team members, both locally and abroad via social media application i.e WhatsApp in completing the tasks; 2) encouragement and mental preparations before the live sessions for the difficult task ahead; 3) helping each other during the interactions with the native speakers. This paper also supports the distinction between students' use of synchronous and asynchronous communication tool in online group activities, as highlighted by Hanan and Martin (2017).

The findings of this study strongly advocate that the respondents were mostly positive in their communication with the native speakers and believed in the benefits of the process. Even though several participants reported negative feelings when communicating, the positive attitudes and the students' willingness to engage and learn with the native speakers far outweighed the negative thoughts. Despite the technical glitches during both live sessions, Malaysian students were positive in their acceptance and attitudes towards using the BBB application, evidence which suggests that web-conferencing tools hold great potential and alternatives for language teaching in the Malaysian context.

Despite involving only a small sample of undergraduate

students from Malaysia, the results provided several findings for future studies in the field of cross-cultural communication and collaborative online learning. Malaysian students were positive about online collaborative learning and concurred that such activities could help develop cooperation, enhance teamwork abilities, foster individual independence and promote cross-cultural awareness among students from both Malaysia and the UK. Such programs also trigger innovative ideas on how to tackle difficult situations, solve communication problems as well as improve students' communication skills, self-awareness, and teamwork efforts.

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REFERENCES

- [1] Abrar, M., Mukminin, A., Habibi, A., Asyraf F., Makmur M. & Marzulina, L. (2018). "If our English isn't a language, what is it?" Indonesia EFL Students Teachers' Challenges Speaking English. *The Qualitative Report*, 1(6), 129–145.
- [2] Baruah, J. & Paulus, P. B. (2018). Collaborative Creativity and Innovation in Education. *Creativity Theory and Action in Education*, 3, 155-177.
- [3] Braun, V. & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 12(1), 5–28.
- [4] Canale, M. & Swain, M. (1980). Theoretical Bases of Communicative Approaches to Second Language Teaching and Testing. *Applied Linguistics*, 1(1), 1-47.
- [5] Corder, S. P. (1981). Error analysis and interlanguage. Oxford: Oxford University Press
- [6] Dörnyei, Z. & Scott, M. L. (1997). Communication Strategies in a Second Language: Definitions and Taxonomies. *Language Learning*, 47:1, 173–210.
- [7] Faerch, C & Kasper, G. (1980). Processes and Strategies in Foreign Language Learning and Communication. *Interlanguage Studies Bulletin Utrecht*, 5, 47-118.
- [8] Faerch, C & Kasper, G. (1984). Two Ways of Defining Communication Strategies. *Language Learning*, 34(1), 45-63.
- [9] Garrison, D. (2019). Online Community of Inquiry Review: Social, Cognitive, and Teaching Presence Issues. *Online Learning*, 11(1), 61-72.

- [10] Hadwin, A.F., Bakhtiar, A. & Miller, M. (2018). Challenges in online collaboration: effects of scripting shared task perceptions. *Intern. J. Compt.-Support. Collab. Learn*, 13, 301-329.
- [11] Hammond, M. (2017). Online collaboration and cooperation: The recurring importance of evidence, rationale and viability. *Educ Inf Technol*, 22, 1005–1024.
- [12] Hanan Khalil and Martin Ebner (2017). Using Electronic Communication Tools in Online Group Activities to Develop Collaborative Learning Skills. *Universal Journal of Educational Research*, 5(4), 529 – 536. DOI: 10.13189/ujer.2017.050401.
- [13] Haythornthwaite, C. (2019). Facilitating Collaboration in Online Learning. *Online Learning*, 10(1), 7-24.
- [14] Kumi-Yeboah, A., Dogbey, J. & Yuan, G. (2017). Online Collaborative Learning Activities: The Perception of Culturally Diverse Graduate Students. *Online Learning*, 2(4), 5–28.
- [15] Miles, M. B. & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. Beverly Hills.
- [16] Mimi Nahariah Azwani Mohamed, Nurizah Md Ngadiran, Nurzarina Abd Samad, Nor Fadhillah Ahmad Powzi (2020). English Language Learning Beyond the Borders: Constructing E-Collaborative Learning between Students of Different Regions. *Universal Journal of Educational Research*, 8(5A), 108 - 113. DOI: 10.13189/ujer.2020.081916.
- [17] Mukminin, A., Masbirorotni, M., Noprival, N., Sutarno, S., Arif, N. & Maimunah. (2015). EFL Speaking Anxiety among Senior High School Students and Policy Recommendations. *Journal of Education and Learning*, 9(3), 217–225.
- [18] Nunan, D. & Bailey, K. M. (2009). *Exploring Second Language Classroom Research: A Comprehensive Guide*. Boston USA: Heinle CENCAGE Learning.
- [19] Oliveira, I., Tinoca, L & Pereira, A. (2011). Online group work patterns: How to promote a successful collaboration. *Computers & Education*, 57(1), 1348-1357.
- [20] Richards, L. (2005). *Handling Qualitative Data*. Sage Publications Limited.
- [21] Romadlon, F. N. (2016). Communication Strategies in the Conversations Between Indonesian University Students and A Native Speaker. *Jurnal Vision*, 5(1), 5-26.
- [22] Selinker, L. (1972). Interlanguage. *IRAL*, 10, 209–230.
- [23] Setlock, L. D., Fussell, S. R. & Neuwirth, C. (2004). Taking It Out of Context: Collaborating Within and Across Cultures in Face-to-Face Setting and via Instant Messaging. *Proceeding of the 2004 ACM Conference on Computer supported Cooperative Work*, 604–613.
- [24] Shumin, K. (2002). Factors to Consider: Developing Adult EFL Students' Speaking Abilities. *Methodology in Language Teaching: An Anthology of Current Practice*, 12, 204–211.
- [25] Singh, M. K. M. (2016). An Emic Perspective on Academic Writing Difficulties among International Graduate Students in Malaysia. *Journal of Language Studies*, 16(3), 83–97.
- [26] Tarone, E. (1980). Communication strategies, foreigner talk and repair in interlanguage. *Language Learning*, 30, 417-431.
- [27] Teng, L. Y. W. (2007). Collaborating and Communicating Online: A Cross Bordered Intercultural Project between Taiwan and the US. *Journal of Intercultural Communication*, 13, 8–18.
- [28] Wang I-Ching, Ahn, J.N., Kim, H.J., and Lin-Siegler, X. (2017). Why Do International Students Avoid Communicating with Americans? *Journal of International Students*, 7(3), 555-580.
- [29] Yang, J., Kinshuk, H. Yu, Chen, S. J. & Huang, R. (2014). Strategies for Smooth and Effective Cross-Cultural Online Collaborative Learning. *Educational Technology & Society*, 17(3), 208–221.

The Application of ICT Techs (Mobile-assisted Language Learning, Gamification, and Virtual Reality) in Teaching English for Secondary School Students in Malaysia during COVID-19 Pandemic

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Abstract With the sudden changes caused by the ongoing worldwide pandemic in Malaysia and rapid progress in the educational learning system towards online learning, some teachers wondered about the application of technology in students' education and how it would impact their learning process. Therefore, the main objectives of this research are (1) to contextually understand the university interns' perception of ICT Techs (MALL, Gamification, and VR) in teaching English for secondary school students during the Covid-19 Pandemic in Malaysia, and (2) to determine which of these ICT Techs (MALL, Gamification, and VR) would be most preferred by the interns for teaching English to secondary school students in Malaysia. The research design for this study was quantitative and a web-based questionnaire was adapted from three articles (Mihaela Badea, 2015; Huseyin Oz, 2015; and Ali Rahimi, Niloofar Seyed Golshan & Hooman Mohebi, 2013). The reliability test indicated a value of 0.866 with Cronbach's Alpha reliability statistic. From a total of 63 university interns selected from a private university in Malaysia, the results indicated that 38.1% chose MALL, 33% chose Gamification, and 29% chose VR, as their preferred technology to teach English for secondary school students during this Covid-19 Pandemic in Malaysia. Evidence

suggested that online learning can be more effective for students where they can control their own learning pace, compared to learning in a classroom environment. Thus, future English teachers should explore and apply innovative pedagogical methods in the teaching-learning process during pandemic outbreak in Malaysia, while contributing to the development of motivation, participation, and engagement among secondary school students in acquiring the English language.

Keywords Gamification, MALL, VR, COVID-19 Pandemic, Secondary School Students, English Language

1. Introduction

Coronavirus, also known as Covid-19 has been identified as a deadly infectious disease caused by severe acute respiratory syndrome along with some types of a common cold. Due to its rapid spread and extensive death caused, it has been declared a worldwide pandemic emergency. As a consequence of this outbreak, the first announcement of the Movement Control Order (MCO) was to have a lockdown throughout the states in Malaysia.

This has impacted the education sector as throughout the pandemic crisis, schools have been temporarily shut down. As a result, the Ministry of Education has opted for online learning or e-learning with the students through technology or devices to facilitate communication in replacing classroom instructional learning.

Back in 1981, the Ministry of Education in Malaysia offered a course called the Instructional Systems Technology for the preservice teacher training program to improve the education system focusing on the teaching and learning process. Since then, many researchers have conducted studies on the implementation of 21st century technologies such as Virtual Reality, Gamification, and Mobile-assisted language learning (MALL) applications into developing and enhancing the students' English language.

Besides that, online games have influenced the lifestyles of kids, teenagers and even adults around the world. Researchers believe that applying gamification into education would not only motivate, but also increase students' focus on learning and their higher order thinking skills. According to researchers such as Roslina & Azizah (2009), and Rafail Prodani, Silvja Çobani, Jozef Bushati, and Aigars Andersons (2020) the implementation of digital technologies in the education system is essential to suit the students' interests and expectations.

According to many researchers with regards to the use of mobile applications in language learning, this approach could also be defined as constructive learning. For example, the study featuring mobile phones in English language classrooms by researchers such as Rahamat, Shah, Din, and Aziz (2011), and Azar & Nasiri (2014). Based on their findings, the results prove that the use of mobile learning (MALL) in class benefits students by motivating their learning attitude and enhancing their learning experience.

The concept of VR can be traced back to the mid-1960s which allows the user to perceive the virtual world as if it is felt and acted realistically (Sutherland, 1965). Hundreds of researchers started to explore the effects and applications of this technology and have produced various scientific papers for the last 20 years. According to Singhal, Bagga, Goyal, and Saxena (2012), VR technology grabbed the attention of the public because it allows users to interact with real and virtual objects, providing learning through experience as well as increasing user attention and motivation at the same time. There is evidence showing that VR application has been adapted throughout several educational sectors for early education and primary schools in teaching the English language in other countries. It was proven that the exposure of VR applications helped improve students' motivation and more positive attitudes towards learning the English language. Each learner would demonstrate a positive attitude when the technology was easy and useful for them to learn. (Venkatesh, Morris, Davis & Davis,

2003).

1.1. Problem Statement

When it comes to teaching with technology, there are pros and cons to it. Even though it does improve the students' motivation to learn, teachers must also consider the fact that students may be too distracted with the content that they sometimes would not be able to grasp the main ideas of the actual context. Moreover, even with the advancement of technology, there are still some students that are yet to own their own high-tech devices.

Even though VR could be considered a unique method in teaching students the English language, it may also cause problems to them. For example, it could be considered rather costly to some students who are not able to acquire it. Additionally, understanding technology such as digital innovations could even be a problem for teachers apart from the students. The lack of learning content was the main argument among teachers as VR was primarily designed for entertainment purposes. It has been considered to be quite a challenge for teachers to acquire technical skills when incorporating this in pedagogical planning. Thus, cognitive overload when using VR apps can be considered quite a challenge for an effective learning environment.

According to Becta (2004), the inaccessibility of ICT resources was not only because of the non-availability of hardware and software or other ICT materials, but also due to several factors such as poor resource organization, poor quality hardware or inappropriate software. Teachers also need to provide multiple teaching instructions for many different devices as each student may own different types of ICT resources.

1.2. Research Objectives

- 1) To find out University interns' perceptions on the use of ICT Techs (MALL, Gamification, and VR) in teaching English for secondary students during the Covid-19 Pandemic in Malaysia.
- 2) To investigate which of these ICT Techs (MALL, Gamification, and VR) would be most preferred by the University interns.

1.3. Research Questions

- 1) What are the University Interns' perceptions of ICT Techs (MALL, Gamification, and VR) application in teaching the English Language for secondary school students during this Covid-19 Pandemic in Malaysia?
- 2) Which ICT Techs (MALL, Gamification, and VR) would be most preferred by the Interns in enhancing English for secondary school students?

2. Literature Review

2.1. COVID-19 Pandemic, Outbreak Educational Sector and Students Online Learning in Saudi Arabia

Muhammad Tanveer and Amiya Bhaumik from Lincoln University, Malaysia; Shafiqul Hassan from Prince Sultan University, Saudi Arabia; and Ikram Ul Haq from King Saud bin Abdul-Aziz University for Health Sciences, both were from Saudi Arabia, Saudi Arabia (2020); have conducted research on Saudi Arabia with regards to this recent and still ongoing Coronavirus pandemic outbreak that has caused worldwide emergencies, and impacted the educational system. The purpose of this study was to emphasize the results of Virtual learning classes among students from Saudi Arabia in the times of the Coronavirus outbreak. A total of 500 students participated in this study voluntarily. Of this total, 345 students originated from Saudi Arabia, and the rest of the participants were from China, Pakistan and India who studied in Saudi Universities. The authors use quantitative and qualitative methodology to analyse the outcome of this study. The findings of this study showed that teaching and learning through Virtual Classes was very challenging, especially for the teachers. First, the teachers had no basic knowledge on setting up a virtual classroom to communicate with students, and they faced challenges in preparing for lessons as well. Moreover, students had difficulties in understanding the materials given without guidance and faced problems in submitting assignments when they could not even meet the criteria without properly understanding the purpose. The authors stated that learning through a Virtual classroom was very stressful for students as it puts more pressure on them. Thus, it was suggested that teachers and parents engage directly via social platforms with regards to their students and children. In addition to that, both institutions and students should consider learning during this Coronavirus pandemic as a dual responsibility to utilize and explore other technology options to cope in terms of education and career path concerns.

2.2. Designing Mobile Apps for English Vocabulary Learning

Wang Bor-Tying (2017) conducted a pilot study to investigate effectiveness by through the development of mobile applications that include both English and Chinese descriptions to help enhance students' English vocabulary. A total of 30 students participated with a background of English level at CEF A2 level. The results showed that students were able to learn deeply in the real context and this method also increased their motivation, compared to using textbooks. Thus, the author stated that the mobile app promotes a student-centred teaching approach in

which students work together to discuss and share their ideas with their peers. It helped enhance the students' vocabulary acquisition and improve their self-learning habits.

2.3. Perception of the Usage of Mobile Assisted Language Learning (MALL) in English as a Second Language (ESL) Learning among Vocational College Students

Wan Ummu Aiman Wan Azli, Parilah Mohd Shah and Maslawati Mohamad (2018) conducted a study to investigate the perceptions on the usage of MALL in English as a Second Language (ESL) among private vocational college students. There was a total of 100 students participating from KRU Academy vocational college. Based on the results, 60% of the participants agreed that using MALL gave them greater control over their tasks and most of them decided that this application was easy to use. 43% of them agreed that using MALL was much more accessible and beneficial in completing their tasks. Thus, the authors suggested applying the use of MALL as one of the teaching aids since it provides various activities for the students to explore regardless of time and place, as well as motivating them to engage with peers and teachers using the targeted language.

2.4. Enhancing English Language Learners' Motivation through Online Games

Natalia V. Iaremenko (2017) conducted a study on how gamified learning brings a positive impact to motivate students in learning the English language. A total of 120 students from the National University of Life and Environmental Sciences of Ukraine in Kyiv was chosen. The findings showed that games had been proven to be motivating in terms of cognitive, emotional, and social aspects of players. The author suggested that teachers need to accept the fact that gamification could also become one of the critical technological tools to teach students in the language classroom because not only it helps increase students' motivation but also their participation in the learning process.

2.5. Enhancement of Performance and Motivation through the Application of Digital Games in an English Language Class

Saovapa Wichadee and Fasawang Pattanapichet (2018) conducted a study about how a digital game could impact students' learning performance and motivation. The targeted population was 2,645 students at a private university in Thailand. Based on the results gathered, gamified learning (Kahoot) produced more achievements from students and increased their learning motivation. The authors stated that the application of digital games can

change the situation in the learning process from being dull and challenging to exciting and much easier to understand.

2.6. The Effect of Virtual Reality on EFL Writing Performance

Emrah Dolgünsöz, Gürkan Yıldırım, and Serkan Yıldırım (2018) conducted a study based on VR technologies to examine the effect it had on developing EFL writing skills. The researchers used the sequential exploratory mixed methodology which initially analysed qualitative data and following that, synchronized them with quantitative findings. A total of 24 EFL first-year students voluntarily participated in this study. Based on the results, majority of the participants felt that VR provides the most benefits on listening skills acquisition. The participants showed a slight improvement in writing skills only when they were given information with VR for writing purposes. Overall, the researchers stated that although VR does not affect learners' writing performance, it does make a difference to their long-term retention. Participants enjoyed the VR experience and found it surreal in terms of the learning environment. In the end, the researchers suggested further research to be done relating to the topic of different age groups and in other language skills such as speaking, listening, and reading.

2.7. Students' Perception in Using Virtual Reality Device in English Classroom

Siti Norzaimalina Abd Majid, Rosnani Ismail, Hafizoah Kassim, Asiah Kassim, and Aisyah Hanum Abu Bakar (2019) from University Malaya Pahang decided to conduct a study based on students' perception from using VR devices in English language classrooms. There were 137 students who volunteered to participate from a technical university in Malaysia. Based on the findings, the students gave a positive insight to the implementation of VR in the classroom. They found it to be a useful tool, flexible, and easier to use with clear and understandable instructions given. Moreover, most of the students agreed that using VR in learning English is an enjoyable experience and helped them to improve their reading skills as well. The participants in this study strongly recommended using VR as one of the learning tools for others because it brings various benefits in learning the English language in terms of usefulness and has instructions that are much easier to understand.

2.8. The Gap

Although technology has been successfully applied throughout education study in Malaysia, it is still difficult to sustain its success with the constant need for software and hardware upgrading. More money needs to be spent

and invested in providing sufficient technical support. The Malaysia Education Blueprint of 2013 to 2015 provided software and 1Bestarinet for schools throughout the nation in a bid to compete with the rest of the world in this 21st century computer literate generation. Still, it has yet to reach their goals up until 2018. This is because educators still prefer to use traditional methods of teaching.

Moreover, with the constant change of technology, most schools in Malaysia have yet to understand the true value of technology integration. For instance, Gamification and MALL have been practiced among the school educators in teaching secondary language, but not Virtual Reality. The reason is because of a lack of time, support, infrastructure, and many others. (Motaghian, Hassanzadeh, and Moghadam, 2013). Currently, four countries have started investing and using VR in their education, and this is in China, U.S.A, U.A.E, and France. These four countries have proven the success of virtual reality implementation into their educational sector.

Therefore, it is hoped that through this study a better understanding is given for educators to bring forward the innovative practices into English teaching by applying modern media platforms.

3. Methodology

A proposed sample was used for this study and the targeted population had a total of 63 participants. The distribution of this questionnaire was through social media platforms. The participants were given a set of questionnaires through the online Google Form link and all responses were collected anonymously.

The questionnaire was designed based on the five-point Likert-scale ranging from 1- Strongly Disagree, 2-Disagree, 3- Neutral, 4 –Agree, and 5 – Strongly Agree. Overall, there were 5 sections included in the questionnaire with a total of 21 questions. The first section of the questionnaire included participant personal information such as age, gender, and knowledge of the three technologies. The second, third, and fourth sections were based on the interns' perceptions for each of the technologies to be used to teach the English language during the Covid-19 pandemic outbreak. While the last section was based on their preference on which of these technologies (MALL, Gamification, and VR), they would choose to teach secondary school students.

3.1. Pilot Test

The questionnaire was piloted with the first 20 responses out of 63 interns. The data for the pilot study were run through SPSS to test the validity and reliability of each item. Each item was computed using the Cronbach Alpha in SPSS 23. For the items tested, .866 was generated as shown in Table 1, giving the conclusion that

an 86% for internal consistency was obtained overall for the 19 items.

Table 1. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.866	.862	19

The results showed that the value of the piloted test was higher than 70%. Hence, it was deemed absolute to justify that the items had a high reliability for further collection and analysis. Therefore, the data were considered reliable for analysis.

4. Findings

4.1. Introduction

This chapter aims to present the main findings of the data collected from the Management and Science University interns. These include the participants' responses to each question and their justifications at the end. The gender question was not asked nor included in the first part of the questionnaire since there were more females than the males among the participants. Thus, no questions based on gender were asked in the questionnaire.

4.2. Main Findings

This section presents the descriptive statistic of frequency for each item as presented categorically. The first part demonstrates the quantitative analysis of the data that would answer the first research question, (i) What is the University Interns' perception of ICT Techs (MALL, Gamification, and VR) in teaching the English Language for secondary school students during the Covid-19 Pandemic in Malaysia?

The second part presents the percentages that answer the second research question (ii) Which ICT Techs (MALL, Gamification, and VR) are most preferred by the Interns in enhancing English for secondary school students?

Table 2. Age

Age	Total
22	29
23	21
25	2
28	1
Total:	63

Table 2 shows the total of participants were divided according to their age groups. The table shows that majority of participants were 22 years old.

Table 3. Interns' knowledge and experience of the three ICT tools.

Have you ever used Gamification in language teaching?	Frequencies
YES	45
NO	18
Have you ever used a MALL in language teaching?	
YES	42
NO	21
Have you heard or read about Virtual Reality?	
YES	55
NO	8

Table 3 indicates the frequencies for each question as responded by the participants. With an overall total of 63 responses collected, the majority of respondents had the experience of using both technologies (Gamification and MALL) in teaching languages during this pandemic outbreak in Malaysia and acknowledged the existence of VR.

4.3. Research Question 1 - What is the University Interns' Perception of ICT Techs (MALL, Gamification, and VR) Application in Teaching the English Language for Secondary School Students during the Covid-19 Pandemic in Malaysia?

For the second part of this questionnaire, respondents were to answer each question based on the 5-point Likert scale, where 1 – Strongly disagree, 2 – disagree, 3 – Neutral, 4 - agree, and 5 – Strongly agree.

Table 4. Total of frequencies for each question

Questions	SD	D	N	A	SA
Games are both fun and educational.	-	-	6	32	25
Games should be given a special role in the foreign language teaching syllabus.	-	1	1	27	34
A game-based learning approach is essential to train future teachers.	-	-	2	33	28
Games are adaptable for different levels of knowledge.	-	-	1	34	28
Games can be useful in stimulating learners' language acquisition.	-	-	-	21	42
The utilization of MALL technologies increases students' motivation for language learning.	-	-	-	21	42
Applications such as WhatsApp, Telegram, and Facebook provide opportunities to use English language without the limitation of time and space.	-	2	2	16	43
MALL systems could increase the quality of lessons.	-	3	4	15	41
M-learning technologies can be used as a supplement to language learning and teaching at all levels of education.	-	-	3	13	47
MALL applications can generate real-world, communicative tasks for Language learners.	-	-	2	18	43
VR would add fun to the teaching process.	-	1	1	25	36
VR is attractive and would motivate the learners.	-	-	1	22	40
VR presents a fun and challenging way to engage students in language learning.	-	-	-	33	30
VR should be considered as one of the teaching aids for language practice.	-	-	-	43	20
VR can be considered as a realistic approach to language learning.	-	-	-	40	23

Such significant agreement was indicated in Table 4. With a total of 63 respondents, the majority of participants showed a positive attitude towards the application of these three ICT techs (Gamification, MALL, and VR) for teaching the targeted language to students through a virtual classroom during the MCO period in Malaysia.

4.5. Research Question 2 – Which ICT Techs (MALL, Gamification, and VR) would be most preferred by the University Interns in Enhancing English for Secondary School Students?

This section demonstrates the results regarding frequency and percentage for the close-ended second research question (ii) Which ICT techs (Gamification, MALL, and VR) would be most preferred by the University Interns in enhancing English for secondary school students?

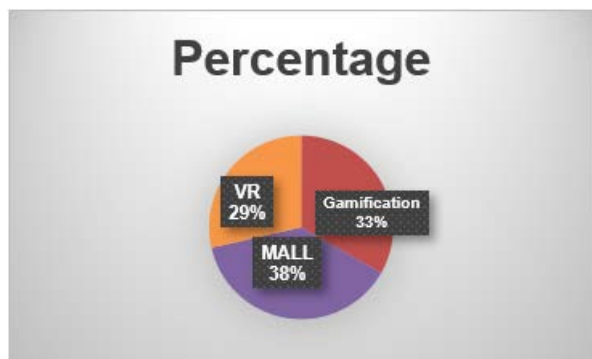
**Figure 1.** Percentages for three ICT Tools

Figure 1 shows the overall results of respondents with MALL having the highest percentage of 38%, Gamification with 33%, and VR with the lowest at 29%.

5. Discussion

5.1. Summary of Findings

The findings implied that interns believed the importance of gamification to be adapted in teaching the English language among secondary school students during the Covid-19 Pandemic in Malaysia, as it could create a fun and enjoyable environment for students to learn.

“The fact that young students prefer to use computer games in acquiring new information should be expected.” - Prensky (2001)

Hence, the interns agreed that future teachers should be trained on the game-based learning methodology beforehand to prepare for the virtual classroom in engaging with students during the MCO period in Malaysia.

Furthermore, the interns' rated all the items positively as they understood that MALL had high potential in contributing to effective second language acquisition for secondary school students. As a recent development in mobile technology:

“It was becoming a practice trend in technology-enhanced language learning where teacher-student can learn and teach digitally anywhere and anytime.” - Şad & Göktaş (2013)

It was emphasized among other researchers that

language learning is beneficial if it were managed in systematic ways through mobile applications when teaching the targeted language during the MCO period due to Covid-19 in Malaysia.

“VR not only can change the way students learned but also exposed them to a simulated version of the reality which could be manipulated to suit the students’ learning needs.” - Yahaya (2007),

The data implied that the interns viewed VR technology as a fun and challenging way to engage students in the language learning process through a virtual classroom. As enjoyable and productive as it is, it could also present a more real-life learning environment for the students during the MCO period. And thus, creating a feeling of involvement among students.

5.2. Comparison of Findings with Previous Studies

A series of recent studies have indicated that the use of gamification in second language learning has brought a significant benefit not only in terms of enhancing the students’ language learning process but also in terms of motivation as well.

“Gamification can give more exposure towards learning to students during this MCO as it adds fun educational learning” (S1)

The finding of this study runs parallel with one of the related literature reviews, Nataliia V. Iaremenko (2017), which stated that:

“The application of game elements into education makes it more relaxed, fun and comfortable for the students to learn.”

This can be agreed upon for catering to the needs of the new generation, that the key to successful technology integration in teaching the targeted language during the MCO period in Malaysia would be the efficient use of digital tools for better student engagement as appropriate to the tasks.

A further novel finding was that mobile learning applications have been increasingly used by teachers to engage with students for language learning since the start of the MCO period. Several pieces of evidence have suggested that MALL does provide students with potential benefits in learning a second language, creating a more effective process learning-teaching through the virtual classroom setting. In line with a previous study by, Ornprapat Suwantarathip and Wiwat Orawiatnakul (2015), mobile phones can create a pleasant learning environment and have a positive effect on learning.

“Students achieve better results in a positive learning environment during this pandemic outbreak period when they can connect with their peers virtually. M-learning can help enhance social integration among students with different learning needs and styles.” (S2)

The results of VR in data findings were equal to previous studies by researchers where the application of virtual reality in language learning had immense potential through immersive and exploratory learning for the students. apart from helping the students to understand the main idea of the learning topics, it also enabled them to process new knowledge.

“VR visualizations can be experienced in any language.” (S3)

Liang-Yi Chung (2012) stated that:

“The unique virtual environment of this application provides actual proactive learning and interactions that enable the students to engage proactively in the virtual world.”

5.3. Arguments

As this outbreak of the Covid-19 pandemic throughout the globe is still an ongoing situation, schools being a part of the education system have had with no option but to be closed in Malaysia. Following an announcement from the Ministry of Education, online learning was opted for to enable lessons to continue throughout the MCO period in Malaysia, and teachers are expected to explore technological tools and be creative when conducting lessons virtually. The challenges teachers had to face with this sudden digital demand were quite drastic in order to adapt to the new norm. It was not an easy task for most teachers in Malaysia to bear the responsibility of making sure the learning process went smoothly and efficiently.

Even so, students were more responsive and supportive when learning virtually from their respective homes during this MCO period. Previous studies showed that students found this experience to be unique and enjoyable. Students were motivated to engage through learning sessions either in group discussions or by participating in online debates.

Besides that, since technology has been a crucial part of education in this digital era, it has helped to ease the process of teaching and learning the targeted language. It is time for future teachers to rethink the idea of applying technology into teaching the English language among secondary school students, as it gives much more information than a textbook can provide. Besides that, technology could help by supporting students in their ability to learn and enhance their language skills and benefit the teacher in meeting the students’ needs in language learning settings. The positive effect from technology has offered numerous alternatives for teachers to create a teaching and learning process in a more fun and productive environment for students.

Nonetheless, the present study confirmed that gamification produced real-world experience according to scaffolding concepts, MALL helped deliver essential resources with easy access anytime and anywhere, while

Virtual Reality enabled the students to explore and interact through different types of social skills and actions. These introduced possible confounding factors in developing students' creativity that provided them with an appealing and enjoyable different style to study the second language.

"Language teachers should explore other technological-based lesson materials that could support students to enhance their language skills during this MCO period." Pourhossein Gilakjani, and Sabouri, (2017)

"E-learning would give students better control over their own learning progress." Dr. Abdelhak (2019)

5.4. Conclusion

5.4.1. Suggestions

When it comes to choosing a game during the MCO period while having to practice social distancing, teachers should consider the fact that students learn best when they interact with peers, while at the same time competing with one another, as it helps to boost their motivation and participation. A teacher should also consider the purpose of a game, the level, the number of students, equipment, materials, and time management to conduct a game-based approach when choosing a game that would best suit the students' needs in the language learning process.

"To maintain the students' motivation during Pandemic outbreak, it is recommended for teachers to use of many various strategies" Dörnyei (2001).

It was also recommended for future studies that an investigation of how English language teachers could accomplish blended learning lessons through the use of MALL depending on the objectives of a lesson. Interviews and observational assessments were highly advised for future research to test the use of mobile devices in second language learning among secondary school students.

Even though VR does help in developing students learning performances, there are not many applications designated for secondary school students targeted in teaching English language. Therefore, further analysis and experiments for this technology to be used in secondary school are strongly recommended for future teachers in the educational sector to understand how these gadgets can be utilised by language teachers and students to suit their needs during this ongoing outbreak pandemic situations.

5.4.2. Conclusion

The true purpose of this study was to determine which ICT techs (MALL, Gamification, and VR) would be most preferred by teachers to teach and improve secondary school students a targeted language. Since the Ministry of Education had announced the closure of schools all

throughout the cities and countries in Malaysia, this had impacted most on education systems, especially teachers. Underprivileged students would face difficulties in accessing educational resources outside of education centres (UNESCO, 2020). This would lead teachers getting restless to adapt to their day-to-day job when planning and conducting the lessons virtually.

Even so, learning from the comfort of their own homes gives the students a sense of purpose during the MCO period of this Covid-19 pandemic outbreak. It creates a positive environment, experience, and opportunity in establishing the targeted language. Thus, teachers will need support and training for integrating technologies into teaching English language to secondary high school students. With the successful integration of these ICT tools, students would have the chance and possibility for effective and meaningful language enhancement.

Furthermore, this paper provides new insight and a better understanding of how these ICT techs (MALL, Gamification, and VR) should be used to improve students' language learning skills especially in developing their creativity and increasing their involvement to study the targeted language. To sum up, the results showed positive attitudes from the interns in increasing students' motivation to effectively learn the English language during the Covid-19 pandemic in Malaysia.

REFERENCES

- [1] Ahmadi, D. (2018). The Use of Technology in English Language Learning: A Literature Review. *International Journal of Research in English Education*, 3(2), 115-125.
- [2] Arikan, A. (2011). *Effectiveness of using games in teaching grammar to young learners*.
- [3] Azar, A. S., & Nasiri, H. (2014). Learners' attitudes toward the effectiveness of mobile assisted language learning (MALL) in L2 listening comprehension. *Procedia-Social and Behavioral Sciences*, 98, 1836-1843.
- [4] Dolgunsöz, E., Yıldırım, G., & Yıldırım, S. (2018). *The effect of virtual reality on EFL writing performance*.
- [5] (n.d.). *ENHANCING ENGLISH LANGUAGE LEARNERS' MOTIVATION THROUGH ONLINE GAMES*.
- [6] Gozcu, E., & Caganaga, C. (2016). *The importance of using games in EFL classrooms*.
- [7] Hashim, H. (2018, 5 17). Application of Technology in the Digital Era Education. *International Journal of Research in Counseling and Education*, 1(2), 1.
- [8] Hashim, H., Md. Yunus, M., Amin Embi, M., & Mohamed Ozir, N. (2017, 3 29). Mobile-assisted Language Learning (MALL) for ESL Learners: A Review of Affordances and Constraints. *Sains Humanika*, 9(1-5).
- [9] Kassim, H. (2018). *STUDENTS' PERCEPTION IN USING*

VIRTUAL REALITY DEVICE IN ENGLISH CLASSROOM.

- [10] Rafail Prodani, Silvja Çobani, Jozef Bushati, and Aigars Andersons. (2020). An Assessment of the Factors that Influence the Use of Digital Technologies in Teaching: A case study. *Universal Journal of Educational Research* 8(4), 1453-1460.
- [11] Vasileiadou, I., & Makrina, Z. (2017, 11 7). Using Online Computer Games in the ELT Classroom: A Case Study. *English Language Teaching*, 10(12), 134.
- [12] Wan Azli, W., Shah, P., & Mohamad, M. (2018). Perception on the Usage of Mobile Assisted Language Learning (MALL) in English as a Second Language (ESL) Learning among Vocational College Students. *Creative Education*, 09(01), 84-98.
- [13] Wang, B.-T. (2017). Designing Mobile Apps for English Vocabulary Learning. *International Journal of Information and Education Technology*, 7(4), 279-283.
- [14] Wichadee, S., & Pattanapichet, F. (n.d.). *ENHANCEMENT OF PERFORMANCE AND MOTIVATION THROUGH APPLICATION OF DIGITAL GAMES IN AN ENGLISH LANGUAGE CLASS.*

Development of Learning Media for Automotive Charging System Based on Macromedia Flash Vocational School

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Abstract This study aims to: (1) determine the feasibility of learning media for electric charging systems based on Macromedia Flash 8 and (2) to determine the ratio of student learning outcomes of the learning medium electrical charging system based on Macromedia Flash 8. This research's method is the Research and Development (R & D) based on the 4D research and development model. Steps being taken, namely the definition phase (define), the planning (design), stage of development (develop), and the deployment phase (disseminate). Data collection techniques in this study were interviews, observation, and questionnaires. The object of research is the vocational school. Based on the results of the validation by the material, experts obtained an average score of cumulative learning media by 90, 0 % with the criteria "Very Eligible". There is no revision of the material. The average incremental score validation by media experts by 90, 0 % with standards" Very Decent, the trial is conducted through 2 stages, namely the control class trial and experimental class trial. Before being tested on the control and experimental classes, small group and large group tests were performed. In the small group trials, an average score of 93, 7 % was obtained with the criteria "Valid," and the extensive group trial results obtained an average score of 94.8% with the criteria "Valid." Test try experimental class earned an average score of 8 6, 7 with the requirements of

"Good" means that the media developed feasible to use and ready to be used as teaching materials.

Keywords Charging System, Media Learning, Macromedia Flash 8, Vocational School

1. Background/ Objectives and Goals

Learning is essential and fundamental for every individual because education is a process of transfer of knowledge from educators to students [1]. The role of educators is providing information and pouring learning materials as much as possible to the learners. Learning is fundamental in human life; by learning, humans make individual qualitative changes so that their behavior develops. Learning is a complex process in every person throughout his life [2], [3]. The learning process occurs because of the interaction between a person and his environment [4]. Learning is an activity, both physical and psychological, which results in new behavioral changes in individuals who learn in the form of relatively constant abilities and not caused by maturity or something temporary.

The results of learning activities are characterized by

changes in behavior in a relatively permanent positive direction in people who learn [5]. A person can be said to have succeeded in learning to show a change in him [6]. Student learned as a result of positive changes in behavior, mindset, outlook, and students' ability from an interaction act of teaching and learning in learning outcomes of intellectual, cognitive strategies, attitudes and values, innovation, verbal and motor learning products. These changes can be interpreted as an increase and development that is better than before.

Vocational education learning cannot be separated from the media [7]. Media is a means of channeling messages or learning information that would be submitted by the source of the message to the target or recipient of the message [8] [9]. The use of instructional media can help achieve successful learning [10-12, 27]. Nowadays, there are many assisted by the learning media with Macromedia Flash. Macromedia Flash is a software application for animation that can be used for the Web. With Macromedia Flash, we can equip a website with several kinds of animations, sounds, interactive animations, and others. The technology has emerged vary drastically, and the learning process in today's environment goes beyond the expectation in this competitive world [13]. In the modern era, teachers must be able to create learning media that attract students [14]. Macromedia Flash 8 is a software that is modern and can be used to add dynamic aspects of Web or interactive animated film. Software Macromedia Flash 8 is an application which can make learning media in the form of text, images, and animations, which then between each function is the function of writing, the function of drawing and animation function can be incorporated into media that have utility more than one function and with their Macromedia Flash 8 application is expected for educators to be more creative in improving learning so as to improve student learning outcomes.

From the results of observations and interviews conducted, it was also found that the student scores of several vocational education subjects, especially the filling system, were still low. In the Covid 19 era, there were still most teachers who used the lecture method and also used a blackboard during the learning process. In fact, vocational education aims to prepare students for work [15] - [17]. Another factor that causes low student learning outcomes is because teachers have not optimally utilized media such as audio-video or other media such as animation and the like. Learning outcomes can be seen from the value of the Mid-Semester Assessment, and this can also be seen from the attitudes of students following the learning process.

Based on these considerations, the researchers tried to develop a media *charging system* based on *Macromedia Flash 8* as a learning medium. It is hoped that this learning media can attract students to learn the electrical *charging system* material so that competency standards can be achieved through the learning process by following the instructions given by the teacher.

2. Methods

This research is a type of Research and Development (R&D). The research and development used in this study is the 4D model short for Define, Design, Development and Dissemination [18]. Research and development are research methods used to produce certain products and test the effectiveness of these products [19], [20]. To be able to produce certain products, used research that is needs analysis and to test the effectiveness of these products in order to function in the wider community.

1. The definition phase (Define)

This define phase includes four main steps, namely front-end analysis, front-end analysis, concept analysis, task analysis, and formulation of learning objectives (specifying instructional objectives).

2. Stage Design (Design)

In this design, the phase aims to design teaching materials for learning tools to obtain initial concepts. a) Selection of Teaching Materials: the chosen teaching material is the charging system animation teaching material which aims to facilitate the learning process because animation-based teaching material is very relevant and easily liked by students at this time, b) Selection Format (*Format Selection*): the choice of format in the development of learning tools is intended to design or design the contents of learning materials, c) Initial Design: based on the analysis that has been obtained, the design of learning tools is accepted, namely teaching materials that must be worked out before being tested by experts.

3. Development Phase (*Develop*)

The goal at this stage is to produce teaching materials for the electrical *charging system* animation. The activities carried out at this stage the researchers validated teaching materials in the form of an animation charging system on the car to the material expert and the media expert, after which they tested the student responses.

4. Spread Phase (*Dessiminate*)

The *disseminate* stage is the final stage of development. Dissemination step was done to promote product development so that it can be accepted by users, both individual, group or system. At this stage, deployment is done by way of disseminating learning media products to the schools studied. Design validation is a process of activities to assess whether the product design, in this case, the new work system will rationally be more effective than the old one or not. It is said rationally because the validation here is still an evaluation based on rational thought, not field facts. In this research, the proof is in the form of product design validation.

Data analysis is an activity after the data from all respondents, or other data sources are collected. Activities in data analysis are grouping data based on variables and

types of respondents, tabulating data based on variables from all respondents, presenting data from each variable, doing calculations to answer the problem formulation. The technique used to analyze qualitative and quantitative data, then the data were analyzed by descriptive statistics. According to Sugiyono (2015: 207), descriptive statistics are statistics that function to describe or provide an overview of the object under study through data samples or existing populations.

- Mean or average value.
- Median or middle value.
- Mode or data values that often appear.

T test is used to compare the average learning outcomes of the experimental group and the control group [22] . Table 1 is used to see product eligibility. If the product is valid with a score of 80-100, 60-79 is quite valid, less than

50 is not valid.

Table 1. Criteria for Interpretation of Scores Based on Intervals [21]

Final Score	Classification
80-100%	Valid
60 – 79	Valid enough
50 – 59	Invalid
<50	Invalid

3. Results

From the results of research on the development of learning media for *charging* systems based on *Macromedia Flash 8*, the following results are obtained:

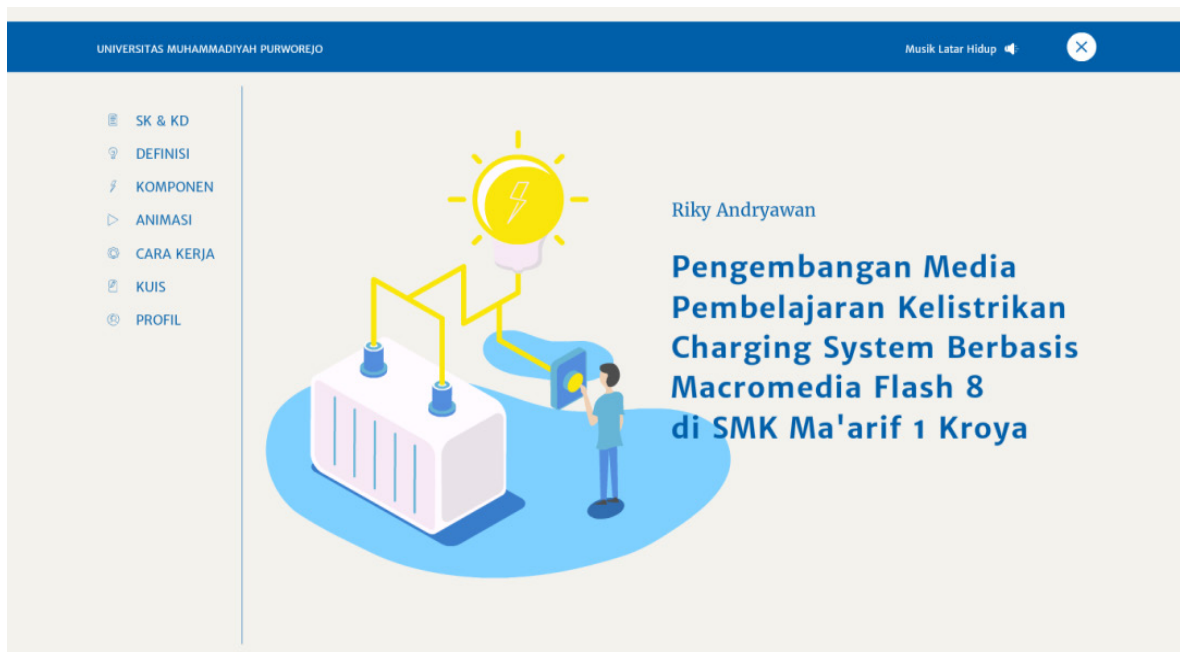


Figure 1. Display of learning media titles and menus

From Figure 1 above is a display of the learning media title. From this title, there are menus provided to make it easier to link to the next menu. From the menu contains competency standards, definitions, components, animation, work methods, quizzes and learning media profiles.



Figure 2. Menu display and learning media components



Figure 3. Menu display and learning quizzes

In Figure 2 about the menu display and the components of learning media, it can be seen that in this learning media there are pictures and animations to make it easier to learn the material given.

Based on Figure 3, there is a quiz menu that is used by students to practice questions. Students can practice

questions independently with this learning media. Macromedia flash learning media display contains the title of competence, learning objectives, the name of the filling system components, component functions, animation of how to work, and the existence of exam questions by students.

Table 2. Results of Expert Data Validation Results

No	Item Questions	Score	(%)	OPTION
1	Media is relevant to the material students must learn	4	100	A
2	The design of instructional media is in accordance with the rules of learning provisions to be presented	3	79	B
3	Learning objectives are clearly stated	4	100	A
4	This medium can facilitate students in mastering the material	4	100	A
5	The medium does not interfere with student concentration	3	79	B
6	The duration used is simple and clear	4	100	A
7	The material presented is concise and clear	3	79	B
8	Each slide has the right explanation	3	79	B
9	Fill in the material in accordance with Basic Competence	4	100	A
10	Media deserve to be tested in research	4	100	A
Number of Scores obtained		(R)		36
Total Score Total		(BC)		40
Percentage Value		(%)		90
Criteria				Valid

Table 3. Validation Data by Media Experts

No	Item Questions	Score	(%)	OPTION
1	The animation presented is suitable to be released as an interactive learning media	4	100	A
2	The design of interactive learning media is in accordance with the rules of learning provisions to be presented	3	79	B
3	The sound in the animation matches the tempo of the description on the video	4	100	A
4	The language used is easy to understand	4	100	A
5	The writing on each page is not dense	3	79	B
6	Sound and resolution are correct	4	100	A
7	The font size reading used is complete	3	79	B
8	The language used is consistent and easy to understand	4	100	A
9	The material presented is in accordance with the research title	3	79	B
10	Animation and video are in accordance with the research title	4	100	A
Number of Scores obtained		(R)		36
Total Score Total		(BC)		40
Percentage Value		(%)		90
Criteria				Valid

Based on table 2, it can be seen that there are 6 question items that get an A. Based on the data from the table 2 then analyzed with a statistical formula to obtain the percentage, namely : Based on the data validation criteria, a percentage of 90% is included in the valid criteria. It can be concluded that the learning media of electricity *charging system* based on *Macromedia Flash 8* developed is feasible to be used to the next stage.

Based on table 3, it can be seen that from the media experts stated that there were 6 questions that got an A, and 4 got a B. Based on the results of validation by the validator consisting of 10 instruments with aspects of the design quality of learning media *charging systems* based on *Macromedia Flash 8*, the contents of the material and the benefits of teaching media get figures with an average percentage of 90% with the criteria " Very Good / Very Eligible."

Based on the data from the table 3, then analyzed with a statistical formula to obtain the percentage, namely: Based on data validation criteria with a rate of 90% included in the valid criteria. So it was concluded that the material developed in the form of learning media based on *Macromedia Flash 8* is feasible to use to the next stage.

1. Small Group Trial Data

Based on the results of the validation of the learning media, electrical *charging system* based on *Macromedia Flash 8* developed by researchers declared valid and feasible to be used in small group trials. This small group trial was conducted in a class of 30 students. The recapitulation of the small group trial response questionnaire is as follows :

Table 4. Recapitulation of Small Group Test Results

No	Statement	A	B	C	D	Average value (%)
1	The material presented is clear and easy to understand	22	8	-	-	94.4%
2	The material presented is clearly brief and clear	20	8	2	-	91.6%
3	Get new experiences from learning media	25	5	-	-	96.5%
4	The language conveyed is easy to understand and clear intonation	15	14	1	-	88.8%
5	The media can make it easier to memorize / remember material	22	8	-	-	94.4%
6	The material presented can be repeated again	22	6	2	-	93%
7	The tempo of the material can be adjusted as desired	17	10	3	-	88.9%
8	The video presented in the animation is easy to understand	25	5	-	-	96.5%
9	Interest in learning to use <i>Macromedia Flash 8</i> learning media	27	2	1	-	97.2%
10	The writing in the media is clear and easy to read	25	4	1	-	95.8%
Total		220	70	10	0	937%
Average		22	7	1.6		93.7%
Criteria		93.7% = "A" (VALID)				

Table 5. Recapitulation of Large Group Test Results

No	Statement	A	B	C	D	Average value (%)
1	The material presented is clear and easy to understand	22	3	-	-	97.48%
2	The material presented is clearly brief and clear	20	3	2	-	94.5%
3	Get new experiences from learning media	18	5	2	-	92.5%
4	The language conveyed is easy to understand and clear intonation	18	7	-	-	94%
5	The media can make it easier to memorize / remember material	17	8	-	-	93.2%
6	The material presented can be repeated again	20	3	2	-	97%
7	The tempo of the material can be adjusted as desired	17	5	3	-	90.8%
8	The video presented in the animation is easy to understand	25	-	-	-	100%
9	Interest in learning to use <i>Macromedia Flash 8</i> learning media	22	2	1	-	96.6%
10	The writing in the media is clear and easy to read	21	4	-	-	92.6%
Total		200	40	10	-	948.68%
Average		20	4	1	-	94.8%
Criteria		94.8% = "A" (VALID)				

Based on table 4, there are 10 items of small scale trial test recapitulation. Based on the analysis of the data above, it is known that the datum from small group trials is 93.7%. Based on the predetermined data interpretation criteria, that 93.7% are included in the valid criteria so it is concluded that the learning media of the *charging system* based on *Macromedia Flash 8* and enter into the valid criteria and can be used in the next stage of the final product implementation.

2. Final Product Implementation Data

The final product implementation is carried out to see whether the media developed by this researcher are effective and efficient for use in the learning process for

students. Implementation of the final product in this study was carried out by involving 25 students. To see a more detailed recapitulation of the questionnaire, responses in large group trials or the final product implementation can be seen in the table 5.

Based on table 5, there are 10 item questions for large-scale test trials. The results of trials related to the feasibility of electrical learning media *charging system* based on *Macromedia Flash 8* are carried out through two stages, namely the control class test and the experimental class test conducted in the experimental class, namely class XII with 41 students and class XII TKR 3 with number of students 43. Also the comparison of graph charts between the control class and the experimental class is as follows:

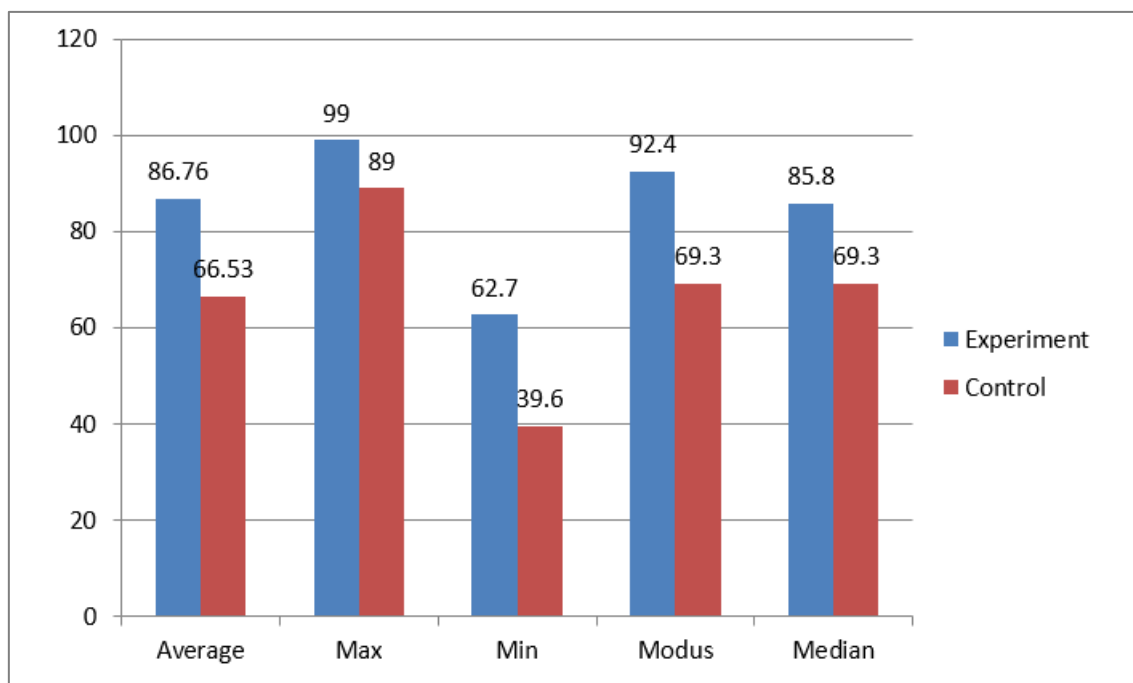


Figure 4. Comparison of Control Class Test Results with Experiment Classes

Based on Figure 4, it can be explained about the differences in the mean, maximum, minimum, mode and median values between the experimental class and the control class. In the control class, test dipe r by the average value 66.53 with the criteria of "Not Eligible" and the experimental class test gained an average value of 86.76 with the criteria "Eligible". This medium has a high level of ease of understanding video. Video has a high level of motivation [23-26, 28]. Thus the developed media can facilitate students to be able to carry out the learning process in accordance with the modern era.

4. Conclusions

From the results of this research and development, it can be concluded as follows: 1) The feasibility of learning media *charging system* based on *Macromedia Flash 8* based *system* is known that the results of validation by material experts get a percentage value of 90% with the criteria "Very Good," then from the expert, the material does not suggest improvements, and states that learning media is appropriate to be used without revision, while validation by media experts is 90% with the criteria of "Very Good.", 2) The results of field trials showed an increase in learning outcomes of the *charging system* electrical material after being given a *charging system* based on *Macromedia Flash 8* as a control class and class XII TKR 1 as an experimental class, namely by comparison of the control class with an average value of 66.53, and the experimental class with an average value of 86.76. Thus the comparison of the control class and the experimental class given the material *charging system* is based on

Macromedia Flash 8 an increase in the value of 20.23 or a percentage of 20.23%. Thus the results of field trials on the learning media developed have increased so that the learning media are said to be feasible, or this research has succeeded.

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REFERENCES

- [1] N. I. Naumkin, N. N. Shekshaeva, S. I. Kvitko, M. V. Lomatkina, V. F. Kupryashkin, dan I. V. Korovina, "Designing the Teaching Model of Multilevel Gradual Training of Students in Innovative Engineering," *Integr. Educ.*, vol. 23, no. 4, hlm. 568–586, Des 2019, doi: 10.15507/1991-9468.097.023.201904.568-586.
- [2] P. Sakulviriyakitkul, K. Sintanakul, dan J. Srisomphan, "The Design of a Learning Process for Promoting Teamwork using Project-Based Learning and the Concept of Agile Software Development," *Int. J. Emerg. Technol. Learn. IJET*, vol. 15, no. 03, hlm. 207, Feb 2020, doi: 10.3991/ijet.v15i03.10480.
- [3] I. W. Santyasa, Universitas Pendidikan Ganesha, Indonesia, I. W. W. Sara, dan Universitas Pendidikan Ganesha,

- Indonesia, "Project Based Learning and Academic Procrastination of Students in Learning Physics," *Int. J. Instr.*, vol. 13, no. 1, hlm. 489–508, Jan 2020, doi: 10.29333/iji.2020.13132a.
- [4] P. Jaiswal, "Integrating Educational Technologies to Augment Learners' Academic Achievements," *Int. J. Emerg. Technol. Learn. IJET*, vol. 15, no. 02, hlm. 145, Jan 2020, doi: 10.3991/ijet.v15i02.11809.
- [5] T. Rokhmani, B. Sujanto, dan M. R. Luddin, "The Implementation of Academic Responsibility in Higher Education: A Case Study," *Integr. Educ.*, vol. 23, no. 3, hlm. 336–349, Sep 2019, doi: 10.15507/1991-9468.096.023.201903.336-349.
- [6] R. O. Agavelyan, S. D. Aubakirova, A. D. Zhomartova, dan E. I. Burdina, "Teachers' Attitudes towards Inclusive Education in Kazakhstan," *Integr. Educ.*, vol. 24, no. 1, hlm. 8–19, Mar 2020, doi: 10.15507/1991-9468.098.024.202001.008-019.
- [7] R. A. Nabawi dan F. Prasetya, "Media Development of Mechanical Drawing Course Based on Project-Based Learning," *Int. J. Innov. Creat. Change*, vol. 11, no. 4, hlm. 309–319, 2020.
- [8] S. Suyitno, J. Dwi, S. Arif, dan P. Aci, "Trainer Stand Instructional Media of Wiring System for Kijang Car to Improve Student Achievement in Vocational Higher Education," *Jour Adv Res. Dyn. Control Syst.*, vol. 11, no. 11, hlm. 991–997, 2019, doi: 10.5373/JARDCS/V11SP11/20193126.
- [9] N. Yue, "Computer Multimedia Assisted English Vocabulary Teaching Courseware," *Int. J. Emerg. Technol. Learn. IJET*, vol. 12, no. 12, hlm. 67, Des 2017, doi: 10.3991/ijet.v12i12.7955.
- [10] Z. K. Avery dan E. M. Reeve, "Developing Effective STEM Professional Development Programs," *J. Technol. Educ.*, vol. 25, no. 1, hlm. 1–15, Sep 2013, doi: 10.21061/jte.v25i1.a.4.
- [11] Y. Zheng, "Inquiry Based Teaching in an Animation Multimedia Course," *Int. J. Emerg. Technol. Learn. IJET*, vol. 14, no. 17, hlm. 17, Sep 2019, doi: 10.3991/ijet.v14i17.11387.
- [12] S. Suyitno, I. Widiyanto, dan S. binti Masrul, "Development of Learning Media for the Course of Two-Stroke Gasoline Motors to Improve Students' Learning Outcomes," *J. Pendidik. Teknol. Dan Kejuru.*, vol. 24, no. 1, hlm. 83–90, 2018.
- [13] V. Karthikayini, "Virtual Reality Classrooms for Today's Generation 'IGEN,'" *Int. J. Adv. Sci. Technol.*, vol. 29, no. 3, hlm. 6, 2020.
- [14] R. M. Tawafak, A. AlSideir, G. Alfarsi, M. N. Al, S. I. Malik, dan J. Jabbar, "E-learning Vs. Traditional Learning for Learners Satisfaction," *Int. J. Adv. Sci. Technol.*, vol. 29, no. 3, hlm. 10, 2020.
- [15] K. Komariah, H. Sofyan, dan T. Mahfud, "Work-based Learning Model and Its Urgency in Preparing Culinary Art Education Graduates," *Int. J. Adv. Sci. Technol.*, vol. 29, no. 3, hlm. 10, 2020.
- [16] [16] S. Suyitno dan P. Pardjono, "Integrated work-based learning (I-WBL) model development in light vehicle engineering competency of vocational high school," *J. Pendidik. Vokasi*, vol. 8, no. 1, hlm. 1, Feb 2018, doi: 10.21831/jpv.v8i1.14360.
- [17] M. Nurtanto, H. Sofyan, P. Pardjono, dan S. Suyitno, "Development model for competency improvement and national vocational qualification support frames in automotive technology," *Int. J. Eval. Res. Educ. IJERE*, vol. 9, no. 1, 2020, doi: https://doi.org/10.11591/ijere.v9i1.20447.
- [18] R. Mayefis dan S. Barat, "Development of Android Based Mobile Learning Media on Computer Assembly at a Vocational High School," *Int. J. Innov. Creat. Change*, vol. 11, no. 4, hlm. 347–361, 2020.
- [19] S. Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, Dan R&D*. Bandung: Alfabeta, 2015.
- [20] S. Suyitno, *Metodologi Penelitian Tindakan Kelas, Eksperimen, dan R & D*. Alfabeta, 2018.
- [21] S. Arikunto dan C. Safruddin A.J, *Evaluasi Program Pendidikan*, 1 ed. Jakarta: Bumi Aksara, 2009.
- [22] K. G. Joreskog dan D. Sorbom, *Structural Equation Modelling with The Simplis Command Language*, 1 ed. USA: Scientific Software International, Inc., 1993.
- [23] S. Muthurman, R. Veerasamy, dan M. Al, "E-Learning to Enhance Educational Competitiveness in the Sultanate of Oman," *Int. J. Innov.*, vol. 11, no. 2, hlm. 84–92, 2020.
- [24] M. Rifai, S. Masitoh, B. S. Bachri, W. H. Setyawan, N. Nurdyansyah, dan H. Puspitasari, "Using Electronic Design Automation and Guided Inquiry Learning Model in Higher Engineering Education," *Univers. J. Educ. Res.*, vol. 8, no. 7, hlm. 2946–2953, Jul 2020, doi: 10.13189/ujer.2020.080723.
- [25] K. Basriyah, D. Sulisworo, G. Maruto, M. Toifur, dan N. H. A. Rahman, "Effects of the Flipped Classroom on Understanding the Thermodynamic Concept at High School Students," *Univers. J. Educ. Res.*, vol. 8, no. 3B, hlm. 51–58, Mar 2020, doi: 10.13189/ujer.2020.081506.
- [26] I. Mubarak, W. Warju, F. D. Isnantyo, M. Nurtanto, dan S. Suyitno, "Enhancing the Learning Outcomes of Automotive Electrical Wiring Diagram through Android Simulation – A Conceptual Design for Automotive Vocational School," *Int. J. Psychosoc. Rehabil.*, vol. 24, no. 08, hlm. 10694–10705, 2020, doi: 10.37200/IJPR/V24I8/PR281066.
- [27] Riski Astuti Liliana, Widodo Raharjo, Ishafit Jauhari, Dwi Sulisworo (2020). Effects of the Online Interactive Learning Media on Student's Achievement and Interest in Physics. *Universal Journal of Educational Research*, 8(3B), 59 - 68. DOI: 10.13189/ujer.2020.081507.
- [28] Khusnul Basriyah, Dwi Sulisworo, Guntur Maruto, Moh Toifur, Nurul Huda Abd Rahman (2020). Effects of the Flipped Classroom on Understanding the Thermodynamic Concept at High School Students. *Universal Journal of Educational Research*, 8 (3B), 51 - 58. DOI: 10.13189/ujer.2020.081506.

Perspectives of STEM Education from Physics Teachers' Points of View: A Quantitative Study

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Abstract Many perspectives of science, technology, engineering, and mathematics (STEM) are available, but which perspective is common among science teachers? This study aims to determine major and minor STEM education perspectives of physics teachers using Bybee's nine perspectives. A number of 70 in-service physics teachers were selected by using cluster random sampling. Data were collected via an online survey using questionnaire items derived from Bybee's review. Pilot testing, face validity assessment and content validity were conducted to determine 27 items that fitted with the nine perspectives of STEM education. Descriptive and inferential statistics were used to analyze the data. This study found that the major perspective of STEM held by the teachers is the perspective that deems engineering or technology as a bridge between science and mathematics. Many teachers were inclined to have inter/multi/transdisciplinary perspectives of STEM than single-disciplinary. Nonetheless, all seven perspectives that are inter/multi/transdisciplinary have no statistically significant differences among them. Additionally, two STEM perspectives that are single-disciplinary kinds have recorded a significant difference in their means. The implications of this study to the literature, STEM teaching and learning, and professional development programs are discussed.

Keywords Bybee, Perspectives of STEM Education, Physics Teachers, Quantitative Research

1. Introduction

Science, technology, engineering, and mathematics (STEM) education has become a primary focus of many countries because it is crucial for the economic advancement and for tackling complex problems of the world, such as climate change, by using multidisciplinary, interdisciplinary or transdisciplinary approaches. Many efforts have been made to reform STEM education toward those three approaches. In short, they are integrated STEM education approaches.

Yet, debates on various STEM perspectives are still happening (Czerniak & Johnson, 2014). The literature has indicated that STEM has many kinds of integration such as integrating two or three STEM subjects or integrating all four STEM disciplines to become transdisciplinary (Bybee, 2013). Even the single-disciplinary STEM perspective still exists among educators (Breiner, Harkness, Johnson, & Koehler, 2012). Different parties have conceptualized STEM in many different ways (Bunyamin et al., 2020; Nasri et al., 2020; Çalışıcı & Sümen, 2018; Türk et al., 2018). To date, this problem is expected to continue to happen because reaching an agreement on a common STEM perspective is quite challenging.

Nonetheless, one solution to this problem is to ask doers of STEM education, which are STEM teachers, about their perspectives on STEM education. As doers, they are the ones who will eventually execute STEM curriculum and teach in the classroom through teaching and learning. Their preference on certain STEM perspectives would influence

their approach to STEM teaching where their thoughts, be it cognitive or affective, might control their teaching. If they have an integrated STEM perspective, they might teach STEM using that perspective.

Studies on STEM perspectives have produced mixed results. Some have found that many teachers or educators hold more of a type of integrated STEM perspective (Srikoom, Hanuscin, & Faikhamta, 2017), but others have discovered a more single-disciplinary type (Breiner et al., 2012). The differences might be due to local factors that shape their perspectives on STEM such as efforts made by national governments or agencies in training teachers to teach integrated STEM (Srikoom et al., 2017; Curriculum Development Center, 2016).

Studying teachers' perspectives of STEM is still relevant to determine the major and minor perspectives possessed by them. The result could be used to inform STEM education stakeholders, especially national governments, school administrations, school teachers, and teacher educators to design STEM professional development programs that fit with teachers' thinking. An empirical study could show the recent perspectives of STEM possessed by many teachers so as to move toward an agreement on the major perspective of STEM among the doers of STEM education. Teachers' perspectives would allow all STEM education stakeholders to follow the most popular perspective of STEM to be adopted.

2. Objective and Research Questions

This study aimed to determine the current perspectives of STEM education among physics teachers. The research questions were: (1) what are the major and minor STEM education perspectives possessed by physics teachers? (2) is there any statistical difference among those perspectives?

The hypotheses were:

H_0 : No significant difference in STEM perspectives among physics teachers.

H_1 : A significant difference exists in STEM perspectives among physics teachers.

Physics teachers were selected because physics has emerged as a common subject included in many studies on STEM education (Kertil & Gurel, 2016; Kim, Kim, Yuan, Hill, Doshi, & Thai, 2015; Dare, Ellis, & Roehrig, 2014). This is because physics is a subject that is most likely to be able to integrate other STEM subjects such as technology, engineering, and mathematics, in a lesson or unit (Bunyamin & Finley, 2016).

3. Literature Review

Even today, debate on interdisciplinary science teaching is still happening. Czerniak and Johnson (2014) have

mentioned that this debate has occurred because of the lack of consensus regarding the meaning of STEM integration. Bybee (2013) has outlined nine perspectives of STEM education: (1) STEM is science (or mathematics), (2) STEM is science and mathematics, (3) STEM is science and incorporates technology, engineering, or mathematics, (4) STEM as a quartet of separate disciplines, (5) STEM is science and mathematics connected by one technology or engineering program, (6) STEM means coordination across four disciplines, (7) STEM means mixing two or three disciplines, (8) STEM as complementary intersecting across disciplines, and (9) STEM means a transdisciplinary course or program. These nine perspectives by Bybee are used as this study's conceptual framework.

Bybee's comprehensive perspectives of STEM education are quite hierarchical. The first perspective seems to be totally single-disciplinary kind while the ninth perspective is a total integration of STEM disciplines. Nadelson and Seifert (2017) have proposed a STEM spectrum ranging from segregate/fragmented STEM to integrated. However, Nadelson and Seifert did not provide a comprehensive compilation of perspectives of STEM education unlike Bybee. The STEM spectrum, on the other hand, might be useful to determine the progress of integrated STEM education in K-12.

Due to the diverse STEM perspectives available, achieving a common perspective is needed to allow STEM teachers, administrators, and governments to go forward with a concerted effort in making a difference in STEM education. A consensus would allow all parties to work together and put aside their differences regarding multiple STEM perspectives.

Asking teachers, through research, might be the most logical way to get the consensus because they are the ones who will eventually teach STEM in classrooms. Their perspectives are central because their knowledge or beliefs might have a significant control on their teaching (Srikoom et al., 2017).

STEM and engineering design. Scholars have argued that engineering design could be a main integrator for STEM disciplines. Bryan, Moore, Johnson, and Roehrig (2016) have even included engineering design as one characteristic of integrated STEM teaching and learning. Next Generation Science Standards (NGSS, 2013) has also recommended teachers to adopt engineering practices for K-12. Engineering might be able to pull other STEM disciplines for integration.

Nonetheless, the recommendation of using engineering design activities or engineering practices needs confirmation among teachers whether they may favor them or not. Many initiatives done in integrated STEM education are currently connected to engineering design practices (Curriculum Development Center, 2016; Siew, Amir, & Chong, 2015; Kelly & Sung, 2017; McFadden & Roehrig, 2019). Thus, determining teachers' preference on use of engineering design or practices is essential to

confirm their preferences.

Use of engineering design is quite evident in one perspective of STEM education by Bybee (2013), which is "STEM is science and mathematics connected by one technology or engineering program." In this regard, Bybee has deemed engineering or technology as a bridge between science and mathematics. This Bybee's perspective is similar to Bryan et al.'s (2016) definition of integrated STEM teaching and learning.

Studies on perspectives of STEM. To date, many studies done on STEM perspectives did not show a clear consensus. Ramli and Talib (2017) studied on Malaysian secondary school teachers' view on STEM. Only five science teachers were included as the research participants because they had adopted a qualitative approach by using interview method. The study had found that only three teachers were able to define STEM but they were unable to elaborate further on the meaning of STEM. Ramli and Talib's study could not be generalized to the whole population, in Malaysia, because they had used a qualitative design that is usually not intended to generate a conclusion for the whole population. Thus, the primary limitation was their research design.

Chalmers, Carter, Cooper, and Nason (2017) have done a review of literature on integrated STEM curriculum. Chalmers and colleagues have suggested the use of a continuum of integrations: within-discipline big ideas that have application in other STEM disciplines, cross-discipline big ideas, and encompassing big ideas. These three approaches are reflected in Bybee's nine perspectives of STEM education (Bybee, 2013). Chalmers et al.'s suggestions were pragmatic. They did not ask teachers to immediately adopt the ideal integration of STEM disciplines, rather acknowledge the integrations as a range from a simpler to a more complex integration. Yet, Chalmers and colleagues did not determine which type of integration that teachers favored because they did not conduct an empirical study. Determining teachers' major perspectives on STEM education would provide answers to this problem by conducting a study among teachers.

Kloser, Wilsey, Twohy, Immonen, and Navotas (2018) conducted a study on conceptions of STEM education in the United States. They used interviewing and drawing of STEM conceptual models as the methods. Sixty-four middle school teachers from nineteen schools were involved. Kloser et al. discovered that many teachers viewed science and mathematics as the most represented subjects for STEM. Technology had become an in-service subject while engineering was the most commonly missing subject. Kloser et al.'s study has hinted that teachers have given unequal representations of science, technology, engineering, and mathematics in STEM integration. This is logical because in typical school settings, science and mathematics are more established than technology and engineering. Yet, to move toward total integration of STEM, all subjects of STEM should be incorporated and are given equal representation. Kloser et al.'s study was

conducted in 2018. Given that this is recent, it is assumed that ideal integration of STEM is still not really accepted even at the conceptual level.

Nonetheless, quite a different research finding was discovered in a recent study by Srikoom et al. (2017) in their research on in-service teachers' conceptions of STEM in Thailand. A questionnaire with an open-ended question was used to gather the data. A workshop on STEM education was conducted for teachers by the Institute for the Promotion of Teaching Science and Technology (IPST) and found that the majority of teachers (20%) had viewed STEM education as transdisciplinary, which is the ninth perspective that Bybee (2013) proposed. The percentage was not really high, but the teachers who chose the transdisciplinary perspective of STEM had become the major group. The least was the teachers who chose the third perspective, STEM is science and incorporates technology, engineering, or mathematics, with 2.32%.

It is expected that conducting studies on STEM perspectives across nations would produce different results by referring to Kloser et al.'s and Srikoom et al.'s studies, in the US and in Thailand. Both studies had used a similar type of research method which was qualitative design using interviewing and/or open-ended questionnaires. Nonetheless, both studies had produced different outcomes. The possible reason was the education settings. For this reason, the researchers wanted to carry out a study on STEM perspectives in a different nation, Malaysia, to determine the favored perspectives of STEM education among its teachers. The results will be compared with recent and past studies so that current progress of integrated STEM education could be determined and future action could be planned.

STEM and physics. Many studies done on integrated STEM education have shown that physics has emerged as the common subject included in STEM (Dare et al., 2014; Kertil & Gurel, 2016; Kim et al., 2015; Siew et al., 2015). Physics is deemed a subject that could immediately apply engineering (Dare et al., 2014) because many topics covered in physics such as electricity and buoyancy could be applied to design products such as a prototype of functional circuit for animals' houses or submarine.

Compared to other subjects, such as mathematics is implicit in physics because many physics concepts such as force and motion involve making and interpreting graphs, which are mathematical aspects. For technology, robotics (Kim et al., 2015) has become a popular topic for design activities. By using physics as the platform for integration, all other STEM subjects could be involved.

It is reasonable to study physics teachers' perspectives of STEM, so that the thinking of the most likely teachers who could be able to integrate STEM disciplines would be revealed. Results of this study could inform physics teachers that they might be able to lead integrated STEM education in schools because of the nature of the physics subject.

4. Methodology

Research design

This study was a descriptive nonexperimental survey because it could reflect a phenomenon within a population such as in this case, the physics teachers' perspectives on STEM education, in a particular time (Johnson & Christensen, 2015; Moutinho & Hutcherson, 2011). A cluster random sampling was used to determine a reasonable sample size that could represent the population of physics teachers in a district which is Johor Bahru, in Johor, Malaysia. This district was selected because it is the capital district of the state of Johor, the most diverse area, and is the district with the highest access to the state's initiatives of STEM education. The state education office is located in this district and so Johor Bahru is the most suitable district to study.

The researchers were given the total number of physics teachers in Johor Bahru which is 82 teachers, by the Education District Office. These teachers came from 42 national secondary schools in the district in the year 2019. On average, each school had two physics teachers. A sample size of 70 teachers should be acquired to represent the population, as the minimal size with 95% confidence level (Krejcie & Morgan, 1970). Thus, a minimal number of 35 schools should be included. However, all those 82 teachers from 42 schools were involved to maximize the size of sample as the size was considered small.

Item construction and pilot study

The researchers used the nine perspectives of STEM education by Bybee (2013) as the main framework because Bybee's descriptions were the most complete version of descriptions of STEM education compared to others. Nonetheless, Bybee did not elaborate STEM perspectives in the form of items, rather in the form of brief descriptions with diagrams. Therefore, the researchers adapted and adopted the descriptions by Bybee (2013) into comprehensible, simplified, and enriched items with several examples so that the respondents of the study could fully understand the items of the survey.

The items constructed were in the native language, Malay. The respondents received the research instrument in the native language version because they were mostly familiar with the language than English.

The researchers prepared a set of questionnaires consisting of two sections, Part A and Part B, with an estimated response time of 10-15 minutes. Part A was about demographic information regarding services while Section B was about perspectives on STEM education. The items in Section B used the five-level Likert scale: (1) strongly disagree; (2) disagree; (3) neutral; (4) agree; and (5) strongly agree (Johnson & Christensen, 2010).

Initially, each of the nine perspectives of STEM (Bybee, 2013) had six items for the purpose of determining

teachers' perspectives on STEM education for the pilot study. Thus, a total number of 54 items were constructed. This number was quite high and should be revised based on the pilot study's analysis of data to exclude irrelevant items. The greater the number of items per construct (STEM perspectives), the higher the probability of an item being replicated is (Little, Lindenberger, & Nesselrode, 1999; Velicer & Fava, 1998).

For the pilot study, the researchers had recruited 37 respondents from physics teachers from all over Malaysia to test the reliability of the research instrument and to refine it. They were given an online survey consisting of 54 items on STEM perspectives. Five out of 37 teachers were also selected for the think-aloud data collection method. They were asked to either verbally or in written forms state their thoughts and understanding of the items asked. Their responses were recorded and analyzed to refine the items used.

The final items selected were determined by the findings of the pilot study. The researchers used the Statistical Package for the Social Sciences (SPSS) software to obtain the Cronbach alpha values needed. Cronbach alpha value that was greater than 0.7 needed to be achieved for the purpose of reliability of the instrument's internal consistency (Johnson & Christensen, 2010; Muijs, 2004). The pilot study's final result showed that all constructs of STEM perspectives achieved the reliability index of 0.7. Each of the construct consisted of three items because they were the ones that contributed to the high values of reliability index, ranging from 0.721 to 0.901. Three items were reasonable and were the minimal number to be used in a construct of measurement (Velicer & Fava, 1998). With nine constructs, a total of 27 items were used for the actual study.

Item validation

All selected items based on the pilot study results had been well received by expert evaluators in the validity of the content. Two experts in the field of STEM education from local universities were appointed to assess the validity of the content of the research instrument. One of the nominees is a senior lecturer with more than ten years of STEM education experience. Meanwhile, another professor of 20 years of services in higher education is specializing in STEM and physics education. She currently works at a public university in Malaysia.

Views and suggestions by the evaluators, for some items, had no effect on the changes in those items. The items of the instrument were randomly arranged without following the structured constructs.

Data collection

The study was conducted via an online platform starting in early July 2019. A group of physics teachers who were teaching in Johor Bahru district was determined through an

online group in a social media platform, Telegram. The main author was one of the members in the online group. The researchers had received high cooperation from all the physics teachers in the district. All 82 teachers were able to be contacted in the Telegram group with the help of the education district office. All of them had successfully answered the online survey within 9 days.

Data analysis

Normal distribution was identified before determining parametric or nonparametric analysis methods. The normalization of the data distribution was through skewness and kurtosis values analyzed by using the SPSS. The z-scores for the deviation and kurtosis values were used for the purpose of determining the validity of the data.

The mean, median, and mode values of each sub-construct (STEM perspectives) were calculated to test and answer the first research question. All mean, median, and mode values of each sub-construct were analyzed using the SPSS.

Subsequently, one-way analysis of variance (ANOVA) tests was used to determine whether there was a significant difference between the STEM perspectives (Johnson & Christensen, 2010) to answer the second research question. The analysis was performed to determine the difference between the means and the p-value obtained. A p-value of 0.05 or less than 0.05 means that there was a significant difference between the nine STEM perspectives.

Post hoc tests were also conducted to analyze the differences between each of the nine STEM perspectives. Additionally, the effect size was also identified to determine the effect size for the comparisons made. According to Cohen (1988), the effect size, d , is small for $d = 0.2$, is medium for $d = 0.5$, and is large for $d = 0.8$.

Sample size in actual study

Initially, all 82 respondents had participated in the study. However, the results of the analysis have shown that 12 respondents were excluded from the analysis due to the low reliability of the findings. A total of 12 respondents answered all 27 items of the questionnaire with either agree or strongly agree on all items. Thus, the actual sample size analyzed for this study was only 70 but it still met the population representation requirements (Krejcie & Morgan, 1970) for the Johor Bahru district physics teachers.

Normality test of the actual study

The normality of the data distribution is based on the value of skewness and kurtosis. The significance level (Alpha) for this small sample size study ($50 < n < 300$) was 0.05 and the z-score for the significance of deviation and kurtosis value was ± 3.29 (Kim, 2013). The values of deviation and kurtosis were obtained using the SPSS, as shown in Table 1.

Table 1 shows that the values of deviation and kurtosis for all nine STEM perspectives, A to I, are within the range of ± 3.29 . Besides, the z-scores of deviation and kurtosis values for all nine STEM perspectives are shown in Table 2, where all z-scores are within the range of ± 3.29 , so the study data distribution is normal.

Referring to Table 2, the lowest z-score of the skewness is on the perspective F, -2.603, while the highest is on the perspective D, 1.059. For the z-score of the kurtosis, the lowest is on perspective E, -0.800 while the highest is on perspective F, 1.814. Thus, all the z-scores of skewness and kurtosis for all perspectives of STEM were within the boundary of the proposed range of $-3.29 < z\text{-score} < 3.29$ (Kim, 2013). Therefore, a parametric analysis method was adopted.

Table 1. Values of skewness and kurtosis of nine perspectives.

Perspectives	A	B	C	D	E	F	G	H	I
N	Valid	70	70	70	70	70	70	70	70
	Missing	0	0	0	0	0	0	0	0
Skewness	.240	-.521	-.473	.304	.193	-.747	-.315	-.480	.016
Std. Error of Skewness	.287	.287	.287	.287	.287	.287	.287	.287	.287
Kurtosis	-.076	.322	-.223	.272	-.453	1.027	-.073	.498	-.328
Std. Error of Kurtosis	.566	.566	.566	.566	.566	.566	.566	.566	.566

Table 2. Test of normality of univariate data by types of perspectives of STEM.

Perspective	Statistic	Skewness		Kurtosis		
		Std. Error	z-score	Statistic	Std. Error	z-score
A	0.240	0.287	0.836	-0.076	0.566	-0.134
B	-0.521	0.287	-1.815	0.322	0.566	0.569
C	-0.473	0.287	-1.648	-0.223	0.566	-0.394
D	0.304	0.287	1.059	0.272	0.566	0.481
E	0.193	0.287	0.672	-0.453	0.566	-0.800
F	-0.747	0.287	-2.603	1.027	0.566	1.814
G	-0.315	0.287	-1.098	-0.073	0.566	-0.129
H	-0.480	0.287	-1.672	0.498	0.566	0.880
I	0.016	0.287	0.056	-0.328	0.566	-0.580

Table 3. Mean, standard deviation, median and mode for nine STEM perspectives

Statistical value	Perspectives								
	A	B	C	D	E	F	G	H	I
Mean	3.0429	3.9667	3.9381	2.5143	4.1524	4.1190	4.1143	4.1381	4.0857
Std. Deviation	.78415	.61424	.72297	.78571	.48049	.61394	.63165	.57172	.53744
Median	3.0000	4.0000	4.0000	2.6667	4.0000	4.0000	4.0000	4.0000	4.0000
Mode	3.00	4.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00

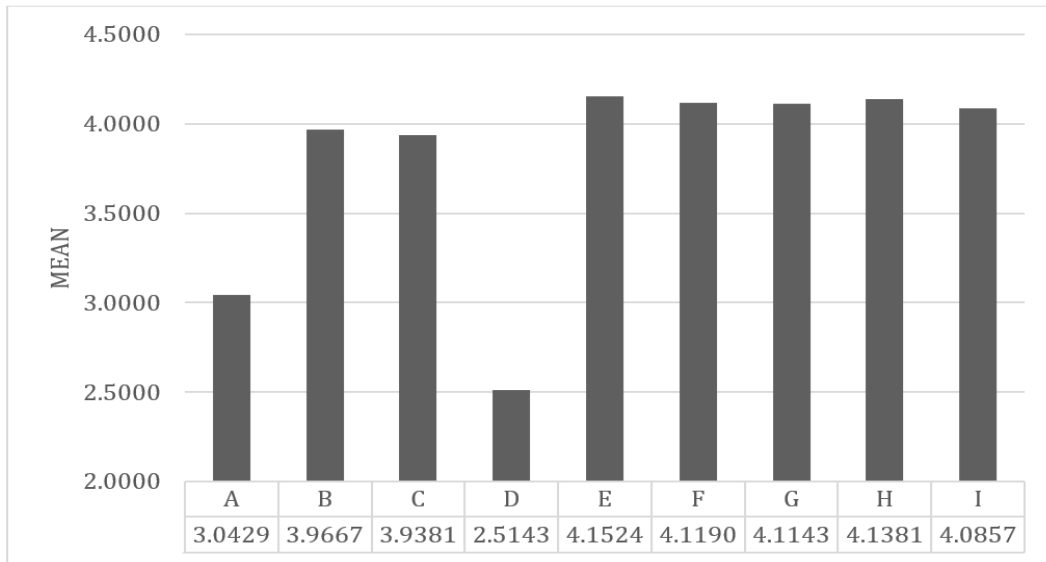


Figure 1. Comparison of mean scores between perspectives of STEM.

5. Results

Descriptive analysis

To answer the first research question, the researchers analyzed the mean values obtained by each STEM perspective construct. The STEM perspective with the highest mean value is considered to be major while the lowest is the minor. Table 3 shows the results of the mean value analysis along with standard deviation, median and modes.

Based on Table 3, standard deviations of all perspectives are less than 1.00 and are within the small standard deviation range (Johnson & Christensen, 2010).

Perspective E has emerged as the major STEM perspective with the mean value of 4.1524, followed by perspective H with mean of 4.1381, and perspective F with mean of 4.1190. Perspective D has become the minor STEM perspective with the lowest mean value, 2.5143, followed by perspective A, 3.0429, and perspective C, 3.9381. Additionally, perspective D gives a 2.00 mode value where most physics teachers chose the scale of 2.00 and most of them also chose the scale of 3.00 for perspective A.

Of the seven other STEM perspectives other than perspectives A and D, most physics teachers chose a 4.00 scale (mode value), which is a high level of agreement for most of these STEM perspectives. Furthermore, based on

Figure 1, the mean value gap between all nine STEM perspective constructs shows that perspectives A and D have very large gaps with perspectives B, C, E, F, G, H and I. In fact, perspectives A and D both have shown a quite large gap in their mean values.

Thus, in general, based on the illustration shown in Figure 1, it is shown that perspectives A and D have given the highest gap compared to perspectives B, C, E, F, G, H and I. These large gaps have signified a possible statistical difference between the mean values. Thus, an inference analysis was performed to complete the descriptive analysis.

Inferential analysis

One-way ANOVA tests were performed to test the hypotheses. Table 4 shows the results of one-way ANOVA to compare mean scores between STEM perspectives.

Table 4. One-way ANOVA test results for comparison of mean scores of nine perspectives

	Sum of squares	df	Mean square	F	Sig.	Partial eta squared
Contrast	195.474	8	24.434	58.535	.000	.430
Error	259.225	621	.417			

Note. The F tests the effect of Construct. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

One-way ANOVA test results have shown that the F

value ($df=8, 621$) = 58,535, $p < .05$ is significant with an effect size of 0.430. The null hypothesis is rejected and the results of the one-way ANOVA test have revealed that there are significant differences between the nine constructs of STEM perspectives. This result (partial $\eta^2=0.430$) has recorded a medium effect size (Cohen, 1988).

To strengthen the results from the ANOVA test, a Post Hoc Multiple Comparisons test was conducted to determine mean differences across constructs of STEM perspectives. Table 5 shows the results.

Based on Table 5, four observations could be made. First, perspective A has recorded significant mean differences with all other STEM perspectives without any exceptions. All recorded probability values for all eight (8) pairs of perspective A compared to perspective B to I are $p = 0.000$. Thus, there are significant differences between perspective A and all other perspectives of STEM.

Second, perspective D shows significant mean differences with all other STEM perspectives without any exceptions, like the situation of perspective A. All recorded probability values for all perspective D pairs are $p = 0.000$. The similarity found between perspectives D and A has indicated that there might be a similar characteristic between these two perspectives.

Third, there is even a significant mean difference between perspectives A and D with a p-value of 0.000. To mention, these two perspectives, even though might share a similar characteristic (first and second observations mentioned), they might also have a different nature.

Fourth, each seven perspectives of STEM education, B, C, E, F, G, H and I, has produced a p-value of greater than 0.05 among them. This means no significant differences exist between them. This result has indicated that all seven perspectives might share a similar characteristic.

Table 5. Post hoc multiple comparisons examination of nine STEM perspectives

Construct (i)	Construct (j)	Mean difference (i-j)	Std. error	Sig.	95% Confidence interval	
					Lower bound	Upper bound
Perspective A	Perspective B	-.9233*	.10921	.000	-1.2632	-.5833
	Perspective C	-.8951*	.10921	.000	-1.2351	-.5552
	Perspective D	.5289*	.10921	.000	.1889	.8688
	Perspective E	-1.1099*	.10921	.000	-1.4498	-.7699
	Perspective F	-1.0763*	.10921	.000	-1.4162	-.7363
	Perspective G	-1.0714*	.10921	.000	-1.4114	-.7315
	Perspective H	-1.0949*	.10921	.000	-1.4348	-.7549
	Perspective I	-1.0427*	.10921	.000	-1.3827	-.7028
Perspective B	Perspective A	.9233*	.10921	.000	.5833	1.2632
	Perspective C	.0281	.10921	1.000	-.3118	.3681
	Perspective D	1.4521*	.10921	.000	1.1122	1.7921
	Perspective E	-.1866	.10921	.741	-.5265	.1534
	Perspective F	-.1530	.10921	.897	-.4929	.1869
	Perspective G	-.1481	.10921	.913	-.4881	.1918
	Perspective H	-.1716	.10921	.820	-.5115	.1684
Perspective C	Perspective I	-.1194	.10921	.975	-.4594	.2205
	Perspective A	.8951*	.10921	.000	.5552	1.2351
	Perspective B	-.0281	.10921	1.000	-.3681	.3118
	Perspective D	1.4240*	.10921	.000	1.0841	1.7639
	Perspective E	-.2147	.10921	.568	-.5547	.1252
	Perspective F	-.1811	.10921	.771	-.5211	.1588
Perspective D	Perspective G	-.1763	.10921	.797	-.5162	.1637
	Perspective H	-.1997	.10921	.663	-.5397	.1402
	Perspective I	-.1476	.10921	.915	-.4875	.1924
	Perspective A	-.5289*	.10921	.000	-.8688	-.1889
	Perspective B	-1.4521*	.10921	.000	-1.7921	-1.1122
Perspective E	Perspective C	-1.4240*	.10921	.000	-1.7639	-1.0841
	Perspective D	-1.6387*	.10921	.000	-1.9787	-1.2988
	Perspective F	-1.6051*	.10921	.000	-1.9451	-1.2652
	Perspective G	-1.6003*	.10921	.000	-1.9402	-1.2603
	Perspective H	-1.6237*	.10921	.000	-1.9637	-1.2838
	Perspective I	-1.5716*	.10921	.000	-1.9115	-1.2316

Table 5 Continued

Perspective E	Perspective A	1.1099*	.10921	.000	.7699	1.4498
	Perspective B	.1866	.10921	.741	-.1534	.5265
	Perspective C	.2147	.10921	.568	-.1252	.5547
	Perspective D	1.6387*	.10921	.000	1.2988	1.9787
	Perspective F	.0336	.10921	1.000	-.3064	.3735
	Perspective G	.0384	.10921	1.000	-.3015	.3784
	Perspective H	.0150	.10921	1.000	-.3249	.3549
	Perspective I	.0671	.10921	1.000	-.2728	.4071
	Perspective F	Perspective A	1.0763*	.10921	.000	.7363
Perspective B		.1530	.10921	.897	-.1869	.4929
Perspective C		.1811	.10921	.771	-.1588	.5211
Perspective D		1.6051*	.10921	.000	1.2652	1.9451
Perspective E		-.0336	.10921	1.000	-.3735	.3064
Perspective G		.0049	.10921	1.000	-.3351	.3448
Perspective H		-.0186	.10921	1.000	-.3585	.3214
Perspective I		.0336	.10921	1.000	-.3064	.3735
Perspective G		Perspective A	1.0714*	.10921	.000	.7315
	Perspective B	.1481	.10921	.913	-.1918	.4881
	Perspective C	.1763	.10921	.797	-.1637	.5162
	Perspective D	1.6003*	.10921	.000	1.2603	1.9402
	Perspective E	-.0384	.10921	1.000	-.3784	.3015
	Perspective F	-.0049	.10921	1.000	-.3448	.3351
	Perspective H	-.0234	.10921	1.000	-.3634	.3165
	Perspective I	.0287	.10921	1.000	-.3112	.3687
	Perspective H	Perspective A	1.0949*	.10921	.000	.7549
Perspective B		.1716	.10921	.820	-.1684	.5115
Perspective C		.1997	.10921	.663	-.1402	.5397
Perspective D		1.6237*	.10921	.000	1.2838	1.9637
Perspective E		-.0150	.10921	1.000	-.3549	.3249
Perspective F		.0186	.10921	1.000	-.3214	.3585
Perspective G		.0234	.10921	1.000	-.3165	.3634
Perspective I		.0521	.10921	1.000	-.2878	.3921
Perspective I		Perspective A	1.0427*	.10921	.000	.7028
	Perspective B	.1194	.10921	.975	-.2205	.4594
	Perspective C	.1476	.10921	.915	-.1924	.4875
	Perspective D	1.5716*	.10921	.000	1.2316	1.9115
	Perspective E	-.0671	.10921	1.000	-.4071	.2728
	Perspective F	-.0336	.10921	1.000	-.3735	.3064
	Perspective G	-.0287	.10921	1.000	-.3687	.3112
	Perspective H	-.0521	.10921	1.000	-.3921	.2878

Notes. Based on observed means. The error term is Mean Square (Error) =.417. The mean difference is significant at the .05 level.

6. Discussion

STEM education perspectives studied were: (1) perspective A: STEM is science (or mathematics), (2) perspective B: STEM is science and mathematics, (3) perspective C: STEM is science and incorporates technology, engineering, or mathematics, (4) perspective D: STEM as a quartet of separate disciplines, (5) perspective E: STEM is science and mathematics connected by one technology or engineering program, (6) perspective F: STEM means coordination across four disciplines, (7) perspective G: STEM means mixing two or three disciplines, (8) perspective H: STEM as complementary intersecting across disciplines, and (9) perspective I: STEM means a transdisciplinary course or program (Bybee, 2013).

Key findings regarding the study on perspectives of STEM education are discussed to produce insights for new literature contributions and practical contributions to integrated STEM teaching and learning. Limitations and future studies are discussed as well.

Perspective E and engineering design

The most favored perspective of STEM education by many physics teachers in this study is perspective E, which is "STEM is science and mathematics connected by one technology or engineering program." The perspective is reflected in many teaching and learning activities done in schools nowadays through engineering design activities (Kelly & Sung, 2017; McFadden & Roehrig, 2019). Around the globe, including the United States, use of engineering practices in K-12 is recommended (NGSS, 2013, Curriculum Development Center, 2016).

Scholars have even believed that STEM integration needs to include engineering design activities (Bryan et al., 2016). Engineering design has now become a major integrator for STEM, especially in integrating science and mathematics. This finding regarding the major preference of the physics teachers on perspective E is in-line with the current progress of integrated STEM education worldwide. Even though this study was done at the local level, in Johor Bahru, Malaysia, the finding is consistent with the world's recent progress in integrated STEM education. Engineering design that can integrate science and mathematics is one useful platform that could be capitalized further for STEM integration. Teachers may use engineering design activities as a start for integration of two or more STEM disciplines, especially science and mathematics, which is consistent with the perspective E that many teachers in this study have favored.

Single disciplinary versus multi/inter/transdisciplinary STEM

Perspectives A and D, which are single-disciplinary types of STEM perspectives, both have been found to have significant differences with all other perspectives, which

are multi/inter/transdisciplinary perspectives, B, C, E, F, G, H, and I. The perspectives that are multi/inter/transdisciplinary have got clear higher mean values than the single disciplinary ones.

Perspectives A and D both are traditional-type of STEM education because they either protect/recognize each discipline of STEM separately or simply recognize STEM as science per se. Significantly lower values of mean for these two perspectives, A and D, compared to those that are multi/inter/transdisciplinary perspectives of STEM indicate that the physics teachers have started to consider in their mind on integration of STEM rather than single-disciplinary. This finding is different from the past study by Breiner et al. (2012) where they found that single-disciplinary or segregated STEM was dominant, while recent studies (Kloser et al., 2018; Srikoom et al., 2017) have indicated either a fair acceptance to integrated STEM education.

The perceived change in the physics teachers' mind on STEM perspectives, especially in thinking of integration across STEM disciplines than segregated STEM disciplines might be a starting point for them to accept integrated STEM approaches. This also implies that many efforts done to transform STEM education toward integration have started to show initial success, especially after the release of the NGSS in 2013 and of the new curriculum of science in many countries that includes integrated STEM education approaches (e.g. Curriculum Development Center, 2016).

The progress of integrated STEM education could now be deemed "half-way" by referring to the STEM spectrum suggested by Nadelson and Seifert (2017). The next step is to ensure that teachers will keep learning how to integrate STEM fully, by training them to adopt and adapt the transdisciplinary STEM perspective.

Governments and professional development providers need to be alert that many teachers will need training to integrate STEM because they have started to make a "buy-in" on STEM integration. Sustaining their thinking on STEM integration is critical to ensure they will be able to adapt and adopt STEM integration in actual practice of teaching.

Two versions of single-disciplinary STEM

Perspectives A and D both have shown a statistically significant difference, too. Even though they both are single disciplinary perspectives of STEM, perspective A is more toward STEM as science per se while perspective D seems to acknowledge other disciplines, technology, engineering or mathematics as STEM. Perspective A has got a higher mean value than perspective D. The physics teachers have favored perspective A than D. The difference in mean has indicated that these two perspectives should be treated as different in nature and has suggested that single disciplinary STEM has two types. Bybee (2013) is true when differentiating perspectives A and D. This study has

empirically supported the Bybee's work.

Scholars may learn that STEM exclusively for science versus STEM for science or technology or engineering or mathematics are different. The first would make STEM more specialized for science while the second makes STEM inclusive in nature, covering any four disciplines of STEM. Many teachers in this study have chosen perspective A than D, which means they are inclined to see STEM as science. This is logical because they are teachers who teach a science subject, physics.

Probably, if this study is expanded to engineering or technology teachers, the result might be different where they might not choose perspective A, rather, perspective D because it includes engineering and technology. Different respondents would likely produce different results due to their respective academic qualifications. Future studies can do research on this matter to confirm this assumption.

Acknowledging multi/inter/transdisciplinary STEM perspectives

Seven perspectives of STEM, perspectives B, C, E, H, F, G, and I, have produced a similar result which is no statistical difference in the mean values between them. These seven perspectives are all multi/inter/transdisciplinary STEM. No differences in mean values might suggest that they all could be seen as "alike". The reason is that all these seven perspectives have a similarity which is integrations that include more than one discipline in STEM, though the levels of integrations are varied.

This finding is quite different from the Bybee's framework (Bybee, 2013) that has differentiated those seven perspectives. Nonetheless, it is important to note that this study does not intend to dismiss Bybee's comprehensive perspectives of STEM education, rather the researchers think as a teacher, a practitioner, that has choices in taking an appropriate perspective of STEM that suits with his/her needs. In actual teaching, a teacher may adopt a perspective of STEM that fits with a particular context. For instance, he/she, today, may adopt perspective E that uses engineering to connect science and mathematics. While, on the next day of teaching, she/he may adopt perspective C that uses science and incorporates technology, engineering or mathematics in teaching a topic. Many teachers are believed pragmatic because as practitioners, they teach according to appropriateness of time, resources, and materials. Even different teachers have different contexts (Nadelson & Seifert, 2017) because they are different in experience, knowledge, and skills.

Teachers who are already capable of using a complex kind of integration, such as in perspective I, "STEM means a transdisciplinary course or program" might be able to immediately adapt and adopt the perspective for their teaching. However, teachers who are less capable in integrating could start with a simpler integration such as in

perspective E, "STEM is science and mathematics connected by one technology or engineering program."

Giving teachers support and sufficient time would allow them to learn to teach integrated STEM based on their own pace. This is actually an acknowledgement of diversity in STEM integration perspectives to recognize multiple types of integration. Letting teachers to move freely from one integration type to another could make them less pressured to transform their STEM teaching and make them teach according to their respective conditions. This would create a comfortable and supportive environment for integrated STEM teaching and learning. From time to time, they would be able to move from a simpler integration to a complex one so that they will be able to reach the transdisciplinary STEM.

Limitations and future studies

This study includes physics teachers and does not include teachers in other STEM disciplines. Inclusion of teachers from all STEM disciplines might give different results and thus provide different insights regarding teachers' thought on certain perspectives of STEM. Future studies can do similar research to other teachers in other STEM disciplines, technology, engineering, and/or mathematics.

The survey was the only method used for data collection. Using other methods such as interviewing could enrich the quantitative findings and provide deeper insights regarding reasons for preferring certain perspectives of STEM. Future studies may use qualitative approaches to strengthen quantitative data.

REFERENCES

- [1] Bunyamin, M. A. H., Talib, C. A., Ahmad, N. J., Ibrahim, N. H., & Surif, J. (2020). Current Teaching Practice of Physics Teachers and Implications for Integrated STEM Education. *Universal Journal of Educational Research*, 8(5A), 18-28.
- [2] Bunyamin, M. A. H. & Finley, F. (2016, January 7-9). [Paper presentation]. International Conference of the Association for Science Teacher Education, Reno, NV, the United States.
- [3] Breiner, J. M., Harkness, S. S., Johnson, C. C., & Koehler, C. M. (2012). What is STEM? A discussion about conceptions of STEM in education and partnerships. *School Science and Mathematics*, 112(1), 3-11. <https://doi.org/10.1111/j.1949-8594.2011.00109.x>
- [4] Bryan, L., Moore, T., Johnson, C., & Roehrig, G. (2016). Integrated STEM education. In C. Johnson, E. Peters-Burton, & T. Moore (Eds.), *STEM road map: A framework for integrated STEM education* (pp. 23-37). Routledge.
- [5] Bybee, R. (2013). *The case for STEM education: Challenges and opportunities*. NSTA Press.

- [6] Çalışıcı, H., & Sümen, Ö.-Ö. (2018). Metaphorical Perceptions of Prospective Teachers for STEM Education. *Universal Journal of Educational Research*, 6(5), 871-880.
- [7] Chalmers, C., Carter, M. L., Cooper, T., & Nason, R. (2017). Implementing "big ideas" to advance the teaching and learning of science, technology, engineering, and mathematics (STEM). *International Journal of Science and Mathematics Education*, 15(1), 25-43. <https://doi.org/10.1007/s10763-017-9799-1>
- [8] Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
- [9] Curriculum Development Center. (2016). *Implementation guide for Science, Technology, Engineering, and Mathematics (STEM) in teaching and learning*. Ministry of Education of Malaysia.
- [10] Czerniak, C. M., & Johnson, C. C. (2014). Interdisciplinary science teaching. In N. G. Lederman, & S. K. Abell (Eds.), *Handbook of research on science education* (pp. 395-411). Routledge.
- [11] Dare, E. A., Ellis, J. A., & Roehrig, G. H. (2014). Driven by beliefs: Understanding challenges physical science teachers face when integrating engineering and physics when integrating engineering and physics. *Journal of Pre-College Engineering Education Research*, 4(2), Article 5. <https://doi.org/10.7771/2157-9288.1098>
- [12] Johnson, B., & Christensen, L. (2015). *Educational research: Quantitative, qualitative, and mixed approaches* (5th ed.). SAGE Publications.
- [13] Johnson, B., & Christensen, L. (2010). *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed.). SAGE Publications.
- [14] Kelley, T., & Sung, E. (2017). Examining elementary school students' transfer of learning through engineering design using think-aloud protocol analysis. *Journal of Technology Education*, 28(2), 83-108. <https://doi.org/10.21061/jte.v28i2.a.5>
- [15] Kertil, M., & Gurel, C. (2016). Mathematical modeling: A bridge to STEM education. *International Journal of Education in Mathematics, Science and Technology*, 4(1), 44. <https://doi.org/10.46328/ijemst.v4i1.77>
- [16] Kim, C., Kim, D., Yuan, J., Hill, R. B., Doshi, P., & Thai, C. N. (2015). Robotics to promote elementary education pre-service teachers' STEM engagement, learning, and teaching. *Computers and Education*, 91, 14-31. <https://doi.org/10.1016/j.compedu.2015.08.005>
- [17] Kloser, M., Wilsey, M., Twohy, K. E., Immonen, A. D., & Navotas, A. C. (2018). "We do STEM": Unsettled conceptions of STEM education in middle school STEM classrooms. *School Science and Mathematics*, 118(8), 335-347. <https://doi.org/10.1111/ssm.12304>
- [18] Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610. <https://doi.org/10.1177/001316447003000308>
- [19] Little, T. D., Lindenberger, U., & Nesselroade, J. R. (1999). On selecting indicators for multivariate measurement and modelling with latent variables: When "good" indicators are bad and "bad" indicators are good. *Psychological Methods*, 4(2), 192-211. <https://doi.org/10.1037/1082-989X.4.2.192>
- [20] McFadden, J., & Roehrig, G. (2019). Engineering design in the elementary science classroom: Supporting student discourse during an engineering design challenge. *International Journal of Technology and Design Education*, 29(2), 231-262. <https://doi.org/10.1007/s10798-018-9444-5>
- [21] Moutinho, L., & Hutcheson, G. D. (2011). *The sage dictionary of quantitative management research*. SAGE Publications.
- [22] Muijs, D. (2004). *Doing quantitative research in education with SPSS*. SAGE Publications.
- [23] Nadelson, L. S., & Seifert, A. L. (2017). Integrated STEM defined: Contexts, challenges, and the future. *The Journal of Educational Research*, 110(3), 221-223. <https://doi.org/10.1080/00220671.2017.1289775>
- [24] Nasri, N. M., Nasri, N., & Talib, M. A. A. (2020). Toward Developing Malaysia STEM Teacher Standard: Early Framework. *Universal Journal of Educational Research*, 8(7), 3077-3084.
- [25] National Research Council. (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. National Academies Press.
- [26] Ramli, N. F., & Talib, O. (2017). Can education institution implement STEM? From Malaysian teachers' view. *International Journal of Academic Research in Business and Social Sciences*, 7(3), 721-732. <http://dx.doi.org/10.6007/IJARBSS/v7-i3/2772>
- [27] Siew, N. M., Amir, N., & Chong, C. L. (2015). The perceptions of pre-service and in-service teachers regarding a project-based STEM approach to teaching science. *SpringerPlus*, 4(1), Article 8. <https://doi.org/10.1186/2193-1801-4-8>
- [28] Srikoorn, W., Hanuscin, D. L., & Faikhamta, C. (2017). Perceptions of in-service teachers toward teaching STEM in Thailand. *Asia-Pacific Forum on Science Learning and Teaching*, 18(2), 1-23. https://www.eduhk.hk/apfslt/v18_issue2/srikoorn/index.htm
- [29] Türk, N., Kalaycı, N., & Yamak, H. (2018). New Trends in Higher Education in the Globalizing World: STEM in Teacher Education. *Universal Journal of Educational Research*, 6(6), 1286-1304.
- [30] Velicer, W. F., & Fava, J. L. (1998). Affects of variable and subject sampling on factor pattern recovery. *Psychological Methods*, 3(2), 231-251. <https://doi.org/10.1037/1082-989X.3.2.231>

Exploring Challenges in Practicing Instructional Leadership: Insights from Senior Secondary Principals

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Abstract In ensuring schools achieving its excellence, the role of school leaders as instructional leaders is considered as relevant and officially documented in the Malaysian Education Blueprint (PPPM) 2013–2025. Previous studies have pointed out challenges faced by principals at various educational systems can delay the implementation of instructional leadership within school contexts. Even though there are extensive literatures on instructional leadership, there is a lack of studies that explored challenges faced by school leaders while implementing instructional leadership practices within the Malaysian schools. Therefore, this qualitative study was conducted with the purpose to explore challenges and obstacles faced by secondary principals while implementing their instructional leadership practice. A total of seven senior principals who had led their schools for at least five years were interviewed. The study revealed that the secondary principals faced two main challenges: the internal and external challenges. Externally, principals faced challenges from parents and teachers' negative attitudes and even less monitoring from the school's stakeholders. In terms of internal challenges, senior principals were challenged with their limited experience and knowledge on instructional leadership which lessen their roles as a resource person to all teachers and as instructional leaders. The findings of the study had led to the practical implications for the improvement of instructional leadership practices in Malaysian secondary schools' context.

Keywords Instructional Leadership, Senior Principals,

Instructional Leadership Practice

1. Introduction

In the era of globalisation of education, instructional leadership practices found to be relevant, suitable and have the highly believed contributed to the excellence of a school [1]. Evidently, instructional leadership has been highlighted by previous studies on its effectiveness to enhance students' achievements which later improving school's performance [2, 3, 4]. Thus, instructional leadership remained as the most studied model of leadership explored and examined in the area of school leadership and management [5; 2]. In the context of Asian countries, instructional leadership was considered as emerging or currently proceeding being researched compared to other studies such as the United Kingdom, United States and European countries which had inspected the effectiveness of instructional leadership within their educational systems [6, 7]. Thus, the research on instructional leadership within Asian countries is considered as emerging [2, 8, 9]. Regardless of instructional leadership received wide attention among school leadership researcher, Bush (2014) [10] and Nguyen et al., (2017) [11] critically highlighted that most studies on instructional leadership presented are from the decentralised educational system and little is known on the practice of leadership related to centralised educational

system. In addition, it is noted that instructional leadership must be examined from various cultures since differences in culture of every educational system have impacted how leadership was perceived and practiced by its principals [12].

In Malaysia, the introduction of Malaysian Education Development Plan (PPPM) 2013–2025 remarked a significant importance of instructional leadership when it was essentially emphasised within the policy alongside with distributed leadership [13]. Significantly, the main objective designated by Ministry of Education Malaysia (MOE) was to reduce the administrative workloads faced by principals; with assumption that principals are able to focus on their instructional leadership practices [14]. Through instructional leadership practice, the ministry has placed high hopes and empowered the school principals to improve the schools' academic performance as part of transformation and changing process of the overall system of education. According to Ng (2019) [15], the transformational process within the school's system is considered pertinent to improve the quality of education to align the purpose of local schooling in the 21st Century demands on education. In addition, more developed countries such as South Korea and Japan also have slowly transforming their educational systems [15].

Thus, through this current educational policy, principals are expected to perform as an effective instructional leader with the assumption that every schools can be transformed into a high performing school [13]. In Malaysian context, instructional leadership has obtained the significant interest and attention among local researchers with the essential believe that the practice of instructional leadership is found central and pertinent to create schools that are improving and effective [16]. In this sense, principals are urged and expected to perform their significant role as instructional leader by continuing support to teachers' professionalism through organising programmes on teachers' professional development and competencies [20]. These effective instructional practices later will enhance students' academic achievements. According to Day, Gu and Sammons (2016) [3], the main purpose of instructional leadership is focus on the efforts and initiative to improve teaching and learning practice. Thus, most of the initiatives are focusing on instructional and classroom practice which later impacted students' performance [20].

2. Statement of the Problem

While practicing instructional leadership, principals are indeed facing some challenges which are able to slow the practice of instructional leadership in schools. Empirically, previous studies pointed on some reasons on instructional leadership challenges; lack of knowledge among principals [17; 20], and heavy workloads [18; 19; 20]. In fact, Hallinger and Murphy (2013) [20] affirmed that school principals are facing conflict and challenges while leading

learning and within their daily practice for instructional purpose. In exploring the challenges, researchers in instructional leadership have pointed that novice principals are facing the stressful and strenuous experiences in practicing instructional leadership due to their lack of experiences, difficulties in managing their time, lack of understanding on the content of educational policy and even problems in managing their school's finance [20; 21; 22]. In this sense, Spillane and Lee (2014) [23] highlighted that newly appointed principals' challenges in practicing their roles as instructional leaders which being described as stressful, shocking and overwhelming.

Admittedly, there are plentiful studies that examined on the role of principals as instructional leaders in various types of schools such as secondary, primary and even the technical and religious-based categorised schools. However, studies which explored on challenges and obstacles faced by principals while implementing instructional leadership are considered as under-researched, received little attention in Malaysian context of educational system. Many studies related to the principals' challenges are mainly from the western-based schools and least attention given on challenges faced by Malaysian principals. Therefore, additional study is needed to explore on the barriers and challenges faced by Malaysian secondary principals with the objective of preparing principals especially novice principals in countering the challenges that they faced as instructional leaders in their own schools.

In filling the gap which being addressed above which relates on principals' instructional leadership challenges, this qualitative study tried to explore on the challenges and barriers faced by secondary principals while executing the instructional leadership practices within their schools setting. From this study, we would like to explore and understand on the challenges that may slow the effectiveness process of instructional leadership within secondary schools in Malaysia. Thus, we investigate on the internal and external factors that have might slowed the principals' instructional leadership roles in schools.

3. Research Questions

Thus, this research was conducted to address the significant two major questions:

- a. What are the internal barriers and challenges faced by secondary principals while practicing the instructional leadership at school?
- b. What are the external barriers and challenges faced by secondary principals while practicing the instructional leadership at school?

Significantly, this study is an attempt to explore on the challenges that faced by principals while practicing their effective instructional leadership roles which received little attention within the instructional leadership framework.

Second, this research will explore in-depth on the challenges that experienced by principals which least preferred within the instructional leadership literatures and references. Perhaps, from this study, it would help the existing and novice principals in finding solutions and strategies to address on challenges that principals faced while practicing instructional leadership. Third, this study will present some experiences that faced by principals which can be compared on the similarities and differences within other educational leadership systems and frameworks especially from the perspectives of western schools.

4. Reviewing the Literature

4.1. Instructional Leadership: Definitions and Model

In conceptualising the instructional leadership, there are initial definitions on instructional leadership by previous researchers. For instance, instructional leadership was defined as principals' initiatives and efforts with the purpose of enhancing student learning progress such as setting school vision, defining school goals, channelling resources needed for learning, implementing teacher supervision and evaluation, organising staff development programs and stimulating relationships and cooperation between teachers [24]. Primarily, the instructional leadership was being conceptualised as a personal characteristic of leadership practice which comprised behaviour, action and also involved practice that emphasised on the effectiveness on teaching and learning [25; 26].

Similarly, simple definition was provided by Glasman (1984) [27] as efforts taken by the school leaders to encourage and create a school's culture that emphasise on instructional practices which whereby enhance students' academic performance. As for other definition, instructional leadership was described as how principals emphasise on teaching and learning activities that undertaken to enhance teachers' productivity and conducive working environment which later improves students' performance [28; 29].

In their initial model, Hallinger and Murphy (1985) [29] have classified the instructional leadership practice into three main constructs, creating a school vision and mission, managing the instructional practice and lastly, creating a school's climate that emphasised on learning to improve teaching and learning in schools. In defining the school's mission and vision, principals are expected to play their effective roles in providing clear understanding to all teachers and staffs related to school's vision and mission mostly related to students' academic achievement and progress. Thus, Leithwood et al (2008) [30] listed principals' tasks such as articulating vision for learning, clarifying the standards of teachers and pupil performances,

fostering teacher learning and development, and coaching teachers to attain success. In the second attribute which is related to managing the school's instructional programmes, school leaders should coordinate and manage the school's instruction and curriculum programmes in supporting students' learning experiences [31]. In this sense, all school leaders are expected to conduct high quality teaching and learning, tracking and monitoring on teachers' competencies and students' academic performance. To fulfill these tasks, principals should obtain assistance from their middle level leaders in diagnosing and monitoring teachers' competencies and students improvement on academic performance [32]. Third, in developing a positive culture, it is the duty of the principals in protecting and maximising the instructional time, motivating teachers and students through positive incentives for improvement [4].

Within the school leadership literature, the title of instructional leadership is considered as an evolving topic that received wide attention among school-based research over past 25 years [1]. However, the study of instructional leadership only received wide attention in the 1980's with the Hallinger and Murphy (1985)'s model of instructional leadership which is being studied and confirmed [33; 11]. Ng (2019) [15] later defined instructional leadership within two major views: the narrow and the boarder views. In the first, instructional leadership was defined as an instructional process which highly involved on the activities related to teaching and learning. Second, in the broader view, instructional leadership was re-conceptualised into a comprehensive framework which relates to academic performance such as creating a conducive climate for teaching and learning, instructional time scheduling and managing, teachers' competencies, and also other related activities and efforts on teaching and learning [15]. In general, instructional leadership is defined as strategies, activities and actions that being implemented by the school leadership in supporting, enforcing and ensuring the effective instructional activities related to teaching and learning in schools [31; 2].

In the year 2000's, instructional leadership has received wide attention among researchers in school-leadership context [11] which pointed on the importance of relationship and collaborative efforts between principals and teachers to secure the school's achievement [34; 35]. In this sense, most studies on instructional leadership have emphasised on the role of principals as a school leader that holds the central role in creating a school culture that promotes on the instructional practices. As such, principals are noted as the resource leaders for effective instructional practice. In debating the role of principals within the instructional leadership framework, Ng (2019) [15] stressed that school principals remained as pertinent school leaders that are capable to create the school's conditions that emphasise on pedagogical activities and capacities, support and create more opportunities for teachers and students' innovation, allocate the financial and human

resource and finally participate and ensure teachers participate in instructional whether individual or collective responsibility for the instructional improvement purpose. Thus, in terms of positive implication, it is stressed that the instructional leadership practice has benefited the school's performance which dealt with efforts and initiative of improving teaching and learning strategies [3; 25; 37; 38].

4.2. Instructional Leadership Practice in Malaysian Schools

In Malaysian educational system, instructional leadership was placed pertinent as selected school-based leadership practice within Malaysian schools. Thus, it was mentioned within the Malaysian's Educational Blueprint 2013 – 2025 [39;14]. From the blueprint, it enhanced the practice of instructional leadership when principals in Malaysia are expected to play various their roles [40]. At the same time, principals should emphasise on instructional matters which include teaching and learning programmes, the school improvement processes and also teachers' professional development which later resulted in the school's academic improvement [40; 41; 42]. Through the implementation of instructional leadership in schools, the MOE hopes that there will be tremendous change within students' academic achievements [38]. Although the ministry has placed a significant importance on instructional leadership to improve school-based leadership practice, studies on instructional leadership are considered as lacking and receive little attention [43] thus suggesting on more studies conducted on local instructional leadership practice.

Empirically, most studies on instructional leadership that were conducted locally are for the fulfilment for postgraduate theses and dissertations and mostly written in Bahasa Malaysia [5]. Although studies on instructional leadership are considered as limited, local researchers also have been researched on the practice of instructional leadership within their locality and based on their preferences. For example, Andi (2007) [44] surveyed 276 teachers on the practice on instructional leadership and its relationship with principals' sense of efficacy. Based on results, teachers perceived their principals have high level of self-efficacy in parallel with a strong emphasis on instructional leadership while performing school leadership functions. Based on principals' gender, female principals were indicated on having higher levels of instructional leadership practice and self-efficacy compared to the male principals. In Selangor, Latip (2007) [45] summarised that secondary principals had implemented and practiced all eleven instructional leadership functions followed by the enforcement of academic policies and the provision of incentives for learning. Finally, it can be seen that the practice of instructional leadership among principals in Malaysia placed great emphasis on the teaching and learning process

by fostering a conducive school culture, i.e. the planning and success of the process is highly expected to achieve the desired goals and vision.

Recently, in 2019, Ghavifekr, Radwan and Velarde (2019) [38] had examined the practice of instructional leadership in Malaysian primary schools. Thus, a total 105 teachers were responded to the Principal Instructional Management Rating Scale (PIMRS) questionnaire. Based on findings, teachers perceived moderately on principals' tasks on defining the school's mission and managing their instructional programmes. However, teachers felt least satisfied with principals' role in creating and promoting the school's positive climate. From the perspective of teachers throughout Malaysia which is divided from the southern, northern, eastern, western and central zones, Abdullah et al (2019) [46] conducted a nationwide study on secondary middle managers' instructional practice based teachers' perspectives. Findings revealed that principals and middle school leaders remained as instructional leaders in schools. Findings also disclosed that principals were seen as least delegated and empowered their instructional duties to their middle managers. In fact, they were not given the full authority to practice their roles as an instructional leader. Similarly, Hassan, Ahmad and Boon (2019) (68) affirmed that the practice of instructional leadership has strong influence on teachers' professional learning communities in most schools in southern zone of Malaysia.

Earlier, Harris et al (2017) [5] summarised that primary school principals in Malaysian played their essential role as instructional leaders and at the same time had clear understanding of their functions and responsibilities and effective instructional leaders. Similarly, Ghavifekir (2015) [47] studied the practice of instructional leadership of principals from the technical and vocational schools in Kuala Lumpur which pointed out on the frequent practice of principals related to (a) professional leadership; (b) shared mission and clear goals; (c) continuous monitoring of teachers' progress; and (d) professional growth of the teachers. From Mustafa et al (2015)'s [48] study, teachers from schools in Pahang revealed that there is a relationship between instructional leadership practice with teachers commitment which indicated on the pertinent role of principals' instructional leadership towards teachers' growth and commitment towards their schools.

In general, many studies in instructional leadership focus on the achievement of vision, teaching and learning activities as well as a conducive teaching and learning climate. Based on past literature, it can be concluded that there is a strong association between principals' instructional leadership practices on students' academic improvement which later resulted in school's improvement and academic excellence. In conclusion, instructional leadership practices place emphasis on student achievement in the academic field, formulate and strengthen teaching strategies, provide and maintain a conducive environment in the school, regularly assess

students' academic achievement.

4.3. Challenges in Practicing Instructional Leadership in Schools

While implementing their roles as instructional leaders, principals indeed faced some challenges, barriers and obstacles that might halted or slowed their instructional improvements. As pointed by Scott (2017) [49], principals faced some challenges while practicing instructional leadership such as lack of funding and resources, high turnover of teachers and lack of educational resources. Earlier, Hallinger and Murphy (2013) [20] summarised on challenges faced by principals such as heavy workload, lack of knowledge to lead their schools, busy schedules, and the school structures which have many layers have provided difficulties for principals to manage the instructional programmes and coordinate the school's curriculum.

In conceptualising principals' challenges, the barriers are categorised into two major elements: the internal and the external challenges. Internally, principals are facing challenges which are related to their own weakness such as lack of knowledge and skills to be effective instructional leaders, and heavy workloads are some of the examples for internal challenges. Externally, resistance from teachers on their changes and improvement on instructional competencies and professional development are the notable challenge faced by principals. In addition, lack of support from parents is also another challenge faced by principals while practicing the instructional leadership.

Empirically, there are reasons of least instructional leadership practice by principals which are derived from their heavy workloads on administrative matters in schools [46; 20]. In this sense, principals spent most of their time handling their schools' disciplinary problems, paperwork, communication via telephone or internet which provided their least time for effective instructional practice [18; 19]. In addition, principals are noted as a source of reason for not emphasising and practicing instructional leadership which consequently forms principals' weakness in formulating strategies and goals, weakness in communication and having inefficient management [50]. Another notable barrier is lack of skills and training and considered as inexperience related to instructional leadership practice especially on how to perform their roles effectively [20]. This is happened to mostly to novice or newly appointed principals who have limited experiences, knowledge and skills on how to be effective instructional leaders in schools [17].

Similarly, previous studies also attested that stress in managing curriculum due to their heavy workload [51], lack of information, teachers and staffs who rejected the school's change and who felt comfortable with the existing situation [52] are challenges faced by principals as effective instructional leaders. In addition, principals had to perform various urgent tasks such as attending meetings,

meeting parents and seeing damage in the school grounds. This situation has indicated principals with limited their time to pay attention to the practice of as effective instructional leaders [53].

5. Methodology

In selecting the design for this study, it is decided that qualitative case study which is undertaken to investigate the challenges and barriers in local public secondary schools studied. The decision on selecting the case study is based on the reason that case study is able to provide in-depth situation that illustrates the real life and unpacks the phenomena which are in the school practice [54; 67]. Through qualitative case study approach, data that were obtained from this study are detailed and extensive especially when studying about people together with their standpoints or insights [55]. As suggested, a multiple case study was chosen since the study involved seven senior principals from seven schools which consisted of interviews session with selected senior principals who had been practicing their instructional leadership in many years as instructional leaders. While practicing instructional leadership, senior principals also noted and shared that they also faced some challenges, barriers and obstacles that might slowed or distracted the instructional leadership effectiveness. Through interviews with senior principals, it is believed more accurate and indigenous data on instructional leadership challenges will be obtained based on opinion that the school leadership practice is highly sensitive to its surrounding contexts [25].

5.1. Sampling

In this study, a total of seven senior principals were interviewed and this paper presented their views of senior principals regarding the challenges that they anticipated while practicing instructional leadership. The senior principals who had been elected must have served for at least five years. For the sampling reason, a purpose sampling method was used in this study to represent the public secondary schools which later enable the exploration of challenges and obstacles of instructional leadership practice from various settings [56].

The demographics distribution of purposive selected senior principal includes their age, gender, academic qualification which includes their National Professional Qualification for Headship (NPQH)/ National Professional Qualification for Educational Leaders (NPQEL) and experiences as principals are presented in Table 1. The reason of selecting only senior principals is based on reasons that senior principals have been practicing instructional leadership and highly emphasised on teaching and learning. Second, only senior principals have wide experiences in encountering various challenges while implementing instructional leadership in their schools.

Table 1. Demographics of senior principals

Numbers	Participants' identity codes	Age	Gender	Academic qualifications	Experience as principals
Principal 1	PK 01	57	Women	Bachelor NPQH	10 years
Principal 2	PK 02	54	Men	Bachelor Master NPQEL	6 years
Principal 3	PK 03	53	Men	Bachelor Master NPQEL	9 years
Principal 4	PK 04	56	Men	Bachelor NPQH	8 years
Principal 5	PK 05	56	Women	Bachelor Master NPQH	6 years
Principal 6	PK 06	51	Women	Bachelor Master NPQEL	8 years
Principal 7	PK 07	56	Men	Bachelor Master NPQEL	5 years

Based on Table 1, three selected senior principals are women principals while other four are male principals. In terms of their academic qualifications, all of them are graduates from their local mandatory leadership preparation programmes whether the NPQH/NPQEL. From the seven principals, only two principals are bachelor degree holders while another five principals obtained their master degree qualifications mostly in educational administration. Based on principals' years of experience, a principal has five years of experience as principal, one principal has nine years of experience, one principal has 10 years of experience as principal, two principals have six years of experience as principals, and lastly two principals have eight years of experience as principals.

5.2. Interviewing Process

For the collection of interview data, the instrument used consisted of semi-structured interview's protocol. This protocol was chosen to be used in order to obtain the relevant feedback on the obstacles faced by principals while implementing instructional leadership in their respective schools. In this sense, Gray (2009) [57] and Fraenkel and Wallen (2006) [58] agree that semi-structured interviews can help researchers investigate in more detail the answers given by study participants. The interview items presented are (1) What are the obstacles you face when implementing instructional leadership in your own school; (2) How do you classify these barriers into some key themes? Before the actual study was conducted, the researchers conducted a pilot study with two principals.

In the first meeting, researchers and principals discussed the setting of the date and time of the interview to be conducted. Principals were also given consent forms as study participants and interview protocols. They were also briefed on their rights as participants in the study and the

confidentiality of this interview. All interviews were conducted in Malay language. These interviews were recorded and transcribed for the purpose of data analysis with the permission of all principals. These interviews were recorded using digital audio recorders and then analysed manually. Before starting the interview session, researchers have applied the suggestion from Johnson and Christensen (2014) [59] that is to start informal conversations first to build relationships before the actual interview is conducted. The duration of the interview that took place lasted between 50 to 60 minutes. After the interview session, the researchers made a transcript of the audio recording. The transcript of the interview data was then submitted to the selected principal to obtain confirmation and make improvements in the event of any data omissions.

5.3. Data Analysis

To analyse the interview data, several processes which suggested by Braun and Clarke (2006) [60] have been implemented which consist of organising, building themes, evaluating data and drawing conclusions from the interviews data. In this sense, Creswell (2009) supported the opinions by emphasising that interviews data need to be analysed or undergone a few processes which are organising, describing and building themes, reporting findings, interpreting findings and finally, verifying the accuracy of findings. In analysing interview data, the process commenced with transferring data from audio to texts. In the process, all verbatim which were obtained from seven series of interviews were transferred into texts. In the process of transcribing these interview data, researchers have used Atlas.ti7 software to simplify the management process. Upon completion of this transcript process, the researcher sent a copy of the transcript to the

study participants for verification purposes. Verification has used the verification form provided along with the transcripts. The transcripts submitted for this verification have been corrected if there is an amendment from the principal interviewed.

In the second phase, all transcribed data, were read repeatedly to understand the overall meaning and ideas that the principals were trying to convey. Next, transcripts are compared to obtain the necessary information and meaning based on principals' statements [61]. In the following process, the transcripts were coded. The process of encoding this transcript is considered essential process in qualitative data analysis [62]. In the process, this transcript data has been reduced to certain meaningful codes. These codes will eventually be grouped into a theme.

Next, the data were categorised and subcategorised. The last process in the analysis is building a theme and description. In this phase, all codes that have been categorised broken down according to specific themes and descriptions. Description means data that contain information of study participants, places and events where the interview took place [61]. All themes obtained are considered as the relevant information to be used as the findings in a qualitative study.

6. Findings

From the series of interviews with seven senior principals, their verbatim were analysed manually and all emerging themes obtained were categorised into two major themes namely internal factors and external factors. Each subsequent theme is further broken down into several sub-themes. In the internal factors theme, the subthemes that are emerged are challenges based on principals' knowledge, attitudes, experiences and workload. As for the external factor themes, it is categorised as teachers, parents and stakeholders. Each category is further explained by several sub-categories. Detailed themes, categories and sub-categories related to barriers in instructional leadership practices are described in the following sections.

6.1. The Internal Factors

Based on the interviews, senior principals highlighted on internal factors that were emerged which capable to slow their roles as effective instructional leaders. Factors such as lack of experience to be instructional leaders, lack of knowledge on instructional leadership, the principals' negative attitudes are notable mentioned factors which being described as challenges that principals faced while practice instructional leadership.

6.1.1. Lack of Experience

From interview sessions with senior principals, four senior principals highlighted on the major challenge that principals faced which refer to lack of experience as instructional leaders. In interviews with them, both senior

principals informed;

"...Ehmmm... do you agree if I say the obstacle comprised the internal and external? agree strongly... sometimes this principal is inexperienced and not good at dividing time ..." (PK02).

Similarly, three principals who were interviewed also raised on the issue of lack experience as an essential hurdle that existed when implementing instructional leadership practice in their schools. According to principals, lack of experience caused the principals failure to implement instructional leadership.

"...Lack of knowledge and ability to be an instructional leader is the essential reason for us as principals. Inexperienced school leaders will definitely a major problem, we are expected to be resource person to teachers and their effective instructional leader at the same time" (PK04).

6.1.2. Least Understanding on the School's Culture

Senior principals also shared other factors why principals sometimes did not perform well their effective roles as instructional leaders. Another factor mentioned was lack of understanding the school's culture. For principals, it is essential for them to understand the school's culture before proceed with any changes and innovation on instructional and learning programmes.

"...There are obstacles. Which is possible even here. The obstacle is how do we know that culture, right? Because our job is to promote a culture of learning, for example sometimes we are alone, we also see a lot of all aspects. Not just the school management aspect, right ...?" (PK03)

6.1.3. Lack of Knowledge about Instructional Leadership

Through interviews, principals argued that as instructional leaders, they should obtain much knowledge on instructional leadership to play their effective resource person for teachers. In contrast, if the principals considered themselves weak and ineffective due to lack of knowledge on instructional leadership, principals will face problems and issues in managing their instructional tasks and even programmes. As such, a senior principal shared his opinion;

"...if knowledge about instructional leadership was considered as least... then the principals had difficulties to manage school ... because... it is not an easy thing ...you have to know everything and being expert to all teachers, in fact to all aspects ..." (PK02).

Likewise, opinions from a senior principal are being supported by two other senior principals. According to them, without strong command of knowledge in instructional leadership, it is considered hard or difficult for principals to implement and determine the instructional leadership practice in their schools. Both principals explained;

"...That's right. Knowledge is important. Plague knowledge that makes culture. If there is no knowledge, how to promote the practice ..." (PK03).

"... lack of knowledge and ability to be an instructional leader an inexperienced leader..." (PK04).

"...Being a principal, really ... depends on yourself ... how you are, to develop your school...The most important thing is... your knowledge that is appropriate and necessary to manage the school..." (PK02).

6.1.4. Principals' Negative Attitudes

Through interviews, senior principals also acknowledged that as principals, they need to think positively, support the Ministry of Education's policies and suggestions. In this sense, as principals, they need update themselves with recent educational policies introduced by the ministry. In addition, they also need to increase their skills and knowledge on instructional leadership. From interviews, senior principals shared on a few challenges and obstacles they encountered while practicing the instructional leadership which stems from the negative attitude of principals. According to senior principals, principals who do not take care about the instructional, lack of knowledge about leadership, instructional and less monitoring the aspects of instructional are issues, challenges and barriers in instructional leadership. The challenges were shared two senior principals during interview sessions;

" ...Because if we do not care, we do not say, one knowledge is less, then we do not care ..." (PK01).

" ...Maybe he, his knowledge is less than instructional. So he wants to monitor, he feels alone, maybe I made a mistake in my way, or maybe there is a better teacher than me. That is actually an obstacle..." (PK01).

" ...we take the example of monitoring PDP teachers...If there is no monitoring, teachers will teach students carelessly..." (PK04).

6.2. The External Factors

As for external factors, there are three themes emerged derived from series of interview sessions with senior principals. From the sessions, senior principals did mention on three central themes which are the attitudes of teachers and parents' negative attitudes and the schools' stakeholders' issues. In this study, the stakeholders are being referred as the District Education Office and the State Education Department.

6.2.1. Teachers with Negative Attitudes

When discussing on the external factors that challenged

the principals' instructional leadership practice, almost all the senior principals did mention on teachers' negative attitudes as major challenge faced by principals while executing the instructional leadership practice. According to principals, teachers who are in their comfortable zone always showed their disinclination to change and even reject changes suggested by the school leaders. From interviews, principals did remark on a few categorised of teachers who always challenge principals' instructional leadership practice; teachers who lack of knowledge on instructional leadership, senior teachers who always reject on changes, and teachers who frequently involved in the outdoor and extracurricular activities are teachers that categorised as lessening the instructional leadership practice in schools.

Through interviews, principals also stressed on the attitude of teachers who do not care about instructional elements such as being late for class and did not conducted their instructional tasks;

"...we have a problem of teachers being late to class...also teachers who do not enter the class ..." (PK02).

In addition, another two principals also voiced on the issue of teachers who showed their reluctance and even mentioned that the school's changes processes are against the school's culture definitely challenged principals' roles as instructional leaders in schools. According to principals, some teachers did mention to them that they don't want to change or follow the new methods recommended by the principal because they felt comfortable with their traditional teaching strategies after so long implementing the approaches.

"...He still follows the old way...the teachers like to mention, this is our school tradition..." (PK01).

"...Sometimes they (teachers) are too comfortable..." (PK03)

In addition, a senior principal also voiced on the attitude of teachers who took advantage when principals were least monitored on their students' teaching and learning processes which sometimes causes problems in schools. A senior principal shared;

"...sometimes the teacher is also good. If he sees the boss (principal) does not see (monitor), they will take the opportunity, take the opportunity ..." (PK01).

As for a senior principal, he did think that the negative attitude of teachers who are not serious and lack of commitment are considered as obstacle to the implementation of instructional leadership.

"...teachers will teach students while they are lazy... when they are lazy, and not serious, students also learn like they don't want to..." (PK04).

6.2.2. The Roles of Parents

Apart from the teachers' negative attitudes, the issue of

the uncommitted parents is also another mentioned challenge for senior principals while implementing their instructional leadership practice. Based on the interviews, the attitude of parents who are least committed to schools as well as parents who always leave their children’s academic progress and matters to teachers and principals as another central issue faced by principals. Accordingly, principals did mention on the lack of monitoring from parents while their children are at home had also caused the instructional implementation into failure or decreased its effectiveness. Besides stressing on the attitude of parents who are less committed, senior principals did realise on some parents who lack of knowledge and even they don’t know how to assist their children while at home also contributed to another challenge to success in the instructional leadership implementation.

"...my student’s parents seem less committed to school ... " (PK02),

"...there are parents who did not perform their responsibilities and just let us to decide ...everything is depends on us ..." (PK04)

6.2.3. The School’s Stakeholders

The third external factor which is being described as a hurdle faced by principals is the stakeholder issue. Accordingly, there are two main themes emerged which are the lack of monitoring from the official educational authorities and secondly, the frequency of principals attending courses and meetings which resulted in principals’ absence from schools resulted in least improvement on instructional leadership practice. From interviews, a senior principal did highlight on the lack of

monitoring from the educational authorities which led to some principals who did not implement their instructional leadership practice;

"...It seems that there is less monitoring from JPN with PPD...As for me, follow up and monitoring is very important. For instance, we were sent to courses, when we go back to school, it depends on us whether to implement or not, some will not do it, the JPN and PPD did not even check on us ..." (PK01).

As for another senior principal, the principal indicates on the number of principals who are absent from schools did not perform their instructional leadership tasks because they have least time to implement instructional leadership in the school.

"...there are also principals who tell me that they have to attend courses and workshop and received calls from PPD and JPN...for me, it is wrong. PPD and JPN officers sometimes seem not understand our duties..." (PK02).

Based on interviews with senior principals, it can be concluded that there are obstacles in the implementation of instructional leadership involving various parties, namely the attitude of teachers, parents who do not cooperate as well as the frequency of JPN and PPD calling principals for courses and seminars causing issues and obstacles while practicing instructional leadership. In addition, the internal aspects of the principals such as lack of knowledge, attitude of the principal and even lack of experience are delays caused in the implementation of instructional leadership in schools. The summary of the study findings is summarised in Table 2 below.

Table 2. Summary of themes and subthemes of challenges for principals’ instructional leadership practice

Themes	Category	Sub-Category
Internal factors	a) Knowledge	<ul style="list-style-type: none"> • little, less • not enough • weak
	b) Attitudes	<ul style="list-style-type: none"> • Do not know, do not care • Lack of confidence • lack of monitoring and regulation • lack of cooperation
	c) Experience	<ul style="list-style-type: none"> • less, a little
	d) Workload	<ul style="list-style-type: none"> • The real task • Not good at managing time • Not enough time-limited • Engaged in external tasks
External Factors	a) Teachers	<ul style="list-style-type: none"> • Lack of discipline • Comfort zone • Do not want to change • Take advantage • External assignments
	b) Parents	<ul style="list-style-type: none"> • Lack of commitment
	c) Stakeholders	<ul style="list-style-type: none"> • Lack monitoring from JPN and PPD • Less follow-up • Involve principals in PPD and JPN activities

7. Discussion

Challenges, obstacle or barriers while implementing instructional leadership in school are often seen as the main hurdle to principals' effective roles as instructional leaders. In this sense, researchers believe that principals as school leaders must practice and implement the instructional leadership because they are the trusted school leaders in schools that have the accountabilities and responsibilities for the improvement, success and effectiveness of teaching and learning in schools [63]. However, within the implementation of instructional leadership, indeed there are challenges, barriers and obstacles within its implementation processes. In this sense, principals are expected by the educational authorities to practice the instructional leadership based on their creativity and innovation and at the same time encounter all the barriers and challenges that principals faced.

Through this qualitative interviews, seven senior principals had highlighted on two essential factors or challenges that may have resulted in least effectiveness and successful improvement on instructional leadership practice. According to senior principals, there are internal factors and external factors. In the external factors, principals did mention on negative attitudes of teachers, the lack of commitment of parents and least monitoring by the school's stakeholders. As for internal factors, senior principals did stress on principals' lack of knowledge to implement instructional leadership, principals' negative attitudes, and lack of experiences in executing the instructional leadership. In general, the findings of this study are corresponding with the findings of Azlin (2006)'s [18] study which also pointed out on the principals' internal factors such as lack of knowledge, attitudes, and experiences of principals which resulted in challenges for principals in performing their roles as effective instructional leaders. From Azlin (2006)'s [18] study, she reported that the in-experienced principals were found to be less pro-active, least creative and innovative in implementing their instructional leadership.

In terms of internal challenges, senior principals also commented on the lack of experience for some principals in practicing instructional leadership. To senior principals, having wide experiences in practicing and implementing instructional leadership is considered essential to determine their effectiveness as instructional leaders and being a resource person to all teachers. Therefore, senior principals did highlight on the importance for all principals to have wide experiences as instructional leaders to ensure the effectiveness of all instructional programmes at their own schools. In this sense, this study finding is similar with opinions from various researchers who pointed on the principals' lack of experience in implementing instructional leadership is considered as the major challenge and hurdle for principals to be acknowledged as instructional leader [17; 64]. In addition, senior principals

also highlight on the lack of knowledge on instructional leadership remained as barrier to principals in implementing their instructional leadership practice in schools. As a result, the school principals became less confident to practice and adopted the instructional leadership when leading their schools. In this sense, as insisted by the Ministry of Education, principals should play their effective roles and resource person to teachers in guaranteeing on the successful implementation of instructional leadership in schools. From interview, senior principals did highlight on the importance and necessity for all public school principals to obtain the appropriate, in-depth and sufficient knowledge on instructional leadership to ensure their effective roles as instructional leaders. Otherwise, they will face problems, difficulties and issues in managing, promoting and implementing their instructional leadership practice even ensuring the successful implementation of their instructional programmes at schools. Due to the lack of knowledge and experiences, principals are found to be less focused when facing complex tasks and encountering challenges while practicing their effective roles as instructional leaders.

The third challenge which also mentioned by senior principals is related to the negative attitudes of the school principals. According to senior principals, they admitted that there are principals who did not perform their duties as instructional leaders. In fact, those principals did not execute the instructional programmes which they should perform effectively. To senior principals, the negative attitudes of principals will result in the decline of the efficiency and growth of instructional leadership practice in schools. According to senior principals, as school and effective instructional leaders, they have to support the recent policies introduced by the Ministry of Education, updating their knowledge, disposition, and skills on instructional leadership. However, senior principals also told that there are principals who did not improve their knowledge, obtain least understanding on the concept, in fact, less monitoring on their instructional programmes. Hence, the negative attitudes of principals who did not monitor their instructional programmes will result in significant decline on students' academic performance. In this sense, principals are seen as least open to change and relatively passive in dealing with school instructional routines. As such, the findings are considered similar with suggestion by researchers in the instructional leadership practice [48; 31; 2] that the school principals are the most significant person in determining the successful implementation and effectiveness of the instructional programmes at schools. In fact, within the Malaysian Educational Blueprint 2013 – 2025, the ministry has informed on the pertinent role of the school principal as the resource person and implementer for the improvement of students' academic performance.

Despite the internal factors which are considered as challenges to principals' instructional leadership practice,

admittedly, there are other external challenges which are also faced by principals while executing their instructional programmes. During interview, senior principals did mention on the challenges that they encountered while dealing with the essential roles of teachers, parents, and stakeholders which refer to the role of local educational authorities. In mentioning on the challenges faced by principals, senior principals did mention on there are teachers who have negative attitudes which are implicated with lessening the effectiveness of the school's instructional programmes. From interview, senior principals also comment on some teachers who are in their comfort zones who frequently reject or show their disinclination attitudes to all school's changes and transformational programmes. Thus, these teachers are considered as challenge since they are frequently against the newly introduced teaching approaches and strategies due to their feeling of comfortable within their traditional methods of teaching and learning.

Additionally, senior principals also mentioned on some teachers who also lack of knowledge on how to perform their duties on the instructional programmes assigned to them. In addition, teachers who are always frequently absent from schools due to their participations on the outdoor and extracurricular activities are also termed by senior principals as a group of teachers that had slowed the instructional leadership practice in their schools. In fact, there are some teachers who are always late for attending their classes and do not perform their instructional routines. Similarly, senior principals also commented on the attitude of some teachers who did not perform their designated teaching and learning programmes due to lack of monitoring from the school principals. Accordingly, lack of monitoring from principals will definitely leave teachers with their own teaching and learning strategies which are considered as an obstacle for the effective implementation of instructional leadership practice. As school leaders, principals have to perform their demanding duties in fulfilling various activities related to administrative and management matters such as scheduling, reporting, managing relationships with parents and the more complex community, dealing with unexpected student and teacher problems and also situations happen outside normal unexpected [65].

Apart from the teachers' negative attitudes, the issue of the uncommitted parents is also another mentioned challenge for principals while implementing their instructional leadership practice. Based on the interviews, senior principals' comments on the attitude of some parents who are indicated as least committed as well as leaving everything on their children academic matters to school. Based on senior principals' explanations, the neglecting attitudes of some parents are another challenge faced by principals when schools received least support from parents related to their children's academic progress and improvements are issues faced by principals. In fact,

senior principals also mentioned on lack of monitoring from students' parents while at home; however, principals also noticed on some parents who least understand on how to help their children related to their academic matters. To principals, there are issues related to the positive collaboration between schools and parents which needs to be improved since teachers and principals have many instructional tasks to be complete; thus, they insisted on parents' support to monitor their children especially on the instructional tasks given to students.

During interviews, principals also talked about another central challenge faced by principals while performing their duties as instructional leaders. In this sense, principals commented on the role of local educational authorities which refers to the lack of monitoring from the local educational authorities' offices which resulted in lack of implementation by schools and principals related to the instructional programmes. To senior principals, they insisted on frequent monitoring from the local authorities to ensure on the effective implementation of instructional programmes by all schools from the local educational authorities' offices. Accordingly, senior principals also talked on the much empowerment given by the local educational offices whether to implement or not to practice on the instructional tasks given to schools. During interview session, senior principals also comment on the assigned tasks provided by local educational authorities which ask principals to attend some courses, workshops and meeting. Thus, some principals were noted to have least time in performing their instructional leadership tasks due to their busy schedules and meeting that they have to attend which to senior principals, that they have to spend most of their time at schools to ensure on the effective implementation of any instructional programmes at schools. According to Mestry (2017) [66], the school principal is currently facing new challenge, a more complex decision and additional responsibilities than ever before. The daily duties of principals in the school are filled with various administrative and management tasks such as obtaining resources, managing student discipline, resolving conflicts with parents and dealing with unexpected teacher and student problems.

7.1. Implications and Recommendations

From the findings of the study, there are some implications, suggestions and in fact recommendations for practice can be forward for the benefits of Malaysian public-school principals in practicing their instructional leadership. First, during interviews, principals did mention on their busy schedules which sometimes distracted them to play their effective roles as instructional leaders. According to principals, they were packed with administrative duties such as attending meeting and courses related to school and instructional improvements. Thus, due to their busy schedules with meetings and

courses, these administrative activities resulted in principals' absence. Thus, principals have least time to monitor any instructional programmes and activities assigned. As for recommendation, the local educational authorities are advised to conduct or organise workshops, meetings and even courses during the school holidays so that principals can more focus on their roles as instructional leaders more effectively. With the high number of attendance at school, principals can implement more effective monitoring of teacher instructional assignments and are able to guide teachers or implement changes to teachers' negative attitudes.

Second, due to their busy schedules, principals need to empower their school leadership team to undertake the roles of instructional leaders. The school leadership team is consisted of the school's senior assistants, the heads of departments and subject's chairs. In this sense, principals need to delegate some instructional tasks to their senior leadership team to ensure that all instructional assignments are implemented although the school principals are away from their schools to attend meetings, workshops and even courses. With this approach, all instructional tasks will be executed with or without the existence of the school principals. In addition, it also will enhance teachers' capacities as instructional leaders through distributed and teacher leadership practice. At the same time, these distributed approaches will reduce or eliminate principals' heavy workload.

Based on the findings, to overcome the school principals who lack of experience and knowledge on instructional leadership, the local educational authorities have to conduct or organise more courses on instructional leadership especially during the school holidays to novice and aspiring principals in order to overcome the issue of lack of experience and knowledge on instructional leadership. In addition, the local educational authorities should emphasise on the concepts and approaches on instructional leadership within principals' leadership preparation courses such as the NPQEL to expose the aspiring and novice principals with knowledge, skills and disposition related to instructional leadership. As a result, it will definitely reduce the principals' issues and problems related to their lack of knowledge and experience in practicing their effective roles as instructional leaders in schools.

7.2. Limitations of the Study

Specifically, this study has some limitations that being acknowledged. First, from the generalisation aspect, the interview data is only limited based on the views and perspectives of the seven senior principals who are participated in this study who were secondary school principals. Through this study, senior principals have provided us with their standpoints, views and perspectives through series of interviews. Therefore, the findings of the

study are considered quite difficult to obtain any generalisations to represent the whole perspectives of Malaysian principals. In this sense, we also question on the generalisation which sometimes has similarities and is contrasted with other types of schools such as primary, religious-based, high performing and cluster schools, private or international schools or may be technical and vocational types of school.

Second, as for the improvement of the study's design, it is encouraging to employ the mixed methods design in fulfilling the study's gap due to this study's limitations based on fully qualitative approach. From the mixed methods approach, the study will commence with a more number of principals who responded on items related to principals' challenges while performing their duties as instructional leaders from various perspectives; externally and internally. Following to the quantitative findings, interviewing and observation approaches can be implemented to have in-depth findings on the mentioned challenges from the quantitative data findings.

Third, this study only involves interviews with seven senior principals, to increase the validity of the study findings, quantitative methods can be proposed that is to increase the number of principals in order to increase the validity and reliability of the study. Fourth, this study is conducted in the category of national secondary schools, for future purposes, the study can be done in private schools, religious schools or vocational colleges that may have findings that are quite different from national secondary schools and less studied in the instructional leadership sides.

REFERENCES

- [1] Hallinger, P. (2005). Instructional leadership and the school principals: a passing fancy that refuses to fade away. *Leadership and Policy in Schools*, 4(3): 221-240.
- [2] Harris, A., Jones, M., Adams, D., & Cheah, K. (2019). Instructional leadership in Malaysia: a review of the contemporary literature. *School Leadership & Management*, 39 (1), 76 – 95.
- [3] Day, C., Gu, Q. & Sammons, P. 2016. The impact of leadership on student outcomes: How successful school leaders use transformational and instructional strategies to make a difference. *Educational Administration Quarterly*, 52(2): 221-258.
- [4] Hallinger, P., & Hosseingholizadeh, R. (2019). Exploring instructional leadership in Iran: A mixed methods study of high- and low-performing principals. *Educational Management Administration & Leadership*, 48 (4), 595-616.
- [5] Harris, A., Jones, M., Cheah, K., Devadason, E., & Adams, D. (2017). Exploring principals' instructional leadership practices in Malaysia: insights and implications. *Journal of Educational Administration*, 55 (2), 207 – 221.

- [6] Hallinger, P., & Walker, A. (2017). Leading learning in Asia-Emerging empirical insights from five societies. *Journal of Educational Administration*, 55(2), 130–146.
- [7] Rigby, J. (2014). Three logics of instructional leadership. *Educational Administration Quarterly*, 50(4), 610-644.
- [8] Hallinger, P. & Chen, J. (2015). Review of research on educational leadership and management in Asia: A comparative analysis of research topics and methods, 1995-2012. *Educational Management Administration & Leadership* 43(1): 5-27.
- [9] Walker, A. and Hallinger, P. (2015). A synthesis of reviews of research on principal leadership in East Asia. *Journal of Educational Administration*, 53(4), 554-570.
- [10] Bush, T. (2014). Instructional leadership in centralized contexts: rhetoric or reality?, *Educational Management Administration & Leadership*, 42 (1), 3-5.
- [11] Nguyen, D.T., Ng, D., & Yap, P.S. (2017). Instructional leadership structure in Singapore: a co-existence of hierarchy and heterarchy. *Journal of Educational Administration*, 55 (2), 147-167.
- [12] Zhao (2018). *Understanding principal's instructional leadership: A theoretical and empirical analysis in China*. Beijing: Beijing Normal University Publishing Group.
- [13] Ministry of Education. 2012. Malaysia Education Blueprint 2013- 2025. Malaysia Retrieved from <http://www.moe.gov.my/userfiles/file/PPP/Preliminary-Blueprint-Eng.pdf>
- [14] Abdullah. J.B. (2012). Instructional leadership practice and attitudes towards changes among principals in secondary schools in Pahang. Unpublished PhD thesis, National University of Malaysia
- [15] Ng, D.F.S. (2019). Instructional leadership. In Wong, B., Hairon, S., & Ng. P.T. (eds.) *School Leadership and Educational Change in Singapore* (pp.7 – 30). Switzerland: Springer Nature.
- [16] Sazali, Y., Rusmini, K.A., Abang Hut, A.E. & Zamri, A. B. (2007). Relationship between instructional leadership with school effectiveness. *Journal of Educational Management and Leadership*, 17(2): 105-117.
- [17] Wiczeorek, D., & Manard, C. (2018). Instructional leadership challenges and practices of novice principals in rural schools. *Journal of Research in Rural Education*, 34(2), 1 -21.
- [18] Azlin Mansor. (2006). Secondary school principals' management practice: a case study. Unpublished PhD thesis, National University of Malaysia.
- [19] Maimunah Muda (2005). Situational leadership practices among secondary principals in Malaysia. Unpublished PhD thesis. National University of Malaysia.
- [20] Hallinger. P., & Murphy, J.F. (2013). Running out of time: finding the time and capacity to lead learning. *NASSP Bulletin*,
- [21] Lee, K. A. (2015). The influence of instructional leadership on teachers' efficacy. Unpublished EdD dissertation. University of Kentucky.
- [22] Nelson, S. W., de la Colina, M. G., & Boone, M. D. (2008). Lifeworld or systems world: What guides novice principals. *Journal of Educational Administration*, 46, 690-701.
- [23] Spillane, J., and Lee, L.C. (2014). Novice principals sense of ultimate responsibility: problems of practice in transitioning to the principal's office. *Educational Administration Quarterly*, 50(3), 431–446.
- [24] Bevoise, W.D. (1984). Synthesis of research on the principals as instructional leader. *Educational Leadership*. 4(5): 14-20.
- [25] Hallinger, P. (2016). Instructional leadership and school socio-economic status: a preliminary investigation. Paper presented at the Annual Meeting of the British Educational Leadership and Management Society (BELMAS), Chester, July 8-10.
- [26] Mulford, B. (2008). The leadership challenge: Improving learning in schools (Australian Education Review No. 53). Camberwell, Victoria, Australia: Australian Council for Educational Research. Retrieved from http://www.acer.edu.au/research_reports/AER.html
- [27] Glasman, N. (1984). Student Achievement and the school principals. *Educational Evaluation and Policy Analysis*. 6 (3): 283-296.
- [28] Greenfield, W. D. (1985). Studies of the assistant principalship: toward new avenues of inquiry. *Education and Urban Society*, 18 (1): 7-27.
- [29] Hallinger, P & Murphy, J. (1985). Assessing the instructional leadership behavior of principals. *Elementary School Journal*. 86(2): 217-248.
- [30] Leithwood, K., Harris, A. & Hopkins, D. (2008). Seven strong claims about successful school leadership, *School Leadership and Management*, 28(1), 27-42.
- [31] Hallinger, P. & Wang, W.C. (2015) *Assessing Instructional Leadership with the Principal Instructional Management Rating Scale*. Dordrecht Netherlands: Springer.
- [32] Ng, F. S. D., Nguyen, T. D., Wong, K. B. & Choy, K. W. (2015a). A review of Singapore principals' leadership qualities, styles, and roles., *Journal Of Educational Administration*, 53 (4), 512–533.
- [33] Southworth, G. (2002). Instructional leadership in schools: reflections and empirical evidence. *School Leadership & Management*, 22 (1): 73–91.
- [34] Robinson, V. M., Lloyd, C. A. & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44(5): 635-674.
- [35] Marks, H.M. & Printy, S. M. (2003). Principal leadership and school performance: Integrating transformational and instructional leadership. *Educational Administration Quarterly* 39(3): 370-397
- [36] Hou, Y., Cui, Y., & Zhang, D.H. (2019). Impact of instructional leadership on high school student academic achievement in China. *Asia Pacific Education Review*, 20:543–558.
- [37] Le Fevre, D., & Robinson, V.M.J. (2014). The interpersonal challenges of instructional leadership: Principals' effectiveness in conversations about performance issues. *Educational Administration Quarterly*, 51(1), 58 -95.

- [38] Ghavifekr, S., Radwan, O., & Velarde, J. (2019). Teachers' perceptions of principals' instructional leadership roles and practices. *Jurnal Pendidikan Malaysia*, 44(2), 72-83.
- [39] Sim, Q. C. (2011). Instructional leadership among principals of secondary schools in Malaysia. *International Research Journal*, 2, 1784-1800.
- [40] Ministry of Education. (2013). Malaysia Education Blueprint 2013-2025: Preliminary Report - Executive summary. Putrajaya: Kuala Lumpur.
- [41] Ibrahim, K. A. Sani, M. I., & Rosemawati, M (2017). Instructional leadership competency among school principal: An empirical study in Selangor. *Journal of Educational Leadership*, 2(3),1-14.
- [42] Mohd Yusri, I. & Aziz, A. (2015). Virtual leadership model and workplace wellness school leaders in Malaysia. Group communication as the mediator. *Journal of Educational Leadership*, 2(1), 1-10.
- [43] Hallinger, P., Adams, D., Harris, A. & Suzette Jones, M. (2018). Review of conceptual models and methodologies in research on principal instructional leadership in Malaysia: A case of knowledge construction in a developing society. *Journal of Educational Administration*, 56(1): 104-126.
- [44] Andi Audryanah Md. Noor (2007). Principals' instructional leadership and self-efficacy and its relationship with school's academic performance. Unpublished Master project. Universiti Teknologi Malaysia.
- [45] Latip Muhammad (2007). The implementation of instructional leadership among principals. Paper presented at National Research Seminar at Batu Lintang Teaching Institute. Sarawak.
- [46] Abdullah, A. G. K., Ali, A. J., Mydin, A., & Amin, N. A. Z. (2019). Exploring capacity of middle managers as instructional leadership to lead transformations of teaching and learning in Malaysian high performing schools. *International Journal Academic Research Business and Social Sciences*, 9(3), 1132–1142.
- [47] Ghavifekr, S., Ibrahim, M. S., Chellapan, K., Sukumaran, K., & Subramaniam, A. (2015). Instructional leadership practices of principal in vocational and technical college: teachers' perception. *Malaysian Online Journal of Educational Management* 3(1), 48 – 67.
- [48] Mustafa, N., M. Radzi, H. Jaafar, W. A. Rohana, and M. Nawawi. (2015). Principals' instructional leadership and teachers' commitment in three Mara junior science colleges (MRSM) in Pahang, Malaysia. *Procedia - Social and Behavioral Sciences* 191, 1848–1853.
- [49] Scott, M. (2017). The challenges of instructional leadership in Manitoba first nations schools: an exploration of what principals have to say. Unpublished PhD thesis. The University of Manitoba.
- [50] Beer, M. and Nohria, N. (2000). Cracking the code of change. *Harvard Business Review* 78(2) :133-141
- [51] Bity Salwana Alias (2009). The analysis of principals' competencies, personal qualities, knowledge, skills and practice in managing schools. Unpublished PhD thesis, National University of Malaysia.
- [52] Hazura. (2009). School principals as the agent of change at a school in Kelantan. Master project. Unpublished Master of Principalship. University of Malaya.
- [53] Mohd Suhaimi Mohammed Ali & Zaidatul Lope Pihie. (2007). Instructional leadership practices among principals at rural secondary schools. Paper presented at the 14th National Seminar on Educational Management and Leadership. Institut Aminudin Baki. Genting Highlands.
- [54] Liljenberg, M. (2016) Teacher leadership modes and practices in a Swedish context – a case study. *School Leadership & Management*, 36(1), 21-40.
- [55] Bogdan, R. C., & Biklen, S. K. (2007). *Qualitative research for education: An introduction to theory and methods*. Boston, MA: Allyn & Bacon.
- [56] Yin, R.K. (2012). *Case Study Research: Design and Methods* (4th ed.). Thousand Oaks: Sage.
- [57] Gray, D.E. (2009). *Doing research in the real world* (2nd edition). London: Sage
- [58] Fraenkel, J. R. & Wallen, N. E. (2006). *How to design and evaluate research in education* (6th edition). New York: McGraw-Hill.
- [59] Johnson, B. & Christensen. L. (2014). *Educational research: quantitative, qualitative and mixed approaches* (5th Edition). Pearson.
- [60] Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*. 3(2), 77 -101.
- [61] Creswell, J. W. (2009). *Research design: qualitative, quantitative and mixed methods approaches* (third edition). Thousand Oaks, California: Sage.
- [62] Creswell, J.W. (2012). *Education research: planning, conducting and evaluating quantitative and qualitative research* (4th Ed.). Boston: Pearson.
- [63] Widhyanti Rosmaniar & Shahril Charil Marzuki. (2016). Headmaster instructional leadership and organizational learning on the quality of madrasah and the quality of graduates the state madrasah aliyah at Jakarta capital region. *Higher Education Studies*, 6(1), 159 – 168.
- [64] Norazlinda Saad. (2010). The influence of participation and attitudes in decision making towards teachers' commitments: Principals supports as the mediator. Unpublished EdD dissertation, Universiti Sains Malaysia.
- [65] Oumer, W. (2014). Principal instructional leadership performances and influencing factors in secondary schools of Addis Ababa. Unpublished MA thesis. Ababa University
- [66] Raj Majesty (2017). Empowering principals to lead and manage public schools effectively in the 21st century. *South African Journal of Education*, 37(1), 1- 11.
- [67] Khan, A., Asmiran, S., Abdul Kadir, S, & Basri, R. (2019). Principals' instructional leadership practices in Pakistan elementary schools: Perceptions and implications. *Universal Journal of Educational Research*, 8 (1A), 16 – 33.
- [68] Hassan, R., Ahmad, J., & Boon, Y. (2019). Instructional leadership practice and professional learning community in the Southern Zone of Malaysia. *Universal Journal of Educational Research*, 7 (12A), 42 – 50.

EFL Teachers' Perceptions of the Barriers and Opportunities for Implementing eLearning at Afghanistan Universities

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Abstract eLearning is implemented as an educational approach in teaching and learning EFL globally. Although, eLearning is said to enhance EFL education, there are still barriers and opportunities for the use of this approach that needs to be investigated. While there is wide research on eLearning, within the context of Afghanistan EFL practices, there is a need for more investigations. The current study aimed to investigate the perceptions of Afghan EFL teachers' perceptions, barriers and opportunities of implementing eLearning at universities. The study applied a qualitative approach. The respondents were 6 EFL teachers, purposefully selected from the English Department of a particular university in Afghanistan. The data were collected via semi-structured interview. Thematic analysis was used for coding. The findings showed that the teachers have a basic understanding of eLearning as well as its potentials for use at university-level EFL teaching and learning. It is also highlighted that the educational system has been transformed, and that eLearning provides a practical and visual language teaching with an anytime/anywhere learning opportunities. Some of the major barriers of eLearning implementation mentioned by the teachers include lack of regular supply of electricity, low speed internet, limited access to ICT tools, and lack of computer labs. The EFL teachers' interest to implement eLearning shows they are motivated to use eLearning in the EFL

classroom, but due to the barriers, it is a challenge that the teachers find it hard to overcome as one of the biggest challenges is the lack of regular supply of electricity. The findings could help the Ministry of Higher Education of Afghanistan to consider this as an urgent need for changes to be made especially as in the new normal, COVID-19 pandemic era, due to digital disruption, virtual classrooms have become the norm worldwide. Without proper ICT systems, power supply and skills, both the teachers and students in Afghanistan would be greatly disadvantaged.

Keywords eLearning, EFL, Perceptions, Education, Barriers, Opportunities, COVID-19

1. Introduction

Today, distance education, virtual learning, personalized learning, blended learning, education IR 4.0, and many other learning models are turning to be the most common approaches in educational practices. In line with these educational advancements, eLearning is common in EFL/ESL practices. eLearning can be traced back to the 1980s (Harasim, 2000), and the term eLearning (electronic Learning) refers to the implementation of an educational design that enhances instruction effectiveness and quality

by incorporating technology which improves teaching, assessment and the learning process as a whole (Amador, Nobre, and Barros, 2016). Since the emergence of computer usage, the term CALL (Computer Assisted Language Learning) is known among language teachers and learners. Later, while the development of technology reached its advanced stage, MALL (Mobile Assisted Language Learning) became a considerable approach used in language learning and teaching arenas. Currently, as part of Information and Communication Technology (ICT) applications, not only mobile but other technological tools are used to facilitate learning. And this has become part of the new normal in the COVID-19 pandemic times due to digital disruption in educational practices whereby teachers and students are now part of virtual classrooms (Ang & Sandaran, 2020). Despite the need for the use of technology in language teaching and learning, some countries such as Afghanistan are lagging on these educational innovations.

There have been many studies on eLearning in recent years, such as Jebreen, (2017), Hussain et al (2018), Al-Azawei, Parslow, and Lundqvist (2016), O'Doherty et al (2018), Rajae Harandi (2015), and Lakbala, (2015). Reviewing the previous studies, some research gaps have been identified. For instance, most of the studies that investigated on eLearning practices used the quantitative approach, while very few used mixed methods, and limited number of them adopted the qualitative approach. The current study adopts a qualitative approach to get an in-depth understanding of the issue as well as to address the research gaps. Based on personal experience, observations and discussions with EFL lecturers in Afghanistan, as well as on our review of previous studies that have investigated different contexts and approaches to eLearning practices, we find that there is a real need to investigate EFL education in relation to eLearning practices in Afghanistan, and most specifically at university level. This study is motivated by the situation in Afghanistan that is based on the experience of one of the researchers who has been a lecturer at a university in Afghanistan. Therefore, the current study aims to investigate the perceptions of EFL teachers on the use of eLearning to determine the barriers and opportunities of implementing eLearning at university-level education in the EFL context of Afghanistan.

2. Implementing eLearning in the EFL Teaching and Learning Environment

In this section, some of the key concepts within the context of the previous studies are discussed including paradigm shift in education in the 21st century and eLearning, major barriers of eLearning in 21st century, and transition from traditional approaches to eLearning, and

ICT literacy of EFL teachers.

2.1. Paradigm Shift in the 21st Century Education and eLearning

The educational paradigm of the 21st century is becoming gradually digitalized and this is a reason why EFL teachers need to be more aware of the needs of the learners to determine approaches which engages and supports self-learning. And in the new normal of the COVID-19 pandemic period, there is an even greater need for ESL/EFL teachers to be more up-to-date with eLearning practices not only because of the shift to virtual classrooms, but also because eLearning is an invaluable platform that is user-friendly and effective and above all, safe as it is managed by the institutions which ensures security breaches do not become an issue as with other external online platforms such as ZOOM. In addition, eLearning's chat, forum, and other applications can help for two-way interaction between teachers and students. Uppal, Ali and Gulliver (2017) elaborate that applying eLearning approaches throughout in each unit of a program can be used in reciprocal ways where students can provide feedback to the teachers, receive feedback from the teachers, and also see how their feedback informs subsequent practice and delivery in real-time, rather than for the potential benefit of future students. These aspects highlight a fact that eLearning approaches provide the opportunity for the learners to be involved in the teaching-learning activities where it improves the teaching and learning process that is aligned with the needs of the 21st century.

Online environments provide opportunities in the way a foreign language is learned. Language evaluation practices are often inadequate in the range and manner in which they are allocated in the eLearning environment (Gillett-Swan, 2017). Therefore, it can be said that eLearning approaches facilitate foreign language learners with a set of interactive tasks through which the learners are involved in every stage of language learning and evaluations. For instance, the learners may have group presentations instead of individual tasks and this assists them in terms of group assessments. Currently, learners who have been deciding to assume eLearning indicated a preference for online assessments. However, Stoessel et al (2015) stated that additional incorporations or the family commitments may restrict learners' ability to engage in alternative and perhaps preferred face-to-face or blended learning approaches. In addition, technology attempts to transform the passive atmosphere into a more dynamic context. Whereas Rajae Harandi (2015) claimed that learners' requirements changed since they are involved in these new technological innovations. This indicates that learners are aware of their authentic needs of language learning and this need can be fulfilled by eLearning. In addition, paradigm-shifting in language teaching methodology is an

issue for teachers. As Domingo and Garganté (2016) stated that pedagogy is transformed from a teacher-centered to a student-centered approach. This has provided more tasks and choices for learners and their learning. Therefore, eLearning in addition to providing all these multiple-choice tasks for the learners, addresses the authentic concerns of EFL education.

According to Hussain et al (2018), in tracking student engagement in different educational activities, eLearning encourages high-quality learning and comprehensive analysis of student engagement can help to minimize course dropout rates. Based on the findings of this study, one of the opportunities for effective implementation of eLearning in teaching and learning a foreign language is facilitating anywhere and anytime education. In fact, technology most particularly eLearning provides this opportunity for foreign language learners to have flexible learning platforms. The current study also tries to highlight the major opportunities of implementing eLearning in EFL education at Afghanistan universities. Consequently, when we are discussing personalized learning, students can decide what to learn and how to learn. Also, eLearning as

an educational approach currently provides the opportunity for both EFL teachers and the learners to decide on the most appropriate contexts and the accurate contents to teach and learn. Gillett-Swan (2017) stated that educational policy developers are becoming increasingly aware of the diversity of the potential of eLearning in current times. They are looking into ways of providing a range of options for learners’ engagement and increasingly flexible teaching approaches such as eLearning can provide multiple pathways and opportunities for EFL education.

2.2. Major Barriers of eLearning in 21st Century

Some of the major challenges of eLearning in 21st century are lack of technical skills in eLearning, lack of development of the electronic contents by faculty members, and lack of interest and commitment among faculty members to use eLearning. Table 1 provides a summary of prior studies on the major barriers of eLearning implantations associated with different countries. It highlights the main barriers within different studies that investigated the barriers of implementing eLearning.

Table 1. The Barriers of Implementing eLearning

No.	Study	Country	Barriers
1	Mahmoodi-Shahrehabaki (2014),	Iran	Lack of government support, lack of public awareness, high costs of eLearning, collectivist society, low-speed internet, and filtering.
2	Qureshi et al (2012),	Pakistan	Electricity failure, English proficiency, lack of ICT infrastructure, curriculum alignment with eLearning approaches, encouragement for eLearning methods, and unsuccessful integration of eLearning.
3	Homavazir (2015),	India	Costs savings are not being universally realized, cyber-crime, course load, course updating, revision, and consistency across departments.
4	Wang et al (2018),	China	Lack of favorable eLearning environments, poor infrastructure, financial constraints, inadequate support, and lack of eLearning skills.
5	Soydal et al (2011),	Turkey	Significant differences in terms of age and title, differences among different departments in terms of eLearning perceptions, and the needs of training for academic staffs.
6	Aljaber (2018),	Saudi Arabia	Challenge of ensuring educators possesses the right skills to operate technology, misalignment of curricula and ICT, resistance to change, and the influence of the culture.
7	Jabreen (2017),	Jordan	Lack of students’ awareness, students’ anxiety, teachers’ resistance to change, and lack of capacity building opportunities.

2.3. Transition from Traditional Approaches to eLearning

Transition from traditional approaches of teaching and learning to technology-enhanced methods is still a barrier that teachers and students face. According to Al-Azawei and Lundqvist (2015), in terms of transition from traditional learning to eLearning, when teachers implement eLearning, they should carry out activities, implement interactive learning and evaluate themselves, because these activities help them understand the importance of the eLearning approaches. And this measure would help them understand their students' needs and issues about eLearning practices in the EFL classrooms. Schmidt, Tschida, and Hodge (2016) indicated that most of the face-to-face learning practices can be adapted into the eLearning context. According to their investigations, it is not simply the case of applying a one size fits all which is what teachers who are relatively unfamiliar with eLearning practices do. Similarly, Orlando and Attard (2015) stated that when it comes to technology, e-teaching depends on the means of technology in use at the time and the curriculum content being taught. When teachers address these concerns, they can help to reduce the barriers by aligning the teaching content with the eLearning module, which makes it better suited for the educational setting.

In addition, blended learning is a better alternative for traditional approaches. Since it provides classrooms with online platforms and face-to-face learning. According to Lalima and Dangwal (2017), blended learning is an innovative model of teaching and learning which enhances both traditional classrooms and ICT integrated education. Therefore, this approach can help institutions and the instructors to adopt blended learning and transit the traditional approaches to eLearning context. Furthermore, Ruliah, Syahrial, Muchtar (2019) indicated that the traditional face-to-face approach which is teacher-centered learning unbaled the instructors carry the educational materials and achieve the course objectives. Whereas, computer assisted learning help them with different models of education including medias, interactive tasks, and visual aids to enhance the education process and deliver the educational materials effectively. This indicates that there are alternative approaches to transit from traditional approaches to eLearning.

2.4. ICT Literacy of EFL Teachers

For a successful eLearning implementation in EFL classrooms, ICT knowledge for EFL teachers is necessary. According to Jebreen (2017), faculty members need to receive training on professional development, education online, and requirements to encourage teaching online. This will have impact on teachers to pave the way for a successful transition from traditional approaches to eLearning. eLearning has the potential to provide

interactive language learning platforms. Thus, if EFL teachers have enough knowledge of ICT and new educational innovations, then they can easily integrate the 21st century skills, i.e. collaboration, cooperation, communication, creativity, and critical thinking which are the core values for EFL education today. Al-Azawei, Parslow, and Lundqvist (2016) stated that a key barrier for implementing eLearning is lack of ICT knowledge of the teachers where the absence of technology leads them to use the traditional approach. Kisanga and Ireson (2015) state that successful eLearning implementation is one means for solving some of the concerns of teaching and learning. This affirmation supports the idea that empowering eLearning implementation particularly in the EFL education in Afghanistan is necessary especially with the practices in the new normal and virtual classroom environment. Taking into consideration the context of EFL classrooms in Afghanistan, our initial observations of Afghanistan EFL teachers show that they lack ICT knowledge due to the lack of ICT tools and guide for better understanding of technology integrated instructions. Therefore, the current study aims to identify the perceptions of EFL teachers on the barriers and opportunities of implementing eLearning in the context of Afghanistan tertiary level institutions.

3. Methodology

The study applied qualitative approach with semi-structured interviews using a purposive sampling technique. The purpose of the qualitative approach is to understand, from within, the subjective reality of the research participants (Creswell, 2017). Semi-structured interview enables us to understand the users' perceptions of their use of eLearning. Blandford (2013) also stated that one growing trend is the application of qualitative methods to better understand the use of technology in context. Since the study is investigating the perceptions of the field's practitioners, therefore, Zorn (2010) also indicated that the purpose of applying a semi-structured interview is the classification of insights into the topic from the perspective of participants. The purpose of using a purposive sampling technique is to select the respondents from the discipline practitioners who could be able to perceive the issue based on the practices and understanding of the authentic concerns.

6 EFL teachers from the English Department of a particular university in Afghanistan were selected as respondents of the study. Blandford (2013) also stated that the choice of approaches to recruitment depends on the purpose of the study and the kinds of respondents needed. In the current study, direct contact is used to recruit the samples. The semi-structured interview is conducted face-to-face and e-interview (Facebook Messenger, WhatsApp, and Telegram). E-interview is getting to be the common tool of the data collections. As Rode (2011) stated

that new technologies developed, they allow new possibilities for fieldwork-remote interviews, participant-observation through games, or blogs, or virtual worlds, and following the lives of one's informants via twitter. Similarly, Blandford (2013) also stated that the possibilities are seemingly endless and growing. The limit may be the imagination of the research team. The interviews are transcribed and thematically coded by identifying the patterns and themes. Braun and Clarke (2013) described that thematic analysis is the process of identifying patterns or themes within qualitative data.

4. Findings and Discussions

The study aimed to answer two main research questions: How EFL teachers perceive the use of eLearning at university-level education in the EFL context of Afghanistan? and What are the barriers and opportunities for implementing eLearning at university-level education in the EFL context of Afghanistan? Applying qualitative approach, data are collected via a semi-structured interview. The main themes identified include, eLearning awareness Among EFL Teachers in Afghanistan, eLearning enhances EFL education, preferred eLearning tools by EFL teachers, eLearning and EFL teachers' interaction with students, lack of infrastructures, eLearning Support by EFL teachers, and eLearning as an ideal approach of EFL practices in the Afghanistan tertiary context.

4.1. eLearning Awareness Among EFL Teachers in Afghanistan

The findings of the study highlight that there is a basic understanding of the use of eLearning at university-level education in the EFL context of Afghanistan. All the teachers interviewed confirmed that they are applying eLearning in their EFL classrooms. As one of the EFL teachers stated, *"I use eLearning accordingly whenever the tools are accessible at university"*. In addition, the findings declare that there is also awareness about eLearning itself among EFL teachers. As an EFL teacher stated that *"eLearning is a kind of teaching which is carried out by the help internet and other electronic devices."*

4.2. eLearning Enhances EFL Education

In terms of how eLearning usage would facilitate EFL education, most of the EFL teachers stated that teachers in Afghanistan are motivated to use eLearning. For example, one teacher stated, *"In recent decades, the educational system has been transformed, and around the world educational institution used eLearning approaches. ELearning can help both teachers and students to acquire recent information on language teaching and learning"*.

This indicates that the paradigm shift in education is motivating the EFL teachers in Afghanistan towards the use of technology-integrated approaches to enhance EFL education. Therefore, most of the EFL teachers agreed that eLearning enhances EFL education. As one of them strongly stated, *"It would best facilitate the acceleration of the language learning process"*.

Similarly, there are findings from the studies that are aligned with the findings of the current study which stated that the term eLearning refers to the implementation of an educational design that enhances instruction effectiveness and quality by incorporating technology which improves teaching, assessment and the learning process as a whole (Amador, Nobre, and Barros, 2016). This highlights that eLearning has the potential to enhance EFL education. In addition, the findings show that eLearning can facilitate EFL students to be independent learners as well as it will help the teachers in the class to provide their students practical and visual teaching which will be received by the learners very easily. As one of the EFL teachers stated, *"Using eLearning, EFL teachers and students are connected 24 hours with each other's and the students have access to the materials that they will study during the classes"*. Also, most of the EFL teachers stated that *"Most of the academic activities are done online, it will prevent time-consuming"*. This indicates the concerns about reducing time-consuming in EFL education applying eLearning.

4.3. Preferred eLearning Tools by EFL Teachers

In terms of what types of eLearning tools are preferred for EFL classrooms, the teachers mentioned web based online resource. For example, one teacher stated, *"The teachers should have pointed out, for students, different webs for English language exercise"*. Also, they stated that EFL teachers should use those webs and online sources as a tool to improve language learning. As an EFL teacher stated, *"EFL teachers have to use online resources for improving EFL"*. EFL teachers also highlighted few tools as eLearning, *"For instance, EFL teachers can play some native speakers' videos in order the learners to learn the correct pronunciation of words as well as to strengthen the students' listening skill"*. The teachers also stated that students should be given projects and assignments integrated with the use of ICT. As an EFL teacher stated, *"The teachers should assign projects and assignments which need online reading for their accomplishment"*. This indicates that EFL teachers do intend to use the available eLearning platforms for enhancing students' language proficiency. Thus, the teachers' response highlights that technological innovations can enhance learners' interests and motivation, benefit students to access the target language input, provide them with more interaction opportunities and feedback (Golonka et al, 2014).

4.4. eLearning and EFL Teachers Interactions with the Students

In terms of interactions with the students via eLearning, EFL teachers stated that students' and teachers' interaction is a core factor for language learning. As one of the EFL teachers said, *“Interaction with students is crucial, without interaction the language learning arguably ineffective”*. It is also elucidated that eLearning interactions with the students mean to guide the students on how to use eLearning resources and seek out valuable and reliable information. In addition, the teachers stated that eLearning facilitates effective interactions between students as well as teachers, e.g. *“eLearning will pave the best way for better interaction. Through eLearning, I can communicate with my students very well. I can share my teaching materials, videos, audio, and slides”*.

This is aligned with the assumed barriers in the problem background of the current study which is stated that students are not willing to learn a foreign language in the traditional way of chalk and talk anymore since they are born in the age of technology and technological trends. Like the findings of the current study, the findings by Aljaber (2018) in Jordan also indicated that barriers related to the technology-integrated approaches gap incline to take on a diverse meaning in different regions and countries. For instance, in developed countries, this gap is demonstrated by limited knowledge of the ICT by both teachers and students, whereas, in developing countries like Afghanistan, it can be said that lacking in ICT infrastructures and knowledge and skills of the teachers and students, is a key barrier.

4.5. Lack of Infrastructure

All the teachers interviewed expressed that they face a lack of infrastructure for using eLearning at university-level education in the EFL context of Afghanistan. For instance, due to the lack of eLearning resources such as projectors, computers, high-speed internet, electricity challenge, and lack of computer lab availability, they tend to not use eLearning much. As one of the EFL teachers stated that *“I have not implemented eLearning in my teaching, while the expected barriers are lack of internet, computers, projectors and eLearning resources which causes student's incompetence in using online resources”*. However, there are steps in progress by the Ministry of Higher Education in Afghanistan (MoHE, 2015) that attempt to facilitate universities with eLearning tools and potentials.

Despite the response of some of the teachers that EFL teachers and the students use eLearning, the findings of the current study highlight that there are challenges in implementing eLearning at university-level education in the EFL context of Afghanistan. For instance, both teachers and students do not have access to internet, electricity, computers and standard classrooms. As one of the EFL

teachers also stated, *“Implementing eLearning requires access to a stable and strong internet connection and electronic technologies such computers, tablets and smartphones, unfortunately, Universities do not have such equipment and facilities”*. They also added that ICT literacy of the teachers is a factor for the implementation of eLearning. As one of the EFL teachers stated, *“Teachers and students have not been trained about eLearning at university”*. According to the findings of the study by Al-Azawei, Parslow, and Lundqvist (2016), a key barrier for implementing eLearning is lack of ICT knowledge of the teachers and the absence of technology leads to them using traditional approaches.

4.6. eLearning Support by EFL Teachers

There are enough potentials not only by the EFL teachers, the organization but also by the ministry of higher education that have taken practical steps towards the improvement of eLearning implementation at university-level education in the EFL context of Afghanistan. The teachers also mentioned the students' perceptions positive towards adopting eLearning. As one of the EFL teachers stated, *“Students feel happy and confident when they utilize eLearning inside or outside of the classrooms”*. This shows that there are motivations for the use of eLearning even by the EFL learners. Similarly, one teacher stated that *“Whenever I implanted some eLearning in the past, my students had positive perceptions”*. Jebreen (2017) also stated that for restructuring the educational development even in developing countries, eLearning has the potential and efficiency. One teacher explained that *“eLearning implementation is a good tool in teaching and learning EFL. We should start implementing eLearning in our university gradually. First, we should start with easy tools then we can practice more difficult ones”*.

4.7. eLearning as an Ideal Approach for EFL Education

The findings show that the teachers consider eLearning as an ideal method for teaching and learning EFL. As one teacher stated, *“Everything has been transformed including the educational system, many new approaches and methods have been introduced to learning and teaching”*. Another added *“Among them, using technology inside the class and outside of the class is taking place to improve the language teaching and learning process”*. Thus, eLearning methods are tied up with technology and technology brings ease particularly in the teaching and learning of EFL. This indicates that EFL teachers are moving toward the paradigm-shift in EFL education. One of the teachers also added that *“eLearning makes students quick respondents to a problem as well as it helps teachers keep a close relationship with his/her students and to be well-aware from the students' progress”*. This is how eLearning is considered an ideal approach to EFL

education. Hussain et al (2018) explain that tracking student engagement in different educational learning activities, eLearning encourages high-quality learning, and comprehensive analysis of student engagement can help to minimize course dropout rates. Similarly, a teacher stated that “Today, the internet is infinite, and the eLearning is one of the best ways to learn English and to get in touch with native speakers”.

In summary, based on the findings, EFL teachers perceived that there is a basic understanding of the eLearning as well as potential to use it in EFL education. They also added that educational system has been transformed, eLearning can help both EFL teachers and the students, eLearning provides practical and visual language teaching, and anytime/anywhere education. In terms of barriers and opportunities for implementing eLearning at university-level education in the EFL context of Afghanistan, the teachers stated lack of infrastructures, namely, electricity, low internet speed, limited access to ICT tools, and lack of computer labs.

5. Conclusion

This study set out to identify the barriers and opportunities for implementing eLearning in the Afghanistan tertiary level EFL context. Based on six semi-structured interviews of EFL teachers, the findings indicate that EFL teachers perceive eLearning as a model that enhances EFL education. They see eLearning as a tool that helps both teachers and students and provides visual language learning tasks. In addition, it is highlighted that eLearning saves time as it provides anytime/anywhere education. Thus, it can be said the teachers are aware of the potentials of eLearning usage in the EFL classroom at universities in Afghanistan. Some of the barriers of implementing eLearning at university-level education in the EFL context of Afghanistan mentioned by the teachers include, lack of infrastructures, lack of computer labs, poor internet connections, and lack of regular supply of electricity, all of which are considered as infrastructure challenges. Our findings highlight the need for better ICT facilities, and measures to enhance the knowledge and skills of EFL teachers to enable the use of eLearning as a part of tertiary level EFL classrooms in Afghanistan. But due to some of the barriers mentioned, the teachers consider this a great disadvantage for the Afghanistan EFL context as without the limitations, teaching and learning of English could be a much better experience and practice for the teachers and students.

REFERENCES

- [1] Afghanistan, Ministry of Higher Education. (2015). *OBE*,

SCL and eLearning Workshop. Kabul: Ministry of Higher Education.

- [2] Ang, S., R., and Sandaran, S., C. (2020). Teachers' practices and perceptions of the use of ICT in ELT classrooms in the pre-covid 19 pandemic era and suggestions for the 'new normal'. *LSP International Journal* 7(1). DOI: 10.11113/lspi.v7n1.100.
- [3] Al-Azawei, A., Parslow, P., & Lundqvist, K. (2016). Barriers and opportunities of ELearning implementation in Iraq: A case of public universities. *The International Review of Research in Open and Distributed Learning*, 17(5). doi:10.19173/irrodl.v17i5.2501.
- [4] Aljaber, A. (2018). ELearning policy in Saudi Arabia: Challenges and successes. *Research in Comparative and International Education*, 13(1), pp. 176194. (doi:10.1177/1745499918764147).
- [5] Amador F., Nobre A., and Barros D. (2016). Towards a model of a didactics of eLearning: An application to education for sustainable development. In: Pinheiro M and Simões D (eds) *Handbook of Research on Engaging Digital Natives in Higher Education Settings*. Hershey, PA: IGI Global, pp.396-415.
- [6] Ang, S.R & Sandaran, S.C. (2020). Teachers' Practices and Perceptions of the Use of ICT in ELT Classrooms in the PreCovid 19 Pandemic Era and Suggestions for the 'New Normal'. *LSP International Journal*, 7/1, 99–119.
- [7] Blandford, Ann. (2013). Semi-structured qualitative studies. In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation. Available online at http://www.interactiondesign.org/encyclopedia/semi-structured_qualitative_studies.html.
- [8] Clarke, V. & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2), 120-123.
- [9] Creswell, J. W., & Poth, C. N. (2017). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Sage publications.
- [10] Domingo, M. G., & Garganté, A. B. (2016). Exploring the use of educational technology in primary education:
- [11] Teachers' perception of mobile technology learning impacts and applications' use in the classroom. *Computers in Human Behaviour*, 56, 21–28. doi: DOI: 10.1016/j.chb.2015.11.023.
- [12] Gillett-Swan, J. (2017). The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design*, 10(1), 20. doi:10.5204/jld.v9i3.293.
- [13] Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). *Computational Intelligence and Neuroscience*, 2018, 1-21. doi:10.1155/2018/6347186.
- [14] Homavazir, Z. F. (2015). 'Impact of eLearning on student learning and employability –A study in India' (dissertation). D.Y. PATIL UNIVERSITY, School of Management.
- [15] Harandi, S. R. (2015). Effects of eLearning on students' motivation. *Procedia - Social and Behavioral Sciences*, 181, 423-430. doi: 10.1016/j.sbspro.2015.04.905.
- [16] Harasim, L. (2000). Shift happens: Online education as a

- new paradigm in learning. *The Internet and Higher Education*, 3(1-2), 41-61. doi:10.1016/s1096-7516(00)00032-4.
- [17] Hussain, M., Zhu, W., Zhang, W., & Abidi, S. M. (2018). Student engagement predictions in an eLearning system and their impact on student course assessment scores. *Computational Intelligence and Neuroscience*, 2018, 1-21. doi:10.1155/2018/6347186.
- [18] Jebreen, I. (2017). ELearning system – challenges & barriers: A case study. *International Journal of Computing Academic Research (IJCAR)*, 6(2), 59–66. Retrieved from <http://meacse.org/IJCAR/archives/119.pdf>.
- [19] Kisanga, D., & Ireson, G. (2015). Barriers and strategies on adoption of eLearning in Tanzanian higher learning institutions: Lessons for adopters. *International Journal of Education and Development using Information and Communication Technology*, 11(2), 126.
- [20] Lakbala, P. (2015). Barriers in implementing eLearning in Hormozgan University of Medical Sciences. *Global Journal of Health Science*, 8(7), 83. doi:10.5539/gjhs.v8n7p83.
- [21] Lalima and Dangwal, K., L. (2017). Blended Learning: An Innovative Approach. *Universal Journal of Educational Research*, 5(1), 129 - 136. DOI: 10.13189/ujer.2017.050116.
- [22] Mahmoodi-Shahrehabaki, M. (2014). ELearning in Iran as a developing country: *Challenges ahead and possible solutions*. *SSRN Electronic Journal*. doi:10.2139/ssrn.251434.
- [23] O'Doherty, D., Dromey, M., Loughed, J., Hannigan, A., Last, J., & Mcgrath, D. (2018). Barriers and solutions to online learning in medical education – An integrative review. *BMC Medical Education*, 18(1). doi:10.1186/s12909-018-1240-0.
- [24] Orlando, J., & Attard, C. (2015). Digital natives come of age: The reality of today's early career teachers using mobile devices to teach mathematics. *Mathematics Education Research Journal*, 28, 107–121. doi:10.1007/s13394-015-0159-6.
- [25] Palethorpe, R. (2011). *Learning and Development*. (fifth edition). London: Chartered Institute of Personnel and Development Published 2009. 400 pp., ISBN: 978 1 84398 216 6 UK £41.99. *Industrial and Commercial Training*, 43(6), 394–395. doi: 10.1108/00197851111160531.
- [26] Qureshi, Ijaz., Ilyas, Khola., Yasmin, Robina. & Whitty, Michael. (2012). Challenges of implementing eLearning in a Pakistani university. *Knowledge Management and ELearning*. 4. 310-324.
- [27] Rajae, Harandi, S. (2015). Effects of eLearning on students' motivation. 3rd International Conference on Leadership, Technology and Innovation Management. *Procedia - Social and Behavioral Sciences* 181, 423 – 430.
- [28] Rode, J. A. (2011). Reflexivity in digital anthropology. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 123-- -132). ACM.
- [29] Rohani, S. (2007). 'Teaching of Grammar: Teachers Beliefs, Instructional Contexts and Practices' (Dissertation). UTM, Johor Bahru, Johor. Retrieved from http://eprints.usm.my/29416/1/Teaching_of_grammar.pdf.
- [30] Ruliah, Syahrial, Z. and Muchtar, H. (2019). The Computer Assisted Instruction Model Based on a Combination of Tutorial Model and Drill and Practice Model in the Instructional Design of Database Systems in Information Technology Colleges. *Universal Journal of Educational Research*, 7(9A), 117 - 124. DOI: 10.13189/ujer.2019.071614.
- [31] Schmidt, S. W., Tschida, C. M., & Hodge, E. M. (2016). How faculty learn to teach online: What administrators need to know. *Online Journal of Distance Learning Administration*. Retrieved from http://www.westga.edu/~distance/ojdl/spring191/schmidt_tschida_hodge191.html.
- [32] Shahnaz, Q., George, P., Son, V., Shabnam, H., Habib, S., Schroeder, J., & Karim, Q. (2014). Effectiveness of parent education through mobile technology in Afghanistan. *Creative Education*, 5, 1921-1928. <http://dx.doi.org/10.4236/ce.2014.522215>.
- [33] Soydal, Irem & Alır, Gülten & Ünal, Yurdagül. (2011). Are Turkish universities ready for eLearning: A case of Hacettepe University Faculty of Letters. *Information Services and Use*. 31. 281-291. 10.3233/ISU-2012-0659.
- [34] Stoessel, K., Ihme, T. A., Barbarino, M-L., Fisseler, B., & Sturmer, S. (2015). Sociodemographic diversity and distance education: Who drops out from academic programs and why? *Research in Higher Education*, 56, 228–246. doi:10.1007/s11162-014-9343-x.
- [35] Uppal, M. A., Ali, S., & Gulliver, S. R. (2017). Factors determining eLearning service quality. *British Journal of Educational Technology*, 49(3), 412–426. doi:10.1111/bjet.12552.
- [36] Wang, Y., Liu, X., & Zhang, Z. (2018). An overview of eLearning in China: History, challenges and opportunities. *Research in Comparative and International Education*, 13(1), 195–210. doi:10.1177/1745499918763421.
- [37] Zamani, B. E., Esfijani, A., & Damaneh, S. M. (2016). Major barriers for participating in online teaching in developing countries from Iranian faculty members perspectives. *Australasian Journal of Educational Technology*. doi:10.14742/ajet.2678.
- [38] Zorn, T. (2010). *Designing and Conducting Semi-Structured Interviews for Research*. Retrieved from <http://wmssoros.mn.gt.waikato.ac.nz/NR/rdonlyres/em25kkojrnxfpq3j7avsnl46vkmera63kk2s6nd5ey2pyposx32ne7dykntjde4u2qhffhp016bzi/Interviewguidelines.pdf>.

The Effect of Training and Supervision on Teacher Performance through Teacher Competence as a Mediating Variable in Primary Schools

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Abstract The low competence and quality of teacher performance in learning is the basis of researchers to test the effect of training and supervision on teacher performance through teacher competence as a mediating variable in primary schools. This research uses a quantitative approach to prove the correlation and causal relationship, the researchers used a. This type of research that will be used in this research is explanatory research or research that is directed to explain the influence between the variables studied. The sample in this study was 100 elementary school teachers in East Lombok regency who were taken by non-probability sampling with the type of purposive sampling. This study uses data analysis methods using PLS (Partial Least Square) is a multivariate statistical technique that makes comparisons between multiple dependent variables and multiple independent variables. The results of this study found that the training had significant and positive influences on teacher competence. The training significantly and positively influences on teacher performance. Supervision influences significantly and positively on teacher competence. Teacher competence influences significantly and positively on teacher performance. But the supervision does not affect teacher performance. This can be seen from each action carried out by teachers who can increase creative and advanced competencies and performance.

Keywords Training, Supervision, Competence, Performance

1. Introduction

The quality of education in a country is determined by the quality of teaching, curriculum, and management of good school institutions (Rockoff, 2004; Timperley & Alton-Lee, 2008). This shows the important role of principals and teachers in improving to provide good output in the form of students' intellectual, personality, and psychosocial development (Hattie, 2008). To support good teaching quality, teachers who have good competence are needed, especially in basic education. The characteristics of primary school education that rely on almost 90% of teacher involvement in learning activities are highly dependent on teacher competency (European Commission, 2013). Primary school teachers have functions and roles in educating, teaching, guiding, directing, training, assessing, and evaluating students in terms of cognitive, affective, and psychomotor (Cubukcu, 2010).

The problems faced by developing countries today are uneven and low teacher competence (Gorem et al., 2017). Teacher competence has a relationship with the quality of teacher performance in teaching (Avalos, 2011; Guskey & Yoon, 2009). The problem of teacher competency in Indonesia shows a fairly high number, where 45 out of 60 teachers or 75% in DKI did not prepare learning well (Leithwood, et al., 2015), 70% did not prepare good

learning methods, learning media, and evaluation of learning, Less than 20% of teachers conducted activities in (1) article writing; (2) researching; (3) making art/technology works; (4) studying the book; (5) taking an English course, (6) attending training and (7) attending a scientific forum (Sung., et al, 2016). These problems occur in almost all regions of Indonesia and become a national problem.

The Government of Indonesia seeks to improve teacher competency and performance through several education and training programs, seminar workshops including Professional Development for Education Personnel (ProDEP), Better Education Through Reformed Management and Universal Teacher Upgrading (BERMUTU), Teacher Competency Test (UKG), Learning Process (PKB). The program only reaches less than 1 million of a total of 2.9 million teachers in Indonesia please paraphrase this sentence (Databoks, 2019). The training program has also shown positive results related to efforts to improve teacher competency and have an impact on the quality of teacher performance in teaching (Cuban, 2013; Kennedy, 2016). Various types of training can be in the form of seminars, workshops; workshops aimed at broadening their horizons, enhancing their experiences and applying them in teaching and learning activities carried out by teachers. Training can influence teacher professionalism in teaching. The training is given, of course, must be in line with the problems and needs of teachers in the field.

2 Literature Review

2.1. Education Training

Training is part of the education process to acquire and increase skills outside the instruction system that applies in a moderately short period with approaches that arrange practice rather than theory (Steele & Zhang, 2016). Many methods are used to improve the quality of teachers in teaching, including by providing training to teachers. Therefore, teachers need to be given adequate training to encourage effective learning (Harris & Sass, 2011). This is because training can improve the quality and professionalism of teachers in teaching. The SEC shows that a teacher must be able to update the value of teaching and academic study, as well as to evaluate the effectiveness and change strategies in teaching so that in this case teachers can comprehend the type of training that they necessity (Ginsburg, 2010, Yafie et al., 2020).

Considering the importance of the suitability of the training, they took part in supporting the teacher's pedagogy. Through good pedagogical knowledge will affect understanding in quality teaching (Konig, et al, 2011), so that it will have an impact on student learning outcomes (Kiel, Lerche, Kollmannsberger, Oubaid, &

Weiss, 2016). Peter in Kamil argues that the concept of training is applied in several aspects, such as (1) several types of skills must be mastered, (2) training is needed to master skills, (3) a slight emphasis on theory is needed. As one of the indicators supporting the professional competence of professions teacher, experience in training can be identified as an important factor that also influences. Teacher competence moreover depends on the training they follow (Shukla, 2014). Teachers must stay to learn, participate in scientific events such as training, seminars, workshops to increase their horizons, improve their experiences and apply them in teaching and learning activities carried out by teachers (Harris & Sass, 2011). So that one of the most important things in improving competence is that teachers need to attend training activities.

2.2. Supervise of the Principal

Supervision is generally understood as oversight, in this case, supervision can help teachers see and understand the conditions and needs of students more clearly so that effective cooperation will be created. The principal functions serve as an Educator, Manager, Administrator, Supervisor, Leadership, and Motivator (EMASLIM) (Marlow, 2016). According to Coimbra (2013) in the supervision of teaching, supervisors can reassure teachers to smear their abilities in carrying out their teaching tasks, inspire teachers to develop their abilities, and encourage teachers so that they have genuine attention (commitment) to the duties and responsibilities so that through supervision of teaching, supervisors can foster teacher motivation. School supervisors, in this case, the headmaster performs academic and managerial supervisory duties in the education unit which includes the preparation of supervision programs, the implementation of guidance, monitoring, implementation of eight national education standards, assessment and guidance and professional teacher training, evaluation of the results of the implementation of the supervision program. Supervision must be able to help and solve the problems experienced by the teacher (Altunay, Arlı, Öz, & Yalçınkaya, 2013). Supervision is an effort to improve teaching, including stimulating, selecting job growth and teacher development, and revising educational goals, teaching materials and teaching methods, and evaluations (Hoque., et al, 2020, Yafie et al., 2020).

Supervision conducted by the school will help the teachers to develop innovation and creativity that they have until to be competitive and efficient to improve the quality of education (Aldaihani, 2017; Khun-inkeeree., et al, 2019). The attention of the principal to the teacher is very important to improve the professionalism and performance of teachers and other education personnel in the school. The attention of the principal in improving teacher professionalism can be done through group discussions,

and class visits (Bredeson, 2000). Ampofo, et al (2019) found the results that supervision by the school principal had a significant effect on teacher performance. In addition to the need for competence for teachers, other factors that contribute to determining teacher performance are job satisfaction and supervision (Osakwe, 2010). Some factors that can affect teacher performance include: 1) mentality (work motivation, work discipline, and work ethics), 2) education, 3) ability, 4) leadership management, 5) income level, 6) salary and health, 7) social security, 8) work climate, 9) facilities and infrastructure, 10) technology and 11) achievements (Stark, et al, 2017).

2.3. Teacher Performance

Based on some of the definitions stated above, it can be stated that the teacher's performance is an achievement that the teacher achieved in carrying out their duties or work during a certain period according to the standard competency and criteria set for the job. Teacher performance can be realized and restrained based on terms or competency criteria that must be controlled by each teacher. Regarding teacher performance, the intended behavior is the teacher's activity in the learning process. Moreover, standards of the teacher performance understanding as quoted by Dimanchetra & Wisaprom (2019) in the teacher performance assessment handbook by the supervisor explain that: "Standard of the teacher performance is related to the teacher qualities in carrying out their duties such as: (1) working with students exclusively, (2) planning of learning, (3) utilization of instructional media, (4) connecting students in a variety of learning experiences, and (5) active leadership of the teacher. Teacher performance can also be measured by the Teacher Ability Assessment Tool (APKG), including: (1) learning plans (teaching plans and materials) or referred to as RPP (Learning Implementation Plan), (2) learning procedures (classroom procedure).

2.4. Teacher Competency

Competencies include pedagogical competencies, personal competencies, social competencies, and professional competencies obtained through professional education. Pedagogic competence is the skill of teachers in learning management. Minister of National Education Regulation No. 16 of 2007 states that teacher pedagogical competency standards consist of (a) mastering learning theory and values of learning that teach, (b) developing curriculum related to the subjects being taught, (c) utilizing information technology and communication for the learning process, (d) managing the evaluation of learning procedures and outcomes, (e) taking thoughtful actions to advance the quality of learning. Personality competence is a personal performance (traits) that must be possessed by a teacher. Poro., et al (2018) based on these personality

competencies, a teacher must: (a) be able to current themselves as an authoritative person, (b) be able to present themselves as noble individuals as role models for students and the community, (c) have independence in work, (d) behave honestly, (e) able to evaluate themselves and performance continuously. Social competence according to (Shukla, 2014) has the characteristics of (a) being inclusive and acting objectively b) communicating effectively and politely with fellow educators, educational staff, parents, and the community, c) adapting in the place of duty, d) communicating with the professional community itself and other professions verbally and in writing or other forms Professional Competence according to Nadeem, et al (2011) is professional if the teacher has basic knowledge and understanding in his field which includes: (a) understanding competency standards and basic competencies in his area of expertise, (b) being able to choose and develop subject matter creatively, (c) mastering methods for developing critical knowledge and studies related to the field of expertise, (d) being creative and innovative in the application of the field of science related to the field of expertise, (e) able to take contemplative actions to advance the quality of learning. Teacher competencies influence their grades, behavior, communication, goals, and teaching practices (Parker, 2018). Therefore, in this era teachers need to improve their information and skills to increase and discover their teaching practices.

3. Research Method

To prove the correlation and causal relationships, the researchers used a quantitative approach. This type of research that will be used in this research is explanatory research or research that is directed to explain the influence between the variables studied. The sample in this study was 100 elementary school teachers in East Lombok regency who were taken by non-probability sampling with the type of purposive sampling. This study uses data analysis methods using Smart PLS software version 2.0. which is run on computer media. PLS (Partial Least Square) is a multivariate statistical technique that makes comparisons between multiple dependent variables and multiple independent variables. PLS is one of the variant-based SEM statistical methods that are designed to solve multiple regressions when specific problems occur in the data. Hypothesis testing is a based procedure on sample evidence and used to determine whether a hypothesis is a reasonable statement and is therefore not rejected, or the hypothesis is unnatural and must, therefore, be rejected. Hypothesis testing is used to partially test the effect of exogenous variables (X) on endogenous variables (Y) by looking at the t- value on each lane. T-value can be obtained from the bootstrapping results. The inner weight coefficient value of the structural model can be said to be

significant if the value of the t-count is greater than the t-table. This hypothesis was tested at a significant level of 0.05 (95% confidence level). To find out the hypothesis test decision making, it is done by comparing the significance level and alpha (0.05).

Hypothesis:

H1: Training has a positive significant effect on teacher competence

H2: Supervision has a positive significant effect on teacher competence

H3: Training has a positive significant effect on teacher quality performance

H4: Supervision has a positive significant effect on teacher quality performance

H5: Teacher competence has a positive significant effect on teacher quality performance

4 Results

4.1. Evaluate Measurement (Outer), Model

4.1.1. Convergent Validity

Convergent validity of the quantity model with instinctive indicators can be seen from the correlation between the scores of items/indicators with a score that constructs. Individual indicators are measured reliable if they have a correlation value above 0.60. Based on the results for outer loading (Table 1), all indicators have loading above 0.50 and are significant.

Validity testing for meditative indicators uses the correlation between item scores and construct scores. From the table, it is known that all dimensions meet convergent validity because it has a loading value of more than 0.50. Reflective indicators are suitable for measuring perceptions so this study uses reflective indicators.

Based on table 1, it can be seen that the value of the correlation value or outer loading on each indicator, all of which are found in the training (x1), supervision (x2), teacher competence (z), teacher performance (y) variables are more than 0.5. This shows that all variables meet the convergent validity so that they can be used to continue testing the hypothesis.

Table 1. Convergent Validity Test

Variable Construct	Indicator	Correlation Value
Training (X1)	Training Content	0.753
	Method of Training	0.810
	Time spent in training	0.686
	Teacher satisfaction with training	0.728
	Organizational support for training and development	0.759
Supervision (X2)	Motivate the teacher	0.844
	Supervision in learning activities	0.886
	Help choose teaching materials	0.834
	Staff meeting to give instructional direction to the teacher	0.690
	The act of delegating instructional tasks to the teacher	0.717
Teacher Competence (Z)	Pedagogic competence	0.816
	Personality competence	0.859
	Social competence	0.817
	Professional Competence	0.723
Teacher Performance (Y)	Working with students individually	0.758
	Preparation and planning of learning	0.779
	Utilization of instructional media	0.796
	Involving students in a variety of learning experiences	0.782
	Active leadership of the teacher	0.784

4.1.4. Hypothesis Testing

The path analysis results will be used to get the effect between variables by observing at the level of significance between variables, as well as the relationships between variables. To see the level of significance between variables, the research Sig is used, if the research Sig is smaller than 0.05 (Sig < 0.05), then it is stated that there is a significant influence between the variables. If the Sig value of the study is greater than the value of 0.05 (Sig > 0.05), then it is stated that the influence between the variables is not significant or can also be seen using the t-test. If the value of t arithmetic is greater than the table (t arithmetic > t table) then the influence between variables is significant. Conversely, if the value of t count is smaller than the t table (t count < t table), the influence between variables is not significant.

Table 2. Direct Effect

Path	Beta	T Statistic	P-Value	Explanation
Training (X1) → Teacher Competence (Z)	0.560	5.797	0.007	Positive Significant
Training (X1) → Teacher Performance (Y)	0.550	5.484	0.008	Positive Significant
Supervision (X2) → Teacher Competence (Z)	0.843	12.679	0.000	Positive Significant
Supervision (X2) → Teacher Performance (Y)	0.046	0.332	0.740	Not Significant
Teacher Competence (Z) → Teacher Performance (Y)	0.763	7.014	0.000	Positive Significant

Table 3. Indirect Effect

Path	Beta	T Statistic	P-Value	Explanation
Training (X1) → Teacher Competence (Z) → Teacher Performance (Y)	0.446	4.148	0.000	Positive Significant
Supervision (X2) → Teacher Competence (Z) → Teacher Performance (Y)	0.370	2.991	0.021	Positive Significant

Table 2 aims to test the direct effect. The test results indicate that training (X1) has a positive and significant effect on teacher competence (z) and teacher performance (Y). Furthermore, the supervision variable (X2) has a positive and significant effect on teacher competence (z) but does not have a significant effect on Teacher Performance (Y). Then teacher competence (z) has a positive and significant effect on teacher performance (Y).

The indirect effect aims to determine the effect of the mediating variable on the relationship between the independent variable and the dependent variable. Table 3 shows that training (X1) has a positive significant effect on teacher performance (Y) through teacher competence as a mediation variable (Z). Furthermore, supervision (X2) has a positive significant effect on teacher performance (Y) through teacher competence as a mediation variable (Z).

4.2. Discussion

4.2.1. Path Coefficient Effect of Training Variables (X1) on Teacher Competence (Z)

The statistical calculation results of the effect of the Training variable (X1) on the Teacher Competence variable (Z) show that the p-value is smaller than the value of α ($0.007 < 0.05$). And the value of the sensitivity of the pathway (beta) has a positive number, the results are significant and positive. These results indicate that the training variable influences teacher competence. This result supports Shukla (2014) statement which one of the supporting indicators of teacher professional competence, experience in training can help as an important supporting factor, while teacher competence also depends on the training that they do (Nurhattati et al., 2020). Training can improve the quality and professionalism of teachers in teaching (Harris & Sass, 2011, Salim et al., 2019). Parker's research (2018) found that teacher competencies can be carried out by the training they do.

4.2.2. Path Coefficient Effect of Training Variables (X1) on Teacher performance (Y)

The results of the statistical calculation of the effect of the Training variable (X1) on the Teacher performance variable (Y) indicate that the p-value is smaller than the value of α ($0.008 < 0.05$). And the value of the sensitivity of the pathway (beta) has a positive number, the results are significant and positive. These results indicate that the training variable influences teacher performance. Through training can affect the professionalism of teachers in teaching. This training includes various activities that

must be followed by teachers during a certain period, as part of developing teacher professionalism (Lyles, 2015). How good the teacher is in teaching depends on motivation, qualifications, experience, training, talent, and other factors (Kazu & Erten, 2016). The more often the education staff attend training, the more skilled the education staff will be so that they can improve their performance (Khan & Abdullah, 2019). Jami, et al (2010) in her research also found that training has a dominant influence on teacher performance.

4.2.3. Path Coefficient Influence of Supervision Variable (X2) on Teacher Competence (Z)

The statistical calculation results of the influence of the Supervision variable (X2) on the Teacher Competence variable (Z) indicate that the p-value is smaller than the value of α ($0.000 < 0.05$). And the value of the sensitivity of the pathway (beta) has a positive number, the results are significant and positive. These results indicate that the Supervision variable influences teacher competence. Supervision of teaching can encourage teachers to apply their abilities in carrying out their teaching tasks, encouraging teachers to develop their abilities (Too, et al, 2012, Nurhayati et al, 2019). Supervision is an effort so that teachers have certain competencies in carrying out their duties (Coimbra, 2013). Khun-inkeeree, et al (2019) in his research found that the supervision of school principals has a positive influence to improve the pedagogical competence of teachers.

4.2.4. Path Coefficient Influence of Supervision Variable (X2) on Teacher Performance (Y)

The statistical calculation results of the influence of the Supervision variable (X2) on the Teacher performance variable (Y) indicate that the p-value is greater than the value of α ($0.740 > 0.05$). These results indicate that the Supervision variable does not affect teacher performance. The principal's attention in increasing teacher professionalism can be done through group discussions, and class visits (Stark, et al., 2017). The study of Ampofo, et al (2019) found the results that supervision by the principal did not significantly affect teacher performance. Yousaf, et al (2018) in his research found that development supervision practices of principals did not contribute significantly to teachers 'work performance and teachers' growth.

4.2.5. Path Coefficient Influence Teacher Competence (Z) Variable on Teacher Performance (Y)

The statistical calculation results of the influence of the

Teacher Competence (Z) variable on the Teacher performance variable (Y) indicate that the p-value is smaller than the value of α ($0.000 < 0.05$). And the value of the sensitivity of the pathway (beta) has a positive number, the results are significant and positive. These results indicate that the Teacher Competence variable influences teacher performance. Teacher competencies influence their grades, behavior, communication, goals, and teaching practices (Parker, 2018). Teachers need to improve their knowledge and skills to improve and explore their teaching practices (Shukla, 2014). Mueller's study (2012) found the results that competence can improve teacher performance; good competence improves the performance of teachers as a result it is necessary to improve competence.

4.2.6. Path Coefficient Influence Training Variable (X1) on Teacher Performance Variable (Y) through Teacher Competence Variable (Z)

The statistical calculation results of the influence of the Training Variable (X1) on Teacher Performance Variable (Y) through Teacher Competence Variable (Z) indicate that the p-value is smaller than the value of α ($0.000 < 0.05$). And the value of the sensitivity of the pathway (beta) has a positive number, the results are significant and positive. These results indicate that the Teacher Competence variable can mediate the effect of the Training Variable (X1) on the Teacher Performance Variable (Y). Through training can affect the professionalism of teachers in teaching. The more often the education staff attend training, the more skilled the education staff will be so that they can improve their performance (Khan & Abdullah, 2019). Mawoli and Babanyako (2011) stated that competence will affect a person's level of performance depending on the person's level of competence and other factors that strengthen it.

4.2.7. Path Coefficient Influence Supervision Variable (X2) on Teacher Performance Variable (Y) through Teacher Competence Variable (Z)

The statistical calculation results of the influence of the Supervision Variable (X2) on Teacher Performance Variable (Y) through Teacher Competence Variable (Z) indicate that the p-value is smaller than the value of α ($0.021 < 0.05$). And the value of the sensitivity of the pathway (beta) has a positive number, the results are significant and positive. These results indicate that the variable of teacher Competence can mediate the effect of Supervision Variable (X2) on Teacher Performance Variable (Y). Supervision conducted by schools will help teachers to develop the innovation and creativity they have, so that they can compete and be efficient to improve the quality of education (Aldaihani, 2017; Khun-inkeeree., Et al, 2019). Supervisory Development Staff practices of the principals also respond to teachers' requirements and improve supervisory competence (Suseela, 2015). De Rijdt,

et al., (2013) in his research found that supervision improves the quality of education, learning, training, and teaching.

5. Conclusions

The results of this study found that the training was significant and positive influences on teacher competence. The training is significant and positive influences on teacher performance. Supervision influences significant and positive on teacher competence. Teacher competence influences significant and positive on teacher performance. But the supervision does not affect teacher performance. This can be seen from every activity carried out by teachers who can improve creative and innovative competencies and performance.

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REFERENCES

- [1] Aldaihani, S. G. (2017). Effect of prevalent supervisory styles on teaching performance in Kuwaiti high schools. *Asian Social Science*, 13(4), 25–36.
- [2] Altunay, E., Arlı, D., Öz, Y., & Yalçınkaya, M. (2013). Continuity in Educational Supervision: A Case Study. *Procedia - Social and Behavioral Sciences*, 106: 723–729.
- [3] Ampofo, S. Y., Onyango, G.A., Ogola, M. (2019). Influence of School Heads' Direct Supervision on Teacher Role Performance in Public Senior High Schools, Central Region, Ghana. *IAFOR Journal of Education*, 7(2): 10-26.
- [4] Avalos, B. (2011). Teacher professional development in Teaching and Teacher Education for over ten years. *Teaching and Teacher Education*, 27(1): 10-20.
- [5] Bredeson, P. V. (2000). The school principal's role in teacher professional development, *Journal of In-Service Education*, 26(2): 385-401.
- [6] Coimbra, M.N.C. (2013). Supervision and Evaluation: Teachers perspectives. *International Journal of Humanities and Social Science*, 3(5).
- [7] Cuban, L. (2013). *Inside the black box of classroom practice: Change without reform in American education*. Harvard Education Press, Cambridge, MA.
- [8] Cubukcu, F. (2010). Student Teachers' Perceptions of Teacher Competence and their Attributes for Success and Failure in Learning. *The Journal of International Social Research*. (3): 10.
- [9] De Rijdt, C., Stes, A., van der Vleuten, C., & Dochy, F. (2013). Influencing variables and moderators of transfer of

- learning to the workplace within the area of staff development in higher education: Research review. *Educational Research Review*, 8, 48-74.
- [10] Dimanchetra, K., & Wisaprom, M. (2019). Factor Analysis of Competencies of Teacher Performance in Secondary Schools In Svay Rieng Province, Cambodia. *International Journal of Education and Research*, 7(5): 62-72.
- [11] European Commission. (2013). *Supporting Teacher Competence Development for Better Learning Outcomes*. European Commission Education and Training.
- [12] Ginsburg, M. (2010). Improving educational quality through active-learning pedagogies: A comparison of five case studies. *Educational Research*, 1(3): 62-74.
- [13] Guskey, T.R., & Yoon, K.S. (2009). What works in professional development?. *Phi Delta Kappan*, 90(7): 495-500.
- [14] Harris, D.N., & Sass, T.R. (2011). Teacher training, teacher quality and student achievement. *Journal of Public Economics*, 95(2011): 798-812.
- [15] Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Hoboken, NJ: Taylor & Francis.
- [16] Hoque, K.E., Kenayathulla, H.B.Bt., Subramaniam, M.V., & Islam, R. (2020). Relationships Between Supervision and Teachers' Performance and Attitude in Secondary Schools in Malaysia. *SAGE Open*, 10(2): 1-11.
- [17] Jami, A., M. A., Ali, U., Baloch, J.-u.-R., & Ayaz, M. (2011). Effects of In-Service Training in Meliorating Teachers performance In Secondary Schools. *International Journal of Academic Research*, 1-6.
- [18] Kazu, İ. Y., & Erten, P. (2016). Teachers' lifelong learning competencies. *Elementary Education Online*, 15(3), 838-854.
- [19] Kennedy, A. (2014). Understanding continuing professional development: The need for theory to impact on policy and practice. *Professional Development in Education*, 40(5): 688-697.
- [20] Khan, S., & Abdullah, N. N. (2019). The impact of staff training and development on teachers' productivity. *Economics, Management and Sustainability*, 4(1), 37-45.
- [21] Khun-inkeeree, H., Dali, P. D., Daud, Y., Fauzee, M. S. O., & Khalid, R. (2019). Effects of teaching and learning supervision on teachers attitudes to supervision at secondary school in Kubang Pasu District, Kedah. *International Journal of Instruction*, 12(1), 1335-1350.
- [22] Kiel, E., Lerche, T., Kollmannsberger, M., Oubaid, V., & Weiss, S. (2016). The Pedagogic Signature of the Teaching Profession. *Journal of Education and Learning*, 5(4): 201-220.
- [23] König, J., Blömeke, S., Paine, L., Schmidt, W.H., & Hsieh, F.-J. (2011). General pedagogical knowledge of future middle school teachers: On the complex ecology of teacher education in the United States, Germany, and Taiwan. *Journal of Teacher Education*, 62(2): 188 -201.
- [24] Leithwood, K., Leonard, L., & Sharratt, L. (2015). Conditions fostering organizational learning in schools. *Educational Administration Quarterly*, 34(2): 243-276.
- [25] Lotunanti, A., Idrus, M, S., Afnan, E., & Setiawan, M. (2014). The Effect of Competence on Commitment, Performance and Satisfaction with Reward as a Moderating Variable (A Study on Designing Work plans in Kendari City Government, Southeast Sulawesi). *International Journal of Business and Management Invention*. 3(2). 18-25
- [26] Lyles, R. (2015). Teachers and Professionalism. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 30(9), 548-550.
- [27] Marlow, E. (2016). The Principal as Supervisor in the School Setting. *Academic Journal: Education*, 136(3).
- [28] Mawoli, M. A., & Babandako, A.Y. 2011. An Evaluation of Staff Motivation, Dissatisfaction and Job Performance in an Academic Setting. *Australian Journal of Business and Management Research*, 1(9).
- [29] Mueller, C. M., (2012). *The Impact of Teacher Certification Programs on Teacher Efficacy, Job Satisfaction, and Teacher Performance: A Comparison of Traditional and Alternative Certification*. Western Kentucky University.
- [30] Nadeem, M., Rana, M.S., Lone, A.H., Maqbool, S., Naz, K., Ali, A. (2011). Teacher's Competencies and Factors Affecting the Performance of Female Teachers in Bahawalpur (Southern Punjab) Pakistan. *International Journal of Business and Social Science*, 2(19): 217-222.
- [31] Nurhattati, Matin, Buchdadi, A.D, & Yusuf, C.F. (2020). Teacher Certification in Indonesia: An Education Policy Analysis. *Universal Journal of Educational Research*, 8(5), 1719 - 1730
- [32] Nurhayati, T., Masnun, M., Udin, T., & Arifuddin, A. (2019). Implementation of principal supervision as an effort to fulfill teacher administration at Islamic elementary school. *Universal Journal of Educational Research*, 7(8), 1826-1831.
- [33] Osakwe, R. (2010). The relationship between principals' supervisory strategies and teachers' instructional performance in Delta North Senatorial District, Nigeria. *Pakistan Journal of Social Sciences*, 7(6), 437-440.
- [34] Parker, L. (2018). Teacher Competencies or Certification Competencies. *Behavioral Disorders*, 5(3), 163-168.
- [35] Poro, S.G., Yiga, A.P., Enon, J.C., Mwosi, F., Eton, M. (2018). Teacher competence and performance in primary schools in Nwoya District, Northern Uganda. *International Journal of Advanced Educational Research*, 4(1): 3-8.
- [36] Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review*, 94(2), 247e252.
- [37] Salim, A., Setyosari, P., Kamdi, W., & Dasna, I. W. (2019). Improving Competency Management of Public Health Center in Indonesia Using the Problem Based Learning Model. *Journal for the Education of Gifted Young Scientists*, 7(3), 731-746.
- [38] Shukla, S. (2014). Teaching Competency, Professional Commitment and Job Satisfaction-A Study of Primary School Teachers. *IOSR Journal of Research & Method in Education*, 4(3): 44-64.
- [39] Stark, D., McGhee, M. W., & Jimerson, J. B. (2017).

- Reclaiming instructional supervision: Using solution-focused strategies to promote teacher development. *Journal of Research on Leadership Education*. 12(3), 215–238.
- [40] Stark, D., McGhee, M. W., & Jimerson, J. B. (2017). Reclaiming instructional supervision: Using solution-focused strategies to promote teacher development. *Journal of Research on Leadership Education*. 12(3), 215–238.
- [41] Steele, D., & Zhang, R. (2016). Enhancement of Teacher Training: Key to Improvement of English Education in Japan. *Procedia- Social and Behavioral Science*, 217(2016): 16-25.
- [42] Sung, Yao-Ting., Chang, Kuo-En., & Liu, Tzu-Chien. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, 94(1): 252-275.
- [43] Suseela, M., (2015). *Teacher learning in Malaysia: Problems and possibilities of reform*. Kuala Lumpur: University of Malaya.
- [44] Timperley, H., & Alton-Lee, A. (2008). Reframing teacher professional learning: An alternative policy approach to strengthening valued outcomes for diverse learners. *Review of Research in Education*, 32, 328e369.
- [45] Too, C., Kimutai, C. K., & Kosgei, Z. (2012). The impact of head teachers' supervision of teachers on students' academic performance. *Journal of Emerging Trends in Educational Research and Policy Studies*, 3(3), 299–306.
- [46] Yafie, E., Haqqi, Y. A., Kustiawan, U., Astuti, W., Boedi, D., & Ilhami, B. S. (2020). The Effect of Teacher Competency Training on High Order Thinking-Based Learning. *JECCE (Journal of Early Childhood Care and Education)*, 2(2), 87-93
- [47] Yafie, E., Samah, N. A., Mohamed, H. & Haqqi, Y. A. (2020) Collaborative Mobile Seamless Learning (CMSL) based on Android Apps to Improving Critical Thinking in Higher Education in the Post-Covid-19 Era. *Jour of Adv Research in Dynamical & Control Systems*, 12 (07), 428-441
- [48] Yousaf, S.U., Usman, B., & Islam, T. (2018). Effects of Supervision Practices of Principals on Work Performance and Growth of Primary School Teachers. *Bulletin of Education and Research*, 40(1): 285-298.

Supporting Cognitive Development through Multimedia Learning and Scientific Approach: An Experimental Study in Preschool

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Abstract Cognitive development is defined as a change in behavior that results in individuals obtaining, organizing, and implementing knowledge in reasoning and solving problems. This research aims to analyze the effect of multimedia learning and scientific approach on cognitive development. This research uses experimental quantitative research that divides research participants into an experimental group and a control group. The results show that there are differences in the mean scores of logical thinking, symbolic thinking, problem-solving in the pre-test and post-test where the post-test scores are higher, so it can be concluded that the two treatments in the control and experimental groups can improve children's cognitive development. Furthermore, the gain score value shows that the experimental group has a higher score meaning so that the experimental group is better than the control group. This is by the t-test which shows that the provision of multimedia learning with the scientific approach given to the experimental class is better than the control class which only uses the scientific approach.

Keywords Cognitive Development, Multimedia

Learning, Scientific Approach, Preschool

1. Introduction

Cognitive development is defined as a change in behavior that results in individuals obtaining, organizing, and implementing knowledge in reasoning and solving problems (Gauvain, 2016). Piaget considers that thinking is one of the differences between humans and animals that comes from social interactions (Huitt, & Hummel, 2003). Early childhood cognitive development is at the motor-sensory stage (0-1.5 years) and the pre-operational stage (1.5-6 years). In the motor-sensory step, knowledge is obtained through the interaction of senses and motor activity. In the pre-operational stage, children begin to understand the world with signs and symbols; egocentric thinking dominates with thoughts that cannot be changed (Huitt & Hummel, 2003).

Cognitive development is one aspect that is sufficiently considered in early childhood education. Good cognitive

development is in line with parents who think that children with high cognitive abilities are smart children (Aisyah et al., 2019). This results in a high intensity of learning that develops mental aspects in early childhood education. Cognitive development in the 2013 Curriculum is divided into three, namely: the ability to solve simple problems in everyday life with flexibility and be socially acceptable, implement knowledge or experience in new conditions, the ability to think logically; recognize differences, patterns, classification, initiative, planning, identify cause and effect and be able to think logically, Think logically: recognize differences, categories, patterns, take the initiative, plan, and recognize cause and effect, the ability to think symbolically; recognizes, mentions, and uses the symbol numbers 1-10, recognizes the alphabet, and can represent various objects in the form of images (Yafie, et al., 2020)

The development of an increasingly modern era encourages cognitive abilities to be packaged in multimedia-based learning. The use of multimedia-based learning media can provide valuable benefits in developing aspects of child development in general and developing mental aspects in particular (Yafie et al., 2020). The use of multimedia in early childhood learning is following the current development of science and technology (science and technology). Multimedia-based education is carried out by presenting more varied words, images, and sounds. Images are modified to be more attractive by turning them into charts, illustrations, videos, or interactive illustrations (Mayer & Moreno, 2003). The 21st-century era makes early childhood inseparable from the use of multimedia such as smartphones, televisions, and VCD players and gadgets (Yafie, et al., 2020). The use of multimedia-based learning is considered more effective and efficient in developing children's cognitive abilities because essentially learning by presenting images, sounds, and words in a more attractive manner will make it easier for children to think (Mayer, 2014).

Cognitive abilities are also defined as thinking skills (de Ribaupierre, 2015). The brain will more readily accept incoming information when it involves various senses (Mayer, 2014). Multimedia learning by combining sound, images, and audio into a more attractive form makes it easier for children to receive information, allowing for faster information processing. Yafie, et al. (2020) argue that the existence of multimedia-based learning also allows meaningful learning to occur because essentially, each individual will be involved in education by taking various relevant information received by the senses.

This is in line with the scientific approach principle, which wants learning to be able to do 5M scientific consisting of observing, asking questions, gathering information, reasoning, and communicating. Multimedia based learning media that combines audio, visual, and audio-visual can make it easier for teachers to apply the 5 M Scientifics, which are considered appropriate media.

Early childhood is in the stage of iconic thinking; (Children observe reality not directly, but through secondary sources, for example, through pictures or writing) and Symbolic; (Children make abstractions in the form of theories, interpretations, analyses of observed and natural reality, a person can have abstract ideas or ideas that are influenced by the ability to speak language and logic (Takaya, 2008)

Based on the above problems, learning media and approaches that are following the needs and developments of the times will be believed to increase the efficiency of early childhood learning. This research was conducted to analyze multimedia-based understanding and scientific approaches to children's cognitive development. Early childhood cognitive development, which is still in the iconic and symbolic stage, causes children not to think abstractly, so they need an appropriate medium and approach to developing cognitive abilities.

2. Literature Review

2.1. Cognitive Development in Early Childhood

Considering that Indonesia is a country with relatively high human resources, stimulation of cognitive development needs to be given. We must manage human resources adequately through consistent and sustainable forms of training and education (Yafie, 2019). Children have sensory sensitivity from birth to 3 years of age (Theo & Martin, 2004). Cognitive potential in children themselves has increased by 50 percent since age 4 and 80 percent since age 8 (Brown, 1989). In the cognitive development theory introduced by Piaget (2002), it is claimed that the theory of cognitive development is a theory that describes how children respond to the world and perceive objects and events around them. The concept of further cognitive development is human thinking skills in which focus, memory, reasoning, imagination, and language are present (Papalia, 2007). As far as cognitive development is concerned, the desired result for children is that they can think objectively and critically, to have explanations, to be able to solve problems and to identify causal relationships in the solution of problems at hand (Yamin and Sanan, 2010: 150).

Early childhood still needs to see what they're all about. This great curiosity leads the children to search for facts and to infer what they have been looking for (Rahayu, Suryanti, Setiawan, 2019). The high desire for children does not mean that teachers and parents are insensitive to one another. On the contrary, proper stimulation of the cognitive aspect is indispensable in this era. Children can be stimulated by playing to suit their development (Rahayu, Suryanti, & Setiawan, 2019). There are three fields of general knowledge in the cognitive field: first, the general knowledge area of science. Second, the idea of

form, color, and scale. Third, the definition of numbers, symbols of numbers, and letters (Rahayu, Suryanti, Setiawan, 2019). To improve cognitive abilities in children, the teacher must provide children with enjoyable experiences in environments that are fun, healthy, and relaxed by using techniques, tools, resources, media this is easy to apply and motivates children to capture information well (Reny, 2013) where the end aim of all this is to allow children to have a greater chance of continuing to grow. By providing children with direct opportunities to carry out different learning activities, it can be a way of improving cognitive systems (Fardiah, Murwani, & Dhieni, 2020). Human intelligence experience as part of a living organism will often evolve dynamically and undergo rapid changes as the organism is more biologically mature (Hergenhahn and Olso, 2008: 313). Cognitive processes encountered by an individual can be used to explain changes in the mind, intellect, and language of a person (Mulyani, 2017).

The characteristics of cognitive development of children aged 5 to 6 years include: being able to shape something using clay, calling and counting numbers 1 to 20, recognizing the symbols of numbers, linking concepts and symbols of numbers, being able to understand the same concept as, larger, smaller, cause and effect, showing the oddity of a picture, knowing the cause of something that happens. Children need the advantages of cognitive ability to improve their awareness of what they see, hear, taste, touch, or smell through their senses. Cognitive development is also known as thinking capacity development or intellectual development in early childhood education institutions such as kindergartens, playgroups, and other similar educational institutions (Sujiono, 2013).

2.2. Multimedia Learning

The use of technology in the learning world is unavoidable. Based on the study submitted by eMarketer (2015), more people have opted to spend more time watching streaming videos than social media since 2015. Meanwhile, Cisco forecasts that the global market for video content on the Internet will rise by 80 percent in 2019. Industrial development is rapidly developing, such as entertainment content on Youtube, Netflix, and social media content for Facebook and education, such as school sites or online courses. Technology advances affect face-to-face learning. The first generation is still using the conventional face to face. The second generation is users of e-learning or distance learning, and the third generation enjoys blended learning (Dang, Zhang, Ravindran & Osmonbekov, 2016). Multimedia learning offers a middle ground that becomes a solution for people who are limited by the ability to process knowledge. This, in turn, has given rise to several channel sources. One of the reasons the learning process must be revolutionized is that the

current generation is experiencing development and many learning interactions are created in the form of online interactions (Cholifah et al., 2019). Dual-channel assumption means that humans process information separately for visually depicted content and auditors closely linked to dual-coding theory (Clark & Paivio, 1991).

In the cognitive theory of multimedia learning proposed by Mayer (Mayer, 2005; Mayer & Fiorella, 2014), it is claimed that if visual senses and auditory channels in working memory are used at the same stage, optimal learning will result. Research that increases the distribution of visual attention in multimedia learning also shows that creativity would be better in images if audio is also applied to written text (Wiebe & Annetta, 2008). This shows that the way students learn is influenced by the audio help they get. The term multimedia learning by Mayer (1997) is also specifically established, which triggers the development of studies on the effects of separate attention that will later form the Cognitive Theory of Multimedia Learning (CTML) and the concepts surrounding it (Mayer & Moreno, 1998). Mayer (1997) further describes that when words and images are visually displayed together, they can be used to describe the cognition that can form the foundation of a person's learning process.

In the late 1980s to early 1990s, early research on multimedia effects established a new theoretical paradigm that was useful for describing and predicting multimedia learning, such as the integration of text and image comprehension (Schnotz & Bannert, 2003). Besides, the distribution of visual focus in evolving multimedia learning is typically dominated by written text rather than images (Schmidt-Weigand, Kohnert, and Glowalla, 2010). The new Cambridge Multimedia Learning Handbook addressed the role of collaboration, learning control, generative images, and advanced concepts of multimedia learning (Kirschner, Kirschner, & Janssen, 2014; Leutner & Schmeck, 2014; Scheiter, 2014). Student learning outcomes may be connected to the processes they conduct, such as their ability to quickly grasp the movement of text and images when audio is introduced (Krejtz et al., 2012; Liu et al., 2011). Researchers researching this can produce results that reflect on the concepts of multimedia learning possessed by individuals who are not only limited to verbal knowledge (Adesope & Nesbit, 2012) but also those linked to spatial skills (Höffler, 2010). Multimedia learning focuses on language skills through machine learning assistance (Abraham, 2008), through Virtual Reality learning (Santos et al., 2014), as well as interactive experiences encountered by learning participants (Gegenfurtner, Quesada-Pallarès, & Knogler, 2014)). This will allow researchers and practitioners in the field of multimedia learning to promote collective needs, monitor students, provide input, and provide easier examples through effective multimedia training in a

detailed, meaningful, and engaging manner.

Many representations can be created from existing learning materials into words and graphics to form a relationship between verbal and visual knowledge that encourages people to participate in active learning through the use of multimedia learning technology (Clark & Mayer, 2016). There is an effect between the determinants of students' behavioral intentions when using multimedia-based learning with technology acceptance and the advantages of multimedia (Lee and Ryu, 2013). While multimedia learning is not widely used, the cognitive processes of multimedia learning attract the attention of several researchers (Desjarlais, 2017). Many findings, evaluations, and self-assessments about the processing of inferences are found in multimedia learning (Rodrigues & Rosa, 2017). However, Mayer said that it required measurements that specifically display cognitive processes during multimedia learning (Mayer, 2017). While multimedia learning has many concepts that are derived from cognitive science assumptions, there is still a lack of empirical evidence to act as a guideline for cognitive processes. The onset of this deficiency stems from the difficulty in measuring cognitive processes, including multimedia components, cognitive load, and visual appearance (Liu & Chuang, 2011).

2.3. Scientific Approach

The scientific approach is one of the learning processes that provide children with a complete learning experience, control, and strategy. This approach is so because the learning process's design is based on concepts, laws, and principles that carry through the stages of preparation formulating a hypothesis analyzing data with various techniques and producing ideas, rules, or regulations Foorman (1997). In the process, this approach also emphasizes learning activities carried out by students by peering, asking questions, reasoning, and trying to make conclusions (Feifer, 2008). This approach's characteristics are by involving scientific process skills to construct ideas, laws, or principles of the cognitive processes presented here in the future. This approach can stimulate children's intellectual development, especially higher-order thinking skills that affect child character (Lawson, 1999).

The hope of applying this scientific approach itself is to understand that children have to understand various scientific materials that are useful for application in everyday life. This is because scientific learning can be applied at all levels of education to introduce the concept of daily life (Reilly, 2006). Through these conditions, it is expected that children can understand so that they find out the source of observation information through and not only passively receiving information (Lawson, 1999). Scientific learning with an integrative thematic or thematic approach will provide a child with a complete and close learning experience. Children will understand

something entirely and avoid partial understanding, which impacts children, which makes us solve daily problems in various creative ways (Yafie, 2019: 2).

Yafie (2019: 110) states that Scientific Approach Learning is essential to provide variety in teaching and learning activities using various methods. For example, experimentation, role-playing, responsibility, conversation. Science does not mean learning about science, but a way of knowing that is following established criteria and involves children directly in a pleasant atmosphere through providing full opportunities to try and discover for themselves the results of the learning process carried out (McCharty, 2005). Yafie (2019: 112) states that learning can be categorized as scientific as the criteria fulfill the following seven criteria:

1. The material given comes from a phenomenon or fact, not imaginary, and can be thought of from the logical cause
2. All explanations, responses, and discussions that are created are objective and not subjective and deviate from the flow of logical thinking
3. Learning that occurs can encourage and motivate children to be critical, analytical, and appropriate to identify, understand, solve problems, and apply what has been obtained
4. Encourage children to think carefully when faced with differences, questions, and links to each other from the material they have
5. Able to encourage and inspire children to develop rational and objective thinking patterns when responding to learning materials
6. Based on concepts, theories, and empirical facts, which can be justified
7. Learning has clear and straightforward objectives but is still easy to implement.

3. Method

3.1. Participant

This research uses experimental quantitative research. The experimental design in this study is a nonrandomized pretest-posttest control group design, that divides research participants into an experimental group and a control group using two groups that already exist in the natural situation of the participants. The experimental group uses multimedia learning with a scientific approach and the control group uses only a scientific approach. This study involved 60 Kindergarten child with age between 4-5 years and 30 children in each group.

3.2. Procedure

- a). Preparation of learning plans with a scientific approach. The learning plan is designed to improve children's cognitive development. This learning plan

- contains topics, learning objectives, time allocation, learning activities using the scientific approach, and evaluation.
- b). Development of multimedia learning. The developed learning multimedia focuses on the topic of plants and is developed by the developmental stages of children aged 4-5 years. This multimedia learning has several components such as material in the form of video, animation, pictures, sound, and evaluation in the form of games and quizzes (multiple-choice, sequences, matching, true and false, and word bank).
 - c). Preparation of research instruments. The research instrument is used to measure cognitive development which is modified from the cognitive assessment scale (Rao, et al., 2014) which consists of including IQ, language, logical thinking, symbolic thinking, executive functions, problem-solving, and academic achievement. In this study, researchers will only take three aspects, namely logical thinking, symbolic thinking, and problem-solving. The instrument is measured using 4 scales consisting of 4 (very good), 3 (good), 2 (sufficient), and 1 (less).
 - d). Doing a pre-test. The pre-test was carried out to determine the cognitive level related to plant topics in the control group and the experimental group before being given treatment. The pre-test was carried out by conducting observations and closed interviews to find out the child's initial knowledge related to the topic and learning objectives, namely the parts of plants, shapes, colors, and tastes of fruits.
 - e). Implementation of learning. The learning implementation in the control group used the Scientific Approach while the Experiments group used multimedia learning with a scientific approach.
 - f). Post-test. Post-test was carried out by conducting observations and closed interviews to determine cognitive development with the topic and learning objectives, namely the parts of the plant, the shape, color, and taste of the fruits.

Table 1 shows that there are 6 (six) steps that must be applied in the scientific approach which include observing, collecting information/experimenting, asking, associating / processing information, communicating, and evaluating.

Table 1. Learning activity

Scientific approach activity	Learning activity	
	Control group (Scientific Approach)	Experiments group (Multimedia Learning with Scientific Approach)
Observe	Children observe the explanation of the subject matter from the teacher with learning resources from books	Children observe the explanation of the subject matter from the teacher with learning resources from multimedia learning
Gather information/experiment	Children learn outside the classroom (in the school garden) to gather information about plants Child experiments with the texture, color, taste, and size of plant parts	Children learn outside the classroom (in the school garden) to gather information about plants guidance by multimedia learning Child experiments with the texture, color, taste, and size of plant parts guidance by multimedia learning
question and ask	Teacher and child do questions and ask each other regarding plant subject matter	Teacher and child do questions and ask each other regarding plant subject matter accompanied by examples from multimedia
Associating / processing information	The child collecting groups the parts of the plant according to the same texture, color, taste, and size categories	The child collecting groups the parts of the plant according to the same texture, color, taste, and size categories
Communicating	Children practice planting plant seeds in discussions with their friends	Children practice planting plant seeds in discussions with their friends
Evaluation	Draw leaves and fruit shapes Fill out the child's worksheet	Draw leaves and fruit shapes Play game, puzzle, and quiz in multimedia learning

3.3. Data Analysis

Data analysis uses an independent sample t-test which is a comparative test or different test to find out whether there is a significant difference mean between two independent groups on the interval or ratio data scale. The two independent groups referred to here are two groups that are not paired, meaning that the data sources come from two different subjects. The hypothesis of the independent sample t-test is accepted if the significant value is smaller than 0.05 ($p < 0.05$). This means that there is a difference in variable Y (cognitive development between the control group and the experimental group). Before the t-test is carried out, the variance similarity test (homogeneity) and the normality test is carried out. The normality test is carried out to see whether the data sample is the normal distribution or not. Normality testing is carried out by looking at Value on Kolmogorov-Smirnov. Data is normally distributed if the significance is greater than 0.05. Similarity test of variance (homogeneity) with the F test (Levene's test). Data is said to be homogeneous if the significance is greater than 0.05.

4. Finding

The main results of this study are to know the effectiveness of multimedia learning with a scientific approach to the differences in the cognitive development of children aged 4-5 years between the control group and the experimental group. However, before analyzing the hypothesis, the normality and homogeneity tests are first carried out.

4.1. Normality Test

The data normality test in the control and experimental group in this study used the Kolmogorov-Smirnov test statistic using the SPSS program. The results of the calculations are presented in Table 2.

Table 2. Normality Test

Group	Asymp.sig (2-tailed)	Explanation
Control	0.738	Normal
Experiment	0.467	Normal

The results of the calculation show that the value of the Asym.Sig. (2-tailed) > 0.05 so that the cognitive development data in the experimental group and control group are normally distributed. Thus, it can be concluded that the distribution of data in the two groups is normally distributed.

4.2. Homogeneity Test

A homogeneity test is used to find out whether the data have the same variance (homogeneous) or not.

Table 3. Homogeneity Test

Variable	Levene Statistic	Sig.	Explanation
Cognitive Development	1.143	0.153	Homogeny

Based on Table 3, it can be seen that the statistical significance values of the Levene test are 1.143 and this significant value is greater than the significance level of 0.05 (sig. (0.153 > 0.05). So it can be concluded that the experimental group and the control group have the same variance.

4.3. Hypothesis Testing

To test the effectiveness of multimedia learning with a scientific approach to improving children's cognitive development, the independent sample t-test was used. The test results can be seen in Table 4.

Table 4. Pre-test-post-test

Group	Variable	Pre-Test		Post-Test		Gain	
		M	SD	M	SD	M	SD
Control	Logical thinking	2.17	0.41	3.11	0.49	0.94	0.11
	Symbolic thinking	2.24	0.38	3.09	0.42	0.85	0.14
	Problem solving	1.89	0.28	2.99	0.32	1.10	0.09
Experiment	Logical thinking	2.21	0.37	3.67	0.38	1.46	0.16
	Symbolic thinking	2.19	0.39	3.77	0.37	1.58	0.17
	Problem solving	1.88	0.30	3.34	0.32	1.46	0.08

In table 4 it is known that there are differences in the mean scores of logical thinking, symbolic thinking, problem-solving in the pre-test and post-test where the post-test scores are higher, so it can be concluded that the two treatments in the control and experimental groups can improve children's cognitive development. Furthermore, the gain score value shows that the experimental group has a higher score meaning so that the experimental group is better than the control group.

Table 5. t-test

Cognitive development Variable	t-statistic	Sig.	Explanation
Logical thinking	2.834	0.000	Significant
Symbolic thinking	3.045	0.000	Significant
Problem solving	2.352	0.000	Significant

The results showed that sig. (2-tailed) is smaller than $\alpha = 0.05$ (sig. 2-tailed = 0.000 < 0.05), so H_0 is rejected. Because H_0 is rejected, it can be concluded that there are differences in cognitive development (logical thinking, symbolic thinking, problem-solving) of children aged 4-5 years between the control group and the experimental group. This shows that the provision of multimedia

learning with the scientific approach given to the experimental class is better than the control class which only uses the scientific approach.

5. Discussion

Cognitive abilities are needed by children to develop their knowledge of what they see, hear, taste, touch or smell through their five senses which are useful to support other aspects of development such as motoric, social, emotional, and moral (Wieman, 2007). Aspects of cognitive development involve the ability to think creatively in solving problems and are automatic in speed in finding new solutions in routine processes. Thus education should help children hone skills in problem-solving, critical thinking, and creativity that is useful when the child is an adult (Ramdhani, Usodo, & Subanti, 2017). Cognitive abilities, especially those related to logical thinking, symbolic thinking, and problem-solving, are very suitable to be developed with a scientific approach (Reid, 2008). Through the application of a scientific approach in the learning process, early childhood will acquire and understand scientific knowledge (Sari, et al., 2018).

The scientific approach in the learning process is designed so that students actively construct concepts, laws, or principles through the stages of observing (to identify or find problems), formulate problems, propose or formulate hypotheses, collect data with various techniques, analyze data, draw conclusions and communicating found concepts, laws or principles (Bensley & Murtagh, 2012). The scientific approach provides understanding to students in recognizing, understanding various materials using a scientific approach, that information can come from anywhere, anytime, not depending on unidirectional information from the teacher (Camuffo, et al., 2020). The scientific approach is very effective in shaping the development of attitudes, skills, and knowledge of students. Through this scientific approach, students are invited to observe, ask, reason, formulate, conclude, and communicate so that students can correctly master the material being studied well. The introduction of the scientific process for early childhood is done by involving children directly in activities, namely doing, experiencing information search by asking, and finding out answers to understanding the world with amazing ideas. Scientific learning in early childhood is very important for many aspects of child development, especially cognitive development (Cangelosi & Parisi, 2002).

In addition to a scientific approach, the use of multimedia learning can also improve children's cognitive understanding. Several research studies show that computers with multimedia components can improve children's cognitive (Vosniadou, et al., 2001). Several studies have shown that the use of technology has many

potential benefits for children, and when used appropriately, they include 1) supporting cognitive and emotional development, and the development of children's social skills and cooperation; 2) helps in the emergence of letter recognition and mathematical thinking, 3) becomes a medium for play, 4) enhances and strengthens the relationship between children and adults, or provides adults with new ways to gain insight into children's thinking based on their needs, thus providing opportunities for better learning, 5) Facilitating the emergence of "new talent" or "multiple intelligence" in children (Hill & Broadhurst, 2001).

The application of science will feel more real and meaningful if the application is close to the child's entire life. Children learn about real-world simulations through computer-based tasks; They are accustomed to utilizing cognitive mechanisms and gradually building knowledge with technological facilities in the form of situational and visual cues. From here, children can develop ideas, exercise, interact, collaborate, be creative, and finally learn (Grantham-McGregor et al., 2007). Preschoolers today enjoy much easier interaction with the support of many emerging technology companies. The latest research in 2012 concluded that tablets have increased with the highest users being early childhood aged 4-14 years (Li et al., 2010). Researchers concluded that learning activities could improve reflective thinking skills and allow children to analyze and plan information scientifically if designed appropriately. The use of computers at home and school affect the improvement of an eye and hand coordination (Lee, et al., 2016). Problem management skills, spatial cognition, spatial representation, iconic skills, and visual attention skills when using children's computers, cell phones, and video games also improve computer use. The effectiveness of digital media compared to traditional media is more effective when used to hone cognitive skills. Children are also more able to develop memory skills when using computers than learning to use media without technology (Johnson & Mayer, 2010).

Learning multimedia was chosen because it has unique advantages compared to other media. According to (Homer, Plass, & Blake, 2008) these advantages include: (1) mixed media, integrating various existing conventional media into one type of interactive media. Cognitive and language learning in schools certainly requires more than one media, both visual and audio media, with multimedia these media can be packaged in one form; (2) user control, allowing users to browse teaching materials according to their abilities and background knowledge. Children can access the material they need and process information independently, so that information absorption will be more effective (Brunken, Plass, & Leutner 2003). (3) Simulation and visualization, with animation, simulation, and visualization technology, users will get more real and abstract information. For children, new information is still in the form of something abstract, for that we need media

that can be used to help absorb the information; (4) different learning styles, multimedia has the potential to accommodate users with different learning styles. Children have different learning styles. Children with a tendency to auditory learning styles can absorb information when using audio, visual media using images and videos, kinesthetic with movement. Multimedia can combine the media used so that differences in children's learning styles can be resolving (Mayer, 2014).

The use of interactive multimedia learning in the classroom is supported by the results of research conducted by Mayer (2014) which states that multimedia has obtained many benefits from its use. Learning gain is 56% greater, learning consistency is better 50-60% and content retention is 25-50% higher (Alemdag & Cagiltay, 2018). Based on the results of these studies, learning multimedia can be said to be a medium that has enormous potential in helping the learning process. Children aged 4-5 years (group A) have developmental achievement targets that must be achieved in learning in kindergarten. To achieve this target requires stimulation of these aspects through learning activities with the concept of learning while playing. In this study, the developed multimedia is aimed at stimulating children with cognitive and language aspects following the applied curriculum and problems that occur in kindergarten. The developed multimedia is expected to be able to provide unique stimulation in the form of attraction and motivation in learning (Anmarkrud, Andresen, & Bråten, 2019).

6. Conclusion

The results showed that there are differences in the mean scores of logical thinking, symbolic thinking, problem-solving in the pre-test and post-test where the post-test scores are higher, so it can be concluded that the two treatments in the control and experimental groups can improve children's cognitive development. Furthermore, the gain score value shows that the experimental group has a higher score meaning so that the experimental group is better than the control group. This is by the t-test which shows that the provision of multimedia learning with the scientific approach given to the experimental class is better than the control class which only uses the scientific approach.

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REFERENCES

- [1] Alemdag, E., & Cagiltay, K. (2018). A systematic review of eye tracking research on multimedia learning. *Computers & Education*, 125, 413-428.

- [2] Aisyah, E. N., Iriyanto, T., Astuti, W., & Yafie, E. (2019). Pengembangan Alat Permainan Ritatonon Tentang Binatang Peliharaan sebagai Media Stimulasi Kemampuan Kognitif Anak Usia Dini. *Journal Kajian Teknologi Pendidikan*, 2(3), 174-180.
- [3] Anmarkrud, Ø., Andresen, A., & Bråten, I. (2019). Cognitive load and working memory in multimedia learning: Conceptual and measurement issues. *Educational Psychologist*, 54(2), 61-83.
- [4] Bensley, D. A., & Murtagh, M. P. (2012). Guidelines for a scientific approach to critical thinking assessment. *Teaching of Psychology*, 39(1), 5-16.
- [5] Brunken, R., Plass, J. L., & Leutner, D. (2003). Direct measurement of cognitive load in multimedia learning. *Educational psychologist*, 38(1), 53-61.
- [6] Camuffo, A., Cordova, A., Gambardella, A., & Spina, C. (2020). A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, 66(2), 564-586.
- [7] Cangelosi, A., & Parisi, D. (2002). Computer simulation: A new scientific approach to the study of language evolution. In *Simulating the evolution of language* (pp. 3-28). Springer, London.
- [8] de Ribaupierre, A. (2015). Piaget's Theory of Cognitive Development. In *International Encyclopedia of the Social & Behavioral Sciences: Second Edition*.
- [9] Grantham-McGregor, S, Cheung, YB, Cueto, S, Glewwe, P, Richter, L, Strupp, B (2007) Developmental potential in the first 5 years for children in developing countries. *The Lancet* 369: 60-70.
- [10] Homer, B. D., Plass, J. L., & Blake, L. (2008). The effects of video on cognitive load and social presence in multimedia-learning. *Computers in Human Behavior*, 24(3), 786-797.
- [11] Johnson, C. I., & Mayer, R. E. (2010). Applying the self-explanation principle to multimedia learning in a computer-based game-like environment. *Computers in Human Behavior*, 26(6), 1246-1252.
- [12] Lee, H., Parsons, D., Kwon, G., Kim, J., Petrova, K., Jeong, E., & Ryu, H. (2016). Cooperation begins: Encouraging critical thinking skills through cooperative reciprocity using a mobile learning game. *Computers & Education*, 97, 97-115.
- [13] Leutner, D. (2014). Motivation and emotion as mediators in multimedia learning. *Learning and Instruction*, 29, 174-175.
- [14] Li, S. C., Pow, J. W., Wong, E. M., & Fung, A. C. (2010). Empowering student learning through Tablet PCs: A case study. *Education and Information Technologies*, 15(3), 171-180.
- [15] Mayer, R. E. (2014). Incorporating motivation into multimedia learning. *Learning and Instruction*, 29, 171-173.
- [16] Ramdhani, M. R., Usodo, B., & Subanti, S. (2017, September). Discovery learning with scientific approach on geometry. In *Journal of Physics: Conference Series* (Vol. 895, No. 1, p. 012033). IOP Publishing.

- [17] Rao, N., Sun, J., Wong, J. M. S., Weekes, B., Ip, P., Shaeffer, S., & Lee, D. (2014). Early childhood development and cognitive development in developing countries: A rigorous literature review. Department for International Development.
- [18] Reid, N. (2008). A scientific approach to the teaching of chemistry. What do we know about how students learn in the sciences, and how can we make our teaching match this to maximise performance?. *Chemistry Education Research and Practice*, 9(1), 51-59.
- [19] Sari, S., Aryana, D. M., Subarkah, C. Z., & Ramdhani, M. A. (2018, January). Multimedia based on scientific approach for periodic system of element. In *IOP Conference Series: Materials Science and Engineering* (Vol. 288, No. 1, p. 012137).
- [20] Vosniadou, S., Ioannides, C., Dimitrakopoulou, A., & Papademetriou, E. (2001). Designing learning environments to promote conceptual change in science. *Learning and Instruction*, 11(4-5), 381-419.
- [21] Wieman, C. (2007). Why not try a scientific approach to science education?. *Change: The Magazine of Higher Learning*, 39(5), 9-15.
- [22] Abraham, L. B. (2008). Computer-mediated glosses in second language reading comprehension and vocabulary learning: A meta-analysis. *Computer Assisted Language Learning*, 21(3), 199-226.
- [23] Adesope, O. O., & Nesbit, J. C. (2012). Verbal redundancy in multimedia learning environments: A meta-analysis. *Journal of Educational Psychology*, 104(1), 250-263.
- [24] Brown JE. (1989). *Nutrition through the life cycle*. United State of America: Wardsworth.
- [25] Clark, J., & Paivio, A. (1991). Dual coding theory and education. *Educational Psychology REview*, 3, 149-210.
- [26] Clark, R., & Mayer, R. (2016). *E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*: John Wiley & Sons
- [27] Dang, Y. M., Zhang, Y. G., Ravindran, S., & Osmonbekov, T. (2016). Examining Student Satisfaction and Gender Differences in Technology-Supported, Blended Learning. *Journal of Information Systems Education*, 27(2).
- [28] Foorman, B., Fletcher, J., & Francis, D. (1997). A scientific approach to reading instruction. *Learning Disabilities Online*.
- [29] Desjarlais, M. (2017). The use of eye gaze to understand multimedia learning. In C. Was, F. Sansost, & B. Morris (Eds.), *Eye-tracking technology applications in educational research* (pp. 122-142). Hershey PA, USA: Information Science Reference.
- [30] eMarketer (Producer). (2015). Average Time Spent per Day on Select Digital Activities by US Adult Users of Each Medium. Retrieved from
- [31] Fardiah, Murwani, S., Dhieni., N. (2020). Meningkatkan Kemampuan Kognitif Anak Usia Dini melalui Pembelajaran Sains. *Jurnal Obsesi: Pendidikan Anak Usia Dini*. 4 (1). 133-140.
- [32] Gauvain, M., & R, R. (2016). Cognitive Development. In *Encyclopedia of Mental Health (Second Edition)* (pp. 317-323).
- [33] Gegenfurtner, A., Quesada-Pallarès, C., & Knogler, M. (2014). Digital simulation-based training: A meta-analysis. *British Journal of Educational Technology*, 45(6), 1097-1114.
- [34] Ginns, P. (2005). Meta-analysis of the modality effect. *Learning and Instruction*, 15(4), 313-331
- [35] Hartanto, A. (2013). *Pembelajaran Matematika Materi Bangun Ruang Balok Dengan Aplikasi Multimedia Interaktif di SD Negeri Teguhan Sragen*. Seminar Riset Unggulan Nasional Informatika Dan Komputer FTI UNSA, 2(1).
- [36] Hergenhahn, B.R dan Olson, Matthew H.(2010). *Theories of Learning*. Jakarta: Kencana PRenada Media Group. Jakarta
- [37] Höffler, T. N. (2010). Spatial ability: Its influence on learning with visualizations - a meta-analytic review. *Educational Psychology Review*, 22(3), 245-269.
- [38] Lawson, A. E. (1999). A scientific approach to teaching about evolution & special creation. *The American Biology Teacher*, 61(4), 266-274.
- [39] Gauvain, M., & R, R. (2016). Cognitive Development. In *Encyclopedia of Mental Health (Second Edition)* (pp. 317-323).
- [40] Hartanto, A. (2013). *Pembelajaran Matematika Materi Bangun Ruang Balok Dengan Aplikasi Multimedia Interaktif Di Sd Negeri Teguhan Sragen*. Seminar Riset Unggulan Nasional Informatika Dan Komputer FTI UNSA, 2(1).
- [41] Huitt, W., & Hummel, J. (2003). Piaget's theory of cognitive development. *Educational Psychology Interactive*, 3(2), 1-5.
- [42] Kirschner, P. A., Kirschner, F., & Janssen, J. (2014). The collaboration principle in multimedia learning. In R. E.
- [43] Krejtz, I., Szarkowska, A., Krejtz, K., Walczak, A., & Duchowski, A. (2012, March). Audio description as an aural guide of children's visual attention: Evidence from an eye-tracking study. In *Proceedings of the symposium on eye tracking research and applications* (pp. 99-106). ACM.
- [44] Lee, D. Y., & Shin, D. (2011). Effects of spatial ability and richness of motion cue on learning in mechanically complex domain. *Computers in Human Behavior*, 27(5), 1665-1674. doi:<https://doi.org/10.1016/j.chb.2011.02.005>
- [45] Leutner, D., & Schmeck, A. (2014). The generative drawing principle in multimedia learning. In R. E. Mayer (Ed.). *Cambridge handbooks in psychology. The Cambridge handbook of multimedia learning* (pp. 433-448). New York, NY, US: Cambridge University Press.
- [46] Liu, H. C., Lai, M. L., & Chuang, H. H. (2011). Using eye-tracking technology to investigate the redundant effect of multimedia web pages on viewers' cognitive processes. *Computers in Human Behavior*, 27(6), 2410-2417.
- [47] Liu, H. C., & Chuang, H. H. (2011). An examination of cognitive processing of multimedia information based on viewers' eye movements. *Interactive Learning Environments*, 19(5), 503-517.
- [48] Mayer, R. E. (1997). *Multimedia learning: Are we asking the*

- right questions? *Educational Psychologist*, 32(1), 1–19
- [49] Mayer, R. E., & Moreno, R. (1998). A split-attention effect in multimedia learning: Evidence for dual processing systems in working memory. *Journal of Educational Psychology*, 90(2), 312–320.
- [50] Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational Psychologist*.
- [51] Mayer, R. E. (2005). Cognitive theory of multimedia learning (Vol. 43). *The Cambridge Handbook of Multimedia Learning*.
- [52] Mayer, R. E., & Fiorella, L. (2014). 12 principles for reducing extraneous processing in multimedia learning: Coherence, signaling, redundancy, spatial contiguity, and temporal contiguity principles. In *The Cambridge handbook of multimedia learning* (Vol. 279).
- [53] Mayer, R. E. (2017). Using multimedia for e-learning. *Journal of Computer Assisted Learning*, 1-21.
- [54] Mulyani, N. (2017). Upaya Meningkatkan Perkembangan Sosial Emosional Anak Usia Dini. *Jurnal Ilmiah Mahasiswa Raushan Fikr*.
- [55] Nugroho, P. (2015). Pandangan Kognitifisme Dan Aplikasinya Dalam Pembelajaran Pendidikan Agama Islam Anak Usia Dini. 3(2).
- [56] Padilla, M. J. (1990). The science process skills. *Research Matters-to the science Teacher*, 9004
- [57] Papalia, D., Olds, S., Feldman R. (2007). *Human development*. 9th ed. New York: Mc. Graw Hill.
- [58] Piaget, Jean. (2002). *Tingkat Perkembangan Kognitif*. Jakarta: Gramedia.
- [59] Rahayu, D., R. (2013). Pengaruh Penggunaan Video Kartun Mencampur Warna Terhadap Kemampuan Kognitif Pada Anak Kelompok B di TK Terpadu Alhidayah II Ds. Bakung Kec. Udanawu Kab. Blitar. *PAUD Teratai*, 2(2).
- [60] Reilly, T. (2006). *The science of training—soccer: A scientific approach to developing strength, speed and endurance*. Routledge.
- [61] Richter, J., Scheiter, K., & Eitel, A. (2016). Signaling text-picture relations in multimedia learning: A comprehensive meta-analysis. *Educational Research Review*, 17, 19–36
- [62] Rodrigues, P., & Rosa, P. (2017). Eye-tracking as a research methodology in educational context. In C. Was, F. Sansost, & B. Morris (Eds.), *Eye tracking technology applications in educational research* (pp. 1–26). Hershey PA, USA: Information Science Reference.
- [63] Feifer, S. G. (2008). Integrating response to intervention (RTI) with neuropsychology: A scientific approach to reading. *Psychology in the Schools*, 45(9), 812–825.
- [64] Santos, M. E. C., Chen, A., Taketomi, T., Yamamoto, G., Miyazaki, J., & Kato, H. (2014). Augmented reality learning experiences: Survey of prototype design and evaluation. *IEEE Transactions on Learning Technologies*, 7(1), 38–56
- [65] Scheiter, K., & Gerjets, P. (2007). Learner control in hypermedia environments. *Educational Psychology Review*, 19(3), 285–307
- [66] Scheiter, K. (2014). The learner control principle in multimedia learning. In R. E. Mayer (Ed.). *Cambridge handbooks in psychology. The Cambridge handbook of multimedia learning* (pp. 487–512). New York, NY, US: Cambridge University Press.
- [67] Schneider, S., Beege, M., Nebel, S., & Rey, G. D. (2018). A meta-analysis of how signaling affects learning with media. *Educational Research Review*, 23, 1–24.
- [68] Schmidt-Weigand, F., Kohnert, A., & Glowalla, U. (2010). A closer look at split visual attention in system-and self-paced instruction in multimedia learning. *Learning and Instruction*, 20(2), 100–110.
- [69] Schnotz, W., & Bannert, M. (2003). Construction and interference in learning from multiple representation. *Learning and Instruction*, 13(2), 141–156.
- [70] Shih, Yi-Huang. (2020). Life Education for Young Children in Taiwanese Preschools: Meaning, Aspects and Teaching Methods. *Universal Journal of Educational Research*. Vol 8(4). 1246-1251
- [71] Sujiono, Y. N. (2013). Hakikat Pengembangan Kognitif. *Metode Pengembangan Kognitif*.
- [72] Suyanto, S. (2012). Pendidikan Karakter untuk Anak Usia Dini. *Pendidikan Karakter Untuk Anak Usia Dini*.
- [73] Takaya, K. (2008). Jerome Bruner’s theory of education: From early Bruner to later Bruner. *Interchange*. <https://doi.org/10.1007/s10780-008-9039-2>
- [74] Tatminingsih, S. (2019). Alternatif Stimulasi Kemampuan Kognitif melalui Penerapan Model Pembelajaran Berbasis Permainan Komprehensif. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 3(1), 183–190. <https://doi.org/https://doi.org/10.31004/obsesi.v3i1.130>
- [75] Theo, R & Martin, H. *Pendidikan Anak usia dini: tuntunan psikologis dan pedagogis bagi pendidik dan orang tua*. 2004. Jakarta: PT Gramedia Widiasarana.
- [76] Ulfa, S. (2016). Pemanfaatan Teknologi Bergerak sebagai Media Pembelajaran bagi Anak Usia Dini. 1(1).
- [77] Ulfah, St. M., Arismunandar, Ahmad, M. A. (2020). Development of Traditional Creative Game Models to Improve Cognitive Ability in Early Childhood: A Preliminary Study. *Universal Journal of Educational Research* Vol 8(11). 5106-5113
- [78] Ulfatun, N. (2020). Pemanfaatan Teknologi dalam Pendidikan Anak Usia Dini. 8(1).
- [79] Wiebe, E., & Annetta, L. (2008). Influences on visual attentional distribution in multimedia instruction. *Journal of Educational Multimedia and Hypermedia*, 17(2), 259–277.
- [80] Yafie, E. (2019). Pengembangan Kognitif (Sains pada Anak Usia Dini). Malang: Universitas Negeri Malang.
- [81] McCarthy, C. B. (2005). Effects of thematic-based, hands-on science teaching versus a textbook approach for students with disabilities. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, 42(3), 245-263.

- [82] Cholifah, P. S., Oktaviani, H. I., Nuraini, N. L. S., Meidina, A. M., Wanodyaningtiyas, R. F., & Yafie, E. (2019, October). Online Project-Based Learning for Improving the Innovative Initiation during Diffusion and Innovation Course. In 2019 5th International Conference on Education and Technology (ICET) (pp. 55-60). IEEE.
- [83] Yafie, E., & Haqqi, Y. A. (2019). Development Application "Detection of Growth and Development for New Born Until Two Years" Based on Android. International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-2S9
- [84] Yafie, E., Haqqi, A. Y., Kustiawan, U., Astuti, W., & Ilhami, S. B. (2020). The Effect of Teacher Competency Training on High Order Thinking-Based Learning. JECCE (Journal of Early Childhood Care and Education), 2(2), 87-93.
- [85] Yafie, E., Samah, N. A., Mohamed, H., & Haqqi, A. Y. (2020). Collaborative Mobile Seamless Learning (CMSL) based on Android Apps to Improving Critical Thinking in Higher Education in the Post-Covid-19 Era. Jour of Adv Research in Dynamical & Control Systems, 12(07), 428-441.
- [86] Yamin, H. Martinis dan Sanan, Sabri Jamilah. (2010). Panduan Pendidikan Anak Usia Dini. Jakarta: GP Press.

Cultural and Socio-economic Status Factors Affecting Female Education in Sokoto State, Northern Nigeria: Implication for Counselling

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Abstract Despite Nigerian government's initiatives such as Northern Education Initiative (NEI), Girl Education Project (GEP) and Universal Basic Education Commission (UBEC) in bridging the massive educational gap between males and females in Sokoto state it remains one of the states with high illiteracy level due to cultural and socio-economic status factors affecting female education. The study investigated the attitudes of parents towards female education and cultural and socio-economic factors responsible for low enrolment and recurrent withdrawal from school. Simple survey design was used, population of 800 students from Women centre for continuing education (WCCE). A sample of 260 students was drawn using Krejcie and Morgan table. Attitudes of parents towards female education questionnaire (APTFEQ) with a reliability of 0.76 and effect of socio-cultural and socio-economic factors on female education questionnaire (ESCSEFFEQ) with 0.84 reliability were the instruments used in collection of data. The study found out that parents have negative attitude towards female education and poverty is the major reason for low enrolment of female students and recurrent withdrawal. Early marriage, gender inequality, religion, child labour and uneducated parents also contributed to such situations. Recommendations were that government should provide free education to females, provision of job opportunities to reduce poverty rate and public awareness campaign on the importance of female

education. Female counsellors are required to counsel female students to be successful Academicians in their society. Counsellors should organize conferences and use such forums in conversing with parents about the importance of female education as the major implications for counselling.

Keywords Parent's Attitudes, Female Education, Culture, Socio-economic Status, Counselling

1. Introduction

Education is the process of impacting knowledge through teaching and learning. It is every child's right to be educated whether male or female. With these the significance of education is paramount; this is the reason why¹ necessitates that every Nigerian child is entitled to equal right of been educated irrespective of gender. Nigeria is operating on 9-3-4 system of education²⁻³. That is 6 years in primary school and 3 years in junior secondary school, 3 years of senior secondary school and 4 years in the university⁴. Nigeria has 30 million students however, this does not tally with the attitudes of parents in northern Nigeria especially in Sokoto state, towards the enrolment of their female child into schools. Nevertheless, People

usually accept that it is dreadful to foresee the future with precision³¹. Thus, it is certainly possible to predict possible results given past and current situations which are significant to build on the achievements and avoid the hindrances recognized in the past to advance the future³².

Cultural and socio-economic factors were found to be the major factors affecting female education¹¹. Cultural factors are; cultural practices such as (early marriage, child labour, gender inequality) religion and fragility¹²⁻¹³. Based on previous study¹⁰ child brides are much more likely to drop out of school and complete fewer years of education than their peers who marry later. This affects the education and health of their children and their ability to earn a living. Female children especially in the rural areas are sent to the cities to work as house maids or hawk goods on the streets¹⁵. These keep them away from school either not enrolled or withdrawn to do such labour^{5,14}. Researcher⁷ added that some females are allowed to start school but will later be withdrawn due to socio-economic or socio-cultural factors. Researcher⁹ reported that there are nearly double as several males graduating from schools as related to females. The major and critical problem of the state for decades is poor female enrolment and recurrent withdrawal⁷. Female child is seen to belong to another family, because of marriage. Some parents send the female child on early marriage so that they can use the dowry to train the boy. Misinterpretation of religious belief is used to deny the right of female children to get education. The general slogan is that "women's education ends in the kitchen"¹⁰. Gender inequality; females are not given equal rights with the male children, because they are seen as inferior to them^{11,16}. That is why there are overburdened with house chores to give the males the opportunity to go to school¹⁷. Their religious belief is that the females shouldn't be taught by a male and be a classmate of male¹⁸. There are against the dressing due to absence of hijab in uniform structure¹⁹.

Poverty, uneducated parents, low socio-economic status parents, unemployment are the socio-economic factors^{12,16}. According to²² poverty remains the most significant factor determining whether a girl can have access to education. Example, in the state, only 4% of poor young women can read, compared with 99% of rich young women in the South Eastern Nigeria²². Researcher²³ asserted that high rate of poverty has heightened the situation, because with little resources males are educated and the females are left out of school. According to researcher¹¹ about 79.9% of the parents in the state are illiterates, making them to be ignorant of the importance of female education. It is preferred that the medical personnel that attend to female patients should be females and the parents are being made aware²³. "The government is creating awareness that unless you allow a girl-child to go to school, you may not have the doctors, nurses and teachers you need to assist the community²³. Female children from high socio-economic status parents tends to be educated over there counter parts¹⁴. Researchers^{2,12} reported that every day, girls face

barriers to education because of poverty, cultural norms and practices, poor infrastructure, violence and fragility.

Educating females reduced poverty. It brings health awareness which in turn prevents HIV/AIDS, STDS, unwanted pregnancies, nation building and reduce infant mortality death,¹⁷. In general, educating female is just like educating the whole nation. Because there are the home builders where charity begins, a nation will never grow without better foundation. Government brought up necessary interventions and initiatives to tackle such menace. These include; formulation of government education policy³⁰: Northern education initiative (NEI), Girls Education Project Phase (GEP3); This gives the parents of the female child money as stipend in order to allow her to go to school), creation of WCCE that provides second chance to women who might have dropped from school, to continue from basic education up to secondary level. Provision of 3 girls only boarding schools, Millennium Development Goals (MDGs), Universal Basic Education (UBE) and Sokoto State Vision 20:20 policy; to reduce the rate of dropout/withdrawal especially for girls by 48% to 20% by 2020⁸.

Sokoto State is one of the northern states with highest illiteracy rate especially for females, with just one female professor in the whole state⁵. They are Hausa/Fulani by tribe and are predominantly Muslims with about 99.9%⁶. With primary school-age population of 1,100,000, and enrolment rate of 610,886 (400,381 Males; 210,505 Females) that is boys (69.8%) to ratio of girls (30.2%)⁷. At junior secondary males has (52,893) while females (23,135), Secondary school is (34,628) males and (12,343) females, while at university level the rate is (51,461) males and (16,793)⁸. While Withdrawal ratio is 1:4.17 One of the reasons for this is that the state feared exposure to western education especially for girls, claiming that it would interfere with the cultural and religious beliefs of the people due to the curriculum in use, even though that has not been the case^{10,20}. Researcher⁵ stated that is why Quranic schools are given preference. Mixing matured males and females in school is against the Hausa culture and religion²¹. Fear of the female child being raped or becomes pregnant; these are the reasons why the females are kept in purdah or married off early, to avoid ruining the family's image²².

2. Statement of the Problem

The wide gap between male and female enrolment rate is quite alarming. The female is seen as a burden and she belongs to another house. Some females are sent to child labour just to get money for the education of the male sibling. Some will start schooling but will later be withdrawn for some reasons, while others are given the access to Quranic schools but no formal education. These produce lesser number of female professionals. So, this

study tends to investigate the factors affecting female's enrolment rate and withdrawal and what attitude parents hold that affects female education in Sokoto state.

3. Objectives

1. To find attitudes of parents towards female's education.
2. To find the cultural and socio-economic factors causing low female enrolment into schools and recurrent withdrawal of female students from schools.

4. Questions

1. What are the attitudes of parent towards female's education?
2. What are the cultural and SES factors causing female's low enrolment rate and recurrent withdrawal from school?

5. Materials and Methods

The study applied simple survey method. According to¹¹

descriptive simple survey allows a researcher to select sample from the population for the purpose of generalization. Cluster sampling and purposive sampling were applied in selecting Sokoto state (core- northern state). The total population of the study is 800 students in WCCE. Using²⁴ table, sample size of 260 female students was drawn. Simple random and proportionate sampling were used to get the sample from each class.

Two questionnaires were adapted as the instruments namely;

- i) Attitudes of parents towards Female child education questionnaire (APTFCEQ)¹⁶: It contained 11 items based on Yes and No. The instrument opted coefficient of 0.76 as the reliability with content validity.
- ii) Socio-cultural and socio-economic factors effect on female child education questionnaire (SCSEFFCEQ)⁵: It contained 11 items. The reliability coefficient was 0.84, using Pearson moment correlation coefficient and was found to be valid.

6. Findings

Research Question 1: what is the attitude of parents towards female education.

Table 1. Showing the Attitudes of parents towards female education in Sokoto state

S/N	Items	Yes	No	% of Yes	% of No	Decision
1	Female education ends-up in the kitchen	190	70	73	27	Agreed
2	Female should not be educated; it would stop her from marrying early	155	105	59.6	40.4	Agreed
3	Educated females are not responsible.	100	160	38.5	61.5	Disagreed
4	Based on religious beliefs, female-child does not need formal education.	200	60	76.9	23.1	Agreed
5	The female-child only needs Quranic education as a future mother	229	31	88.1	11.9	Agreed
6	Female marriage dowry should be used to educate male-child	235	25	90.4	9.6	Agreed
7	Educated females are disobedient	99	161	38.1	61.9	Disagreed
8	Educated female controls her husband	160	100	61.5	38.5	Agreed
9	Female education is good if only it is free	120	140	46.2	53.8	Disagreed
10	High rate of pregnancy during female-child formal education depresses the parents	210	50	80.8	19.2	Agreed
11	Females contributes less towards nation building	175	85	67.3	32.7	Agreed

Research Question 2: What are the factors causing female low school enrolment rate and recurrent female student’s withdrawal from school.

To know the factors responsible for recurrent female students’ withdrawal, first is to know the recurrent withdrawals at each level of education (primary-senior secondary school)

Table 2. Recurrent female student’s withdrawal from each school level

Responses	Frequencies	Percentages
Primary School	21	8.1%
After Primary School	65	25%
Junior Secondary School	80	30.8%
Senior Secondary School	94	36.1%
Total	260	100%

Table 3. Factors Responsible for female Student’s low Enrolment and Recurrent Withdrawal

Responses	Frequencies	Percentages
Early marriage	50	19.2%
poverty	60	23.1%
Religion	49	18.8%
Gender inequality	42	16.2%
Uneducated parents	39	15%
Gender role	20	7.7%
Total		100%

7. Discussion

Table 1 findings indicated that parents in Sokoto state have negative attitude towards female child education, because the agreed has the highest percentage. This finding was supported by previous researchers^{19,25,16} which reported that parents have negative attitudes towards their female children’s education in Sokoto. Researcher²⁶ had dissimilarity with present finding, where they found positive attitude of parents towards female-child education in Edo state.

Table 2 shows that 8.1% of the respondents are dropouts at primary level, 25% dropout after primary(not furthering to secondary school level), also 30.8% are withdrawn at junior secondary and 36.1% at senior secondary school; all these dropouts are due to either early marriage, unwanted pregnancies, misinterpretation of religion, poverty and, uneducated parents, gender inequality or child labour.

Table 3 revealed that 19.2% early marriage is the because of low female enrolment rate, 23.1% was poverty, 18.8% reported religion, gender inequality had 16.2%, 15% from uneducated parents and 7.7% from child labour.

Findings were supported by previous researchers^{21,24,20,27,28} who stated that early marriage,

gender inequality, religion and poverty are the leading factors in denying females of basic formal education in Sokoto State, but it is a misinterpretation of Islamic beliefs. while^{29,30} reported bad governance, poor infrastructure and funding of the educational sector as the factors responsible.

8. Conclusion

Conclusion was reached based on the findings, that parents have negative attitudes towards female education in Sokoto State. Cultural and socio-economic status such as early marriage, poverty, religion, uneducated parents, gender inequality and child labour are the causes of low enrolment and recurrent withdrawal of females, with poverty as the major factor.

Based on the findings and conclusion; the following recommendations were reached that parents should adopt positive attitudes towards female education, and government should provide job opportunities so as to reduce poverty rate, provide free education for females and improve public awareness campaign on the importance of female education to parents and parents should not show male child preference over the female child.

9. Counselling Implication

There are following counselling implications:

1. Female counsellors are required in schools so as to counsel female students in order to be a successful academicians in their society by beating all the societal odds and having better self-concept and self-esteem.
2. School and multi-cultural counsellors should organize conferences and use such forums in conversing with parents and community members on the importance of female education and effect of gender equality.
3. Counsellors should counsel female students on consequences of unwanted pregnancies and STDs.

REFERENCES

- [1] Federal Government of Nigeria (FGN). National Policy on Education (NPE). Annual National Report. Lagos 2016.
- [2] National Education Data Survey (NEDS). National Report. Abuja 2015
- [3] Onwuameze, N. C. Educational opportunity and inequality in Nigeria: assessing social background, gender and regional effects (Univeresity of Iowa). 2013, Retrieved from <https://ir.uiowa.edu/etd/2598>.
- [4] Federal Ministry of Education (FME). Nigeria Education Indicators, 2016.
- [5] Kainuwa, A., Binji, N., & Yusuf, M. Cultural Traditions and Practices of the Parents as Barriers to Girl-child Education in

- Zamfara State. *International Journal of Scientific and Research Publications*, 3(11), pp.1–8, 2013.
- [6] Katami, N. A. Educational Needs of Married Women in Sokoto State Women Centre for Continuing Education. M.Ed. Dissertation, Usmanu Danfodiyo University Sokoto, 2008.
- [7] Yakubu, U. K., Binji, M. B., & Muhammad, A. Factors Responsible For Frequent Withdrawal of Girls from Schools and Their New Enthusiasm for Re-Joining Formal Education after Years of Break : *Journal of Research and Method in Education*, 4(6), pp.18–23, 2014.
- [8] Sokoto Ministry of Education (SME). State Strategic Education Sector Plan (SESP) by (2011-2020), 2010.
- [9] Nmadu, G., Avidime, S., Oguntunde, O., Binta, V. D., & Mandara, M. Girl Child Education : Rising to the Challenge. *African Journal of Reproductive Health*, 2010, 14(3), pp. 107–112.
- [10] United Nations International Children Educational Fund (UNICEF). (2017). Annual Report.
- [11] Lawal, Z. I. Relationship between Self-Concept, Vocational Preference and Educational Needs of Married Women, in Women Centre for Continuing Education. M.Ed. Dissertation, Usmanu Danfodiyo University Sokoto 2017.
- [12] Kamaldeen, A. S., Buhari, A. S. & Parakoyi, D. Perception attitude and practices of parents in Okene Nigeria toward Girl-Child Education. *Journal of Science and Research* , 2(8), 2012.
- [13] Olomukoro, C.O. and Omiunu, S. E. Strategies for Expanding Access to Education to the Girl-Child in Nigeria. *Journal of Adult Education and Development*, 2011, 5(1), pp. 212–222.
- [14] Khalid, M. Accessing the Educational Needs of Women in Women Centre for Continuing Education Niger State. M.Ed. Dissertation, Usmanu Danfodiyo University Sokoto, 2012.
- [15] Terhemba, G. A., & Umaru, A. Evaluation of parents attitude toward girl-child enrolment and completion of secondary school education in Yobe State, Nigeria, Counselling implications for human development (O. and G. Adegoke, A.A., Aluede, Ed.) 2015.
- [16] Onoyase, A. Attitude of Parents toward Female-Child Secondary Education in Sokoto State, Nigeria : Implications for Counselling, *Journal of Educational and Social Research*, 8(2), pp. 21–27, 2018.
- [17] Uchezuba, F. N. Effects of Marital Status and Study Habit on the Academic Performance Among Senior Secondary School Students of Women Centre for Continuing Education Sokoto State. M.Ed. Dissertation, Usmanu Danfodiyo University Sokoto, 2014.
- [18] Ilyas, S. U. The Challenges Faced by Muslim Female Education and the Way Forward, 2014, pp. 88–91.
- [19] Lawal, Z. I. Attitudes of Parents Towards Their Girl- Child Education. M.Ed. Dissertation, Usmanu Danfodiyo University, 2009.
- [20] Nwosu, N. P. Education For All Women By The Year 2015: Women Center For Continuing Education, Sokoto Nigeria As A Case Study, 2008, (234). Belgium.
- [21] Oraegbuna, R. C. Cultural Obstacles To Basic Formal Education And Training Of Women In Sokoto State , Northern Nigeria Project Paper Submitted To The Institute Of African Studies, 2012.
- [22] United Nation Education, Science and Cultural Organisation (UNESCO). Action Plan, 2015.
- [23] Saleh, M. J., & Kwache, P. Z. An investigation into the girl-child enrolment and completion in senior secondary school in Bauchi state, Nigeria. *In International Research Journal of Library, Information and Archival Studies*, 2, 2012.
- [24] Krejcie, R. V., & Morgan, D. W. Determining Sample Size For Research Activities. *Education and Psychological Measurement*, 30, pp. 607–610, 1970.
- [25] Jamil, M. Y. Education : A Solution to the Contemporary Challenges of a Common Woman in a typical Hausa-Fulani Dominated Society in Nigeria. *International Journal of Scientific and Research Publications*, 2, 2(6), pp. 1–5., 201
- [26] Okobia, E. O., & Ekejiuba, P. Parental Attitudes and Girl - Child Education in Edo State. *Journal of Educational and Social Research*, 5(3), pp. 175–180, 2015.
- [27] Mohammed, K., Nggada, D. C., & Abdullahi, Y. The State of Nigerian Female Education in the Post Colonial Era ; With Reference To Some Northern States . *International Journal of Humanities and Social Science Invention*, 2(11), pp. 14–16, 2013.
- [28] Lawal, Z.I., Khan, A., Ramli, B.J., & Miqureshi, I.M. Relationship Between Self-Concept, Vocational Preference and Educational Needs of Married Women, in Women Center for Continuing Education, SokotoState, Nigeria. *Indian Journal of Public Health Research and Development*, 10(6), pp. 1330-1335, 2019.
- [29] Aja-Okorie, U. Women education in Nigeria: Problems and implications for family role and stability. *European Scientific Journal*, 2013, 9(28), pp. 272–282.
- [30] Lawal, Z. I., Khan, A., & bin Ramli, J. Culture, socio-economic status, and religious coping as predictors of happiness: a review. *Annals of Tropical Medicine and Health*, 23, pp. 156-169, 2020.
- [31] Alhassan, A. J. (2020). Evaluation of Ghana's 2007 Educational Policy: Effects on Education in the Upper West Region. *Universal Journal of Educational Research*, 8(9), pp. 4242-4260.
- [32] Assulaimani, T. The Future of Teaching English in Saudi Arabia. *Universal Journal of Educational Research*, 7(8), pp. 1623-1634, 2019.

Students' Emotional Intelligence and Self-efficacy towards Their Academic Performance: A Survey Study on Public Higher Learning Institution

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Abstract Learning in higher institution is a challenging situation. Students may adapt well to the new academic environment or might experience failure in coping with the demand of real-life learning. In most of the time, they would be physically and emotionally drained. Hence, this study investigated students in public higher learning institution on managing their emotional intelligence and self-efficacy towards their academic performance in such setting. A total of 150 valid questionnaires were collected in a public university in Selangor, Malaysia using purposive sampling method. The Academic Self-Efficacy Scale (ASE) and Emotional Quotient Inventory (EQ-i) instruments were used. In order to achieve the study's objective, the data were analyzed using Statistical Package for Social Studies (SPSS) for its descriptive analyses, t-test and Pearson correlation analyses. It was found that there is a significant relationship between students' emotional intelligence and academic performance, self-efficacy based on academic performance and there is a relationship between students' emotional intelligence and academic self-efficacy. It is vital to investigate this area of study as it would affect this tertiary students' performance in their studying years.

Keywords Emotional Intelligence, Self-efficacy, Academic Performance

1. Introduction

Malaysia's higher learning institution system has grown rapidly where there has been a significant increase in students' enrollment, global recognition and a sharp growth in the number of international students. As another developed country, Malaysia also prioritizes education as it can make a significant contribution to socio-economic development as well as human capital development. To date, in Malaysia there are more than 500 institutions of higher learning including public, private institutions and even community colleges. Since the inception of its first university in 1905, Malaysia now has 20 public universities, 32 private universities and university colleges, 4 branch campuses of international universities, 21 polytechnics, 37 public community colleges and 485 private colleges. Malaysia's higher education progress has been impressive, but with the increasing number of global competitions, Malaysia needs to transform its higher education sector.

Reforms have begun with the implementation of the National Higher Education Strategic Plan as the Ministry is aware that the National education system needs to be further enhanced in order to remain competitive in line with global trends. Thus, various efforts and strategies have been planned and implemented by higher education institutions to produce quality and excellent graduates in terms of physical, emotional, spiritual and intellectual

factors. It is vital to take a look on one's emotional state especially among these students as it forms their attitudes and personalities in life. Emotions are defined as a condition experience by humans that develop several changes in physiological, self and psychological processes (Mohmood Nazar Mohamad, 1992). Unbalance emotional state would affect students' performance while studying if they are in a challenging situation. In addition, emotional development among students is the core value of student development to academic achievement and student preservation in their studying years (Low & Nelson, 2009). According to Emang et al. (2014), it may be a common issue but particularly it is essential for the field of education.

In addition, there have been many studies related to social and emotional factors as the important role of determining students' academic excellence. According to Mustafa et al (2016), he explained that there is a relationship between emotional intelligence and academic achievement those students who have high scores in emotional intelligence show better performance in academic achievement. While, Goleman (1998) stated that emotional intelligence refers to the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships. Goleman (1995) further reiterates that our thinking is always influenced by our emotions. It denotes that students who are chronically sad or angry or even anxious find it hard for them to concentrate and to learn. Snyder as well (1991) did a study amongst freshmen as they entered college. He found that those who scored higher on hope (emotional intelligence) had higher grades at the end of the year and that hope was a better predictor of good grades. Thus, Basan & Omar (2014) stressed the need to focus on emotional intelligence and its role in improving student academic achievement.

Especially, most studies have found that the issues faced by students are a factor in the decline in academic achievement (Add, 2019; Irfan & Shabana 2012). Some studies explained that among the issues that are often experienced by students, especially university students such as issues of stress, finance, drug abuse, family and so on (Lin 2015). Malaysian educators are worried about low academic achievement among students that many are lack of self-efficacy. The University Utara Malaysia scenario showed that most of the students obtained low academic achievement due to several reasons such as lack of motivation, low self-efficacy and other reasons. This is crucial as nevertheless, some studies have also found that academic self-efficacy also contributes to students' academic excellence (Richardson et al. 2012; Honicke & Broadbent 2016). Academic self efficacy refers to students' belief and confidence that they will successfully achieve a specified level in academic tasks or achieve certain academic goals (Pajares, 1996). It was found that students in higher learning institutions who have high self-efficacy

are confident in their ability to perform well academically. This, in turn, influenced their performance as in comparison; students who are lack of self-efficacy may not perform well in academic compared to students who have higher academic expectations. Self-efficacy remained significant as a measure of academic ability.

In order to grasp a clearer view on such area, this study would like to investigate the aforementioned topic especially there is not much study discusses on it especially in Malaysia's higher learning institution setting. Thus, this study will be a primary reference in understanding the relative connection of students' emotional intelligence, self-efficacy and academic performance at tertiary level accordingly.

2. Objectives

- 1) To measure the level of academic performance among students.
- 2) To examine differences between emotional intelligence & academic self-efficacy based on academic performance
- 3) To identify the relation between emotional intelligence and academic self-efficacy.

3. Literature Review

Emotional intelligence is an increasingly popular concern and topic that plays an enormous part in one's success. As early as the 1900's until around 1970's, Mayer (2001) stated that an interest in intelligence testing was solely focused on cognition and the study on emotions focused on clarification as 'chicken-and-egg' problem of which happens first: physiological reaction, or emotion. Apart from that, studies within emotions research were also focused on whether emotions were universal or culturally determined and idiosyncratic. Goleman (1996), Dulewicz and Higgs (2000) provide support for this proposition that the combination of emotional intelligence and intellectual quality (IQ) is a more powerful predictor of success than either measures alone. For example, in an academic setting, a study done by Marquez et al. (2006) among students, it was found that emotional intelligence scores are correlated with academic achievement after controlling for general intelligent. In others studies, correlation between emotional intelligence showed a great range from $r = 0.20$ to 0.25 for higher learning institutions students (Bracket & Mayer, 2003; Jaleel & Verghis, 2017).

Grace (2012) claimed that emotional intelligence is crucial to study and imperative to one's success as its significant positive relationships were established between students' academic achievement as well. It denotes that students who have high level of emotional intelligence traits tend to adapt better to social and interpersonal environment with others. Also, these students have better

time management in comparison to students who have low emotional intelligence as these opposite students would have harmful behavior traits (Pau, et al., 2004). It is important to observe students in higher learning institutions' emotional intelligence as according to Ghosh and Gill (2003), students who possess high emotional intelligence are more confident, fast learners, cheerful and could manage their emotions accordingly. Kamassi, Ahmed et al. (2019) signifies that emotional intelligence ability is essential in higher education context. This is seconded by previous study (Shi & Wang, 2007; Salami, 2010; Kumar & Muniandy, 2012; Fall, et al., 2013) that emotional intelligence is highly acknowledged among higher education students as well.

In Malaysia, such situation is a concern as well as Malaysia has profoundly developed towards a reputable educational transformation process to achieve greater socio-economic progress and human capital development. Hilaluddin Johan Ariffin (2003) suggested that emotional intelligence play significant roles in student's academic achievements. The influence of emotional intelligence on popular culture and the academic community has been rapid and widespread (Emmerling & Goleman, 2003). Vela (2003) and Stottlemyer (2002) also claimed that there were significant correlations between emotional intelligence skills and academic achievement. The domains of emotional intelligence, which are self-awareness and empathy, were significantly related to academic achievement as seconded by Norhayati Ahmad's study (2003) among third semester in Diploma of Teaching courses students. Especially, emotional intelligence would affect students' achievement and performance whether towards positive or negative in their learning experience that would be a worrisome (Salovey & Mayer, 1990).

Besides that, most of the studies claimed that self-efficacy is a good predictor of one's real performance. Self-efficacy denotes when one needs to react to such situation of an expected manner with appropriate skills, knowledge and attitudes (Savas, Bozgeyik & Eser, 2014). In congruence with such claim, Ngui and Lay (2020) stated that personal attributes as emotional intelligence, self-efficacy and subjective well-being would stimulate one's resilience in managing any tense situation. This is supported by previous study that as well proven there is a connection between these idiosyncratic (Abebe & HaileMariam, 2011; Hong, 2012; Koydemir & Schlutz, 2012; Lane & Wilson, 2011; Maher et al., 2012; Mapfumo, et al., 2012; Windle, Bennett, & Noyes, 2011). Furthermore, academic self-efficacy also contributes to students' academic excellence (Richardson et al. 2012; Honicke & Broadbent 2016). For example, in one study carried out by Bandura, Adams & Beyer (1977) showed that there is a strong relationship between self-efficacy judgements and real performance.

It has shown that these idiosyncratic are inter-related

with one and another. One's emotional intelligence would possibly be different as it relies on their self-efficacy in managing the new academic life personally and socially. This is vital to investigate as it would affect students' performance in their studying years. Especially, in Malaysia there is a minimal study exploring on this area. Hence, this study aims to identify the relationship between emotional intelligence and self-efficacy to students' academic performance among Malaysia's public higher learning institutions.

4. Methodology

This is a quantitative research and it involves descriptive and inferential analysis. This study using survey design consists of 150 university students. This study involved students in a public university in Selangor, Malaysia who are selected using purposive sampling method in order to determine low and high academic achiever. The populations of this study are designated as a full-time student which comprising of 16 courses. The Academic Self-Efficacy Scale (ASE) is used to assess academic self-efficacy among students. The inventory created by Owen and Froman (1988). The scale was developed using three university faculty members who devised a pool of what they considered to be routine academic behaviors for college students. The inventory consists of 33 items without hierarchical composition, and participants will be asked to respond using a 5-point Likert-type scale ranging from 1, or "very little" to 5, or "quite a lot." The emotional intelligence among students measured using Emotional Quotient Inventory (*EQ-i*) which consists of 133 items. *EQ-i* instrument measured using five-point Likert scales along with 15 subscales. This inventory was developed by Reuven Bar-On (Bar-On: 1996, revised 2002). Whereby, academic performance in this study referred to student's achievement in examination. Meanwhile, students also grouped according to their cumulative grade point average (CGPA) as high achievers (3.50 and above) and low achievers (below 2.65). The data collected were analyzed descriptively to measure academic performance of samples. Independent sample t-tests were used to measure differences in emotional intelligence and academic self-efficacy between low-and high-achieving groups. Correlation analysis was also done to determine the relationship between emotional intelligence and academic self-efficacy.

5. Result and Discussion

The collected data were analysed using Statistical Package for Social Studies (SPSS) version 23. Categorical variables were presented as frequency (n) and percentage (%).

Table 1. The distribution of samples across demographic characteristics

Demographic variable	Category	Frequency	Percent
Gender	Male	59	39
	Female	91	61
	Total	150	100
Level of study	First year	52	35.0
	Second year	55	37.0
	Third year	38	25.0
	Others	5	3.0
	Total	150	100
CGPA	3.50 and above	68	45.0
	2.65 and below	82	55.0
	Total	150	100

Table 1 above described the distribution of the respondents in terms of their demographic information. It shows that 35% came from the first year, 37% from the second year, 25% in third year level of study and only 3% come from others. In addition, this study consists of 59% male students whereby 91% of female students. The data collected also indicate that 68% students were among high achiever while 82% students were low achiever.

Table 2. The difference between emotional intelligence based on academic performance

Academic Performance	N	M	SD	df	p
High achiever	68	425.92	41.37	98	.001
Low achiever	82	312.92	38.47	74.84	

n=150

p<0.05

The results of independent sample t-test in Table 2 shows a significant difference is encountered between high achiever and low achiever students in terms of their emotional intelligence ($p < 0.05 = 0.001$). Furthermore, the mean of emotional intelligence for high achiever students ($M = 425.92$) is found higher than that of low achiever students ($M = 312.92$).

Table 3. The difference between academic self-efficacy based on academic performance

Academic Performance	N	M	SD	df	p
High achiever	68	4.8962	1.035	98	0.000
Low achiever	82	2.7767	1.938	74.84	

n=150

p<0.05

The results of independent sample t-test in Table 3 shows a significant difference is encountered between high achiever and low achiever students in terms of their academic self-efficacy ($p < 0.05 = 0.000$). Furthermore, the mean of academic self-efficacy for high achiever students ($M = 4.89$) is found higher than that of low achiever students ($M = 2.77$).

Table 4. The difference between sub-scale of academic self-efficacy among students

Domain of Academic Self Efficacy	High Achiever Mean (M)	Low Achiever Mean (M)
Social Status	4.32	3.12
Cognitive Application	4.81	2.42
Technical Skills	4.70	2.83
Total Mean Score	4.61	2.79

While, the result of Table 4 revealed that there is a significant difference between high achiever and low achiever students in terms of their sub-scale of self-efficacy. The total mean score of high achiever students ($M = 4.61$) is higher in comparison to the total mean score of the low achiever students ($M = 2.79$). Also, the mean of low achiever student's social status ($M = 3.12$) is found higher than the mean of low achiever students' cognitive application ($M = 2.42$).

Table 5. Relationship between emotional intelligence and academic self-efficacy

Categories	Academic Self-Efficacy	
Emotional Intelligence	Pearson Correlation	.249*
	Sig. (2-tailed)	.000

n=150

In Table 5 above, Pearson Correlation method was used to analyze the relationship between two variables of emotional intelligence and academic self-efficacy. The result revealed that emotional intelligence and academic self-efficacy significantly correlated ($r = 0.249$, $p < 0.05 = 0.000$).

From the findings, it reflects that the association between emotional intelligence and academic performance was found to be significant. It is in line with Grace's study (2012) that emotional intelligence has significant positive relationships established between students' academic achievements. Furthermore, there is also a connection between self-efficacy based on academic performance. It was found that, indeed, academic self-efficacy was strongly related to academic performance and adjustment. This is incongruence with Chemers et al. (2001) that claimed students who have high self-efficacy entered higher learning institutions with confidence will perform well academically as well. Meanwhile, students who are lack of self-efficacy might not perform well academically.

In addition, the findings illustrated that there is a significant relationship between sub-scale of self-efficacy among students. From the findings, students' social status, cognitive application and technical skills are significant between one and another among the high and low achievers' students. This is in line with Savas, Bozgeyik & Eser (2014) statement that one's self-efficacy is determined by their appropriate skills, knowledge and attitudes. Moreover, it was identified that there is a relationship between students'

emotional intelligence and academic self-efficacy among higher learning institutions students. This current study also indicated that students in the university in Malaysia portrayed a moderate level of academic performance. The findings also found that emotional intelligence and academic self-efficacy were significant predictor of academic performance in university students. Therefore, this result could indicate the significant presence of emotional intelligence and academic self-efficacy effect on the improvement on academic performance in students.

As a result, the findings of this study indicated that the mean of emotional intelligence and academic self-efficacy for high achiever students is found higher than that of low achiever students. The findings sustain the results of another author as Alyami et al (2017). Significant differences have been obtained highlighting the fact that students with high academic performance perceive themselves as having high levels of emotional intelligence, being able to understand and accurately perceive their own emotions and utilize emotions in social environments and also efficacious in think highly of their capabilities. Also, the result of this study explained that higher achiever tends to perceive efficacy in accomplishing academic behaviors that imply social status, cognitive application and technical skill, as compared to low achiever.

These results are easily explained by when students need to bear their emotional intelligence competencies, such as the ability to organize feelings, problem solving, intrapersonal and interpersonal skills, which are closely related to academic success. For example, a student who has very good skills in emotional management can use these skills to cope with stress and anxiety associated with tests and exams. Furthermore, the ability to demonstrate interpersonal skills can assist students to get academic help from teachers, peers and resource persons. In addition, those with high levels of self-efficacy tend to rely on themselves when facing complex problems to find a way out of the problem, as well as being patient during the process, making more effort, and lasting longer to overcome challenges. Thus, it seems that self-efficacy is one of the most important factors in students' academic success.

The findings of this study, however, contradicts those of Al-Ghamdi (2014) and Sahinidis et. al (2016) who found that emotional intelligence was not significantly associated with academic achievement. One explanation for this apparent contradiction may be due different aspect of investigation regarding emotional intelligence as it has many areas and components. While, Khan et al (2013) and Neuville et al. (2007) found academic self-efficacy do not contribute to the academic achievement. However, this result due to the used of global attributes rather than specific measures of academic self-efficacy (Honicke & Broadbent 2016).

In response to the last objective, that investigated the

relationship between emotional intelligence and academic self-efficacy, the findings revealed emotional intelligence and academic self-efficacy significantly are correlated. This result was in line with a study by Hen & Goroshit (2014) reported a significant correlation between emotional intelligence and academic self-efficacy. This has again strengthened previous findings concerning emotional intelligence and academic self-efficacy by Belanger et al. (2007) as indicated that although students' emotional intelligence was not directly linked to academic success, students with higher levels of emotional intelligence had more self-efficacy and that in turn enhanced their academic performance.

6. Conclusions

Students at higher learning institution face distress of new learning environment and demand as they have to put their various knowledge and skills into practice that they do not experience much earlier. Students need to adjust such situation by managing it appropriately as it is vital to their positive emotional development. Their emotional intelligence would possibly be different as it relies on their self-efficacy. This is because it will affect them personally and socially in achieving academic success that facilitated their learning experience. Significantly, emotional intelligence is crucial to students' academic success as its significant positive relationships are established as reflected in the present study as well as previous related works. In addition, self-efficacy and emotional intelligence are two personality traits that have a complementary relationship as well.

The implication of this study is that there is a need to enhance academic success among students by designing training modules or program that focused on the development of emotional intelligence and academic self-efficacy in order to slightly enhance their academic achievement in their studying years. Especially, this would be in line with the Malaysia' National education system that urges to be further enhanced in order to remain competitive in line with global trends. On top of that, individual who have high self-efficacy would think highly of their capabilities which influence the initiation, intensity and persistence of behavior. These traits are important for students at such setting to embrace and possess. It is vital as emotional development among students is the core value of students' academic development. Therefore, it is necessary for students in higher learning institutions to know how to cope with such challenging situations. In brief, further study can be conducted to see closer relation between emotional intelligence, academic self-efficacy and academic performance among students.

REFERENCES

- [1] Abebe, S., & HaileMariam, A. (2011). Teacher stressors and potential remedies from pre-service teachers' and cooperating teachers. *Eastern Education Journal*, 40(1), 64–74.
- [2] Alan Carr (2004). *Positive Psychology; the science of happiness and human strengths*. New York: Brunner-Routledge.
- [3] Al-Ghamdi, F. (2014). The role of trait emotional intelligence in individual performance: A descriptive study in Albaha University, Saudi Arabia. *Journal of Service Science and Management*, 7: 361-367.
- [4] Alyami M, Melyani Z, Al Johani A, Ullah E, Alyami H, Sundram F, (2017) The impact of self-esteem, academic self-efficacy and perceived stress on academic performance: a cross-sectional study of Saudi psychology students. *Eur J Educ Sci (EJES)*, 4(3):51–68.
- [5] Bandura, A. (1997). Self-Efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84, 191-215.
- [6] Bandura, A., Adams, N. E., & Beyer, J. (1977). Cognitive processes mediating behavioural change. *Journal of personality and social psychology*, 35, 125-139.
- [7] Bar-On, R. (1996). *The emotional quotient inventory: A test of emotional intelligence*. Toronto, Canada: Multi-Health Systems, Inc.
- [8] Bassam Yousef Ibrahim Banat & Omar Rimawi. (2014). The impact of emotional intelligence on academic achievement: A case study of Al- Quds University students. *International Humanities Studies*, 1(2).
- [9] Bracket, M. A., & Mayer, J.D. (2003). Convergent, discriminant and incremental validity of competing model of measures of emotional intelligence. *Personality and social psychology Bulletin*, 29(9), 1–12.
- [10] Bradberry, T. & Greaves, J. (2001-2006). *Emotional intelligence appraisal: There is more than IQ*, San Diego, CA: Talent Smart Inc.
- [11] Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology*, 93(1), 55-64.
- [12] Dagdag, J. D., Cuizon, H. G., & Bete, A. O. (2019). College students' problems and their link to academic performance: Basis for needs-driven student programs. *Journal of Research, Policy & Practice of Teachers and Teacher Education*, 9(2), 54-65.
- [13] Emang, S., Azam, N. H., Entigar, S. G., & Ramli, N. D. (2014). The Relationship between Emotional Intelligence and Academic Achievement: A Study on Government Transformation Programme (GTP) at Secondary Schools in Rural Areas, Ulu Baram Sarawak. *WEI International Academic Conference Proceedings*. Bali, Indonesia.
- [14] Fall, L. T., Kelly, S., MacDonald, P., Primm, C., & Holmes, W. (2013). Intercultural communication apprehension and emotional intelligence in higher education: Preparing business students for career success. *Business Communication Quarterly*, 76(4), pp. 412-426.
- [15] Gable, S.L. & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology*, 9, 103-110.
- [16] Goleman, D. (1995). *Emotional intelligence*. New York: Bantam Books.
- [17] Goleman, D. (1995). *Emotional Intelligence: Why it can matter more than IQ*. Britain: Bloomsbury.
- [18] Goleman, D. (1998). *Working with emotional intelligence*. New York: Bantam Books.
- [19] Goleman, D., Boyatzis, R., & McKee, A. (2002). *Primal leadership: Realizing the power of emotional intelligence*. Boston: Harvard Business School Press.
- [20] Gill, V. (2003) "Emotional quotient more important than IQ", *The Tribune*, No. May 1, pp13.
- [21] Ghosh, P. (2003) "Emotionality of intelligence", *Everyman's Science*, Vol.38, pp2-5.
- [22] Grace, A. F. (2012). Emotional Intelligence as Predictors of Academic Achievement among Some University Students in Barbados. *International Journal of Higher Education*, 1.
- [23] Hen, M & Goroshit, M. (2014). Academic Self-Efficacy, Emotional Intelligence, GPA and Academic Procrastination in Higher Education. *Eurasian Journal of Social Sciences*, 2:1-10.
- [24] Hilaluddin Johan Ariffin. *Kepintaran emosi dan kaitannya dengan pencapaian akademik: Satu kajian di Sek.Men.Doktor Burhanuddin, Taiping*. Unpublished Master Dissertation, Universiti Utara Malaysia, 2003.
- [25] Hong, J. Y. (2012). Why do some beginning teachers leave the school, and others stay? Understanding teacher resilience through psychological lenses. *Teachers and Teaching: Theory and Practice*, 18(4), 417–440.
- [26] Honicke, T & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Education Research Review*, 17: 63-84.
- [27] Irfan Mushtaq & Shabana Nawaz Khan. (2012). Factors Affecting Students' Academic Performance. *Global Journal of Management and Business Research*, 12(9).
- [28] Kamassi, Ahmed & Manaf, Noor & Omar, Azura. (2019). The level of Emotional Intelligence among Administrative Staff in Higher Learning Institution. *Journal of Economics and Human Development*, 10 (2), 324-335. Retrieved Nov 04 2020 from: https://www.researchgate.net/publication/339900736_The_level_of_Emotional_Intelligence_among_Administrative_Staff_in_Higher_Learning_Institution
- [29] Khan, A. S., Cansever, Z., Avsar, U. Z., & Acemoglu, H. (2013). Perceived self-efficacy and academic performance of medical students at Ataturk University, Turkey. *Journal of the College of Physicians and Surgeons Pakistan*, 23: 495-498.
- [30] Koydemir, S., & Schlutz, A. (2012). Emotional intelligence predicts components of subjective well-being beyond personality: A two-country study using self and informant reports. *The Journal of Positive Psychology*, 7(2), 107-118.
- [31] Kumar, J. A., & Muniandy, B. (2012). The Influence of Demographic Profiles on Emotional Intelligence: A Study on Polytechnic Lecturers in Malaysia. *International online*

journal of educational sciences. 4(1).

- [32] Lane, A. M., & Wilson, M. (2011). Emotions and trait emotional intelligence among ultra-endurance runners. *Journal of Science and Medicine in Sport*, 14(4), 358–362.
- [33] Lin, M.-C., Pan, C.-T., & Ching, G. S (2015). Common problems and coping solutions of university students in Taiwan. *International Journal of Research Studies in Education*, 4(1): 3-16.
- [34] Low, G.R. (2000). Quantifying Emotional Intelligence: Positive contributions of emotional mind. A paper presented for the Spring 2000 faculty lecture as Texas A&M University/Kingsville, Kingsville, Texas.
- [35] Low, G.R & Nelson, D.B (2004). Emotional intelligence: Effectively bridging the gap between high school and college. Texas Association Of Secondary School Principals (TASSP).
- [36] Low, G.R & Nelson, D.B. (2009). Emotional Intelligence and College Success: A Research-Based Assessment and Intervention Model. Retrieved 12 Dec 2019 from: www.tamuk.edu/.../EI_and_College_Success-2006_cederpa.pdf.
- [37] Maher, J. P., Doerksen, S. E., Elavsky, S., Hyde, A. L., Pincus, A. L., Ram, N., & Conroy, D. E. (2012). A daily analysis of physical activity and satisfaction with life in emerging adults. *Health Psychology*, 32(6), 647-656.
- [38] Mahmood Nazar Mohamed (1992). *Pengantar Psikologi: Satu Pengenalan Asas Kepada Jiwa dan Tingkah Laku Manusia*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- [39] Mapfumo, J. S., Chitsiko, N., & Chireshe, R. (2012). Teaching practice generated stressors and coping mechanisms among student teachers in Zimbabwe. *South African Journal of Education*, 32(2), 155–166.
- [40] Marquez, P.G., Martin, R.P., & Bracket, M.A. (2006). Relating emotional intelligence to social competence and academic achievement in high school students. *Psichotema*, 18(Supl.), 18–23.
- [41] Mohd Tajuddin Zakaria (1995). Hubungan di antara stail kepimpinan guru besar dengan iklim ekolah dan pencapaian akademik. Unpublished Master Dissertation, Universiti Utara Malaysia.
- [42] Mustafa Afifi, Amal Shehata, Enas Mahrous Abd Alaziz. (2016). Emotional Intelligence, Self- Efficacy and Academic Performance among University Students. *Journal of Nursing and Health Science (IOSR-JNHS)*, 5(3) :74-81.
- [43] Neuville, S., Frenay, M., & Bourgeois, E. (2007). Task value, self-efficacy and goal orientations: Impact on self-regulated learning, choice and performance among university students. *Psychologica Belgica*, 47: 95-117.
- [44] Ngui, G. K., & Lay, Y. F. (2020). The effect of emotional intelligence, self-efficacy, subjective well-being and resilience on student teachers' perceived practicum stress: A Malaysian case study. *European Journal of Educational Research*, 9(1), 277-291. <https://doi.org/10.12973/eu-jer.9.1.277>
- [45] Norhayati Hj Ahmad Zakaria. Kecerdasan emosi dan hubungannya dengan pencapaian akademik. Unpublished Master Dissertation, Universiti Utara Malaysia, 2003.
- [46] Okun, B.F. (2002). *Effective helping: Interviewing and counselling Techniques*. Canada: Brooks/Cole Thomson Learning.
- [47] Pajares, F. (1996). Self-Efficacy Beliefs in Academic Settings. *Review of Educational Research*, 66: 543.
- [48] Pau, AKH., Croucher, R., Sohanpal, R., Muirhead, V., & Seymour, K. (2004). Emotional Intelligence and Stress Coping in Dental Undergraduates – a Qualitative Study. *British Dental Journal*, 205–209.
- [49] Richardson, M., Abraham, C., and Bond, R. (2012). Psychological correlates of university students' academic performance: a systematic review and meta-analysis. *Psychol. Bull*, 138:353–387.
- [50] Sahinidis, A., Kallivokas, D., Markantonatou, A. & Sdvolias, L. (2016). Emotional intelligence effects on academic performance. An empirical study of university students, *Tourism Research Institute*, 15(1): 151-162.
- [51] Sajna Jaleel, Alie Molly Verghis, "Comparison between Emotional Intelligence and Aggression among Student Teachers at Secondary Level," *Universal Journal of Educational Research*, Vol. 5, No. 1, pp. 137 - 140, 2017.
- [52] Salami, S. O. (2010). Emotional intelligence, self-efficacy, psychological well-being and students' attitudes: Implications for quality education. *European Journal of Educational Studies*. 2(3), pp. 247-257.
- [53] Salovey, P., & Mayer, J.D. (1990). Emotional Intelligence. *Imagination, cognition, and personality*, 9, 185-211.
- [54] Salovey, P., Mayer, J.D., Goldman, S.L., Turvey, C. & Palfai, T.P. (1995). Emotional attention, clarity, and repair: exploring emotional intelligence using the Trait Meta-Mood Scale. In J.W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 125-154). Washington, DC: American Psychological Association.
- [55] Salovey, P., Mayer, J.D. (1997). What is emotional intelligence? In P. Salovey and D. J. Sluyter (EDS), *Emotional development and emotional intelligence: educational implications* (pp 3-31). New York: Basic Books.
- [56] Savas, A. C., Bozgeyik, Y., & Eser, I. (2014). A study on the relationship between teacher self-efficacy and burnout. *European Journal of Educational Research*, 3(4), 159-166. <https://doi.org/10.12973/eu-jer.3.4.159>
- [57] Shi, J., & Wang, L. (2007). Validation of emotional intelligence scale in Chinese university students. *Personality and Individual Differences*. 43(2), pp. 377-387.
- [58] Straub, R.O (2002). *Health Psychology*. Worth Publisher: New York.
- [59] Vela R.H. Jr. (2003). The role of emotional intelligence in the academic achievement of first year college students, Unpublished doctoral dissertations, Texas A&M University-Kingsville.
- [60] Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes*, 9(8), 1-18.
- Yokoyama, S. (2019). Academic Self-Efficacy and Academic Performance in Online Learning: A Mini Review. *Front. Psychol*, 9:2794.

The Effect of Classroom Management Implementation on Students' Achievement

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Abstract This study aims to know about the effect of Classroom Management Implementation on Achievement Student learning. The approach in this research is quantitative research. The results of this study are based on the results of statistical tests. Based on the test results with the linear equation formula shows, that the coefficients table (a) regression equation model, learning achievement results can be predicted, influenced by the results of class management implementation which is obtained value $Y = 31,147 + 15,929 X$. Variable Y is the result of learning, and X is the implementation of classroom management. Based on the results of the linear equation test, it can be analyzed, among others, if the teacher does not implement classroom management, then the value ($X = 0$), and the results of students' learning achievement statistical value test is obtained at $31,147 + 15,929(1) = 57,176$. Then the regression coefficient of value mounts to $b = 31.147$, the amount of students' achievement scores increase in line with increase in the results of implementing class management. The result of the regression equation $Y = 31,147 + 15,929$, the value of X used as the basis for the calculation increases with the level of students' learning achievement, who are influenced by the implementation of good classroom management.

Keywords Classroom Management Implementation, Students' Learning Achievement

1. Introduction

The development of the country is greatly influenced by various factors and one of them is, human resource quality. Human resource quality is a very important factor to become a developed, strong, and prosperous country. Increasing the quality of human resources, depending on education. As stated in the Law of the Republic of Indonesia Number 20 of 2003 Chapter 1 Article 1 "National Education is education based on Pancasila and the 1945 Constitution, which is rooted in religious values, Indonesian national culture, and responsive to the demands of changing times" (Regulations implementation of the National Education System. (2010: 2-4) In general, the goal of national education in Indonesia is to educate the nation's life In Chapter II Article 3 of the Republic of Indonesia Law Number 20 of 2003 that National Education functions, develops the capabilities and shapes the character and the civilization of the nation. It has dignity in the framework of educating the nation's life, and developing the students' potency to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, and independent and become democratic and responsible citizens.

In order to achieve this goal, families and the environment as well as educational institutions play a very important role, especially in educational institutions which are basically used as direct sources of knowledge. The quality of school institutions will also demand professional

teachers. Professional teachers are teachers who are skilled in mastering the learning process so that it runs effectively and efficiently. A pleasant learning process is closely related to friendly, conducive and comfortable classroom conditions. This requires the action of a teacher to manage the class well. The students will still feel bored, if the teachers only implement fun teaching method but the class condition is less comfortable. In other words, the teacher in the classroom must pay attention to the two important things, such as the right learning method and classroom management. It must also be the main point that to consider.

The success of the learning process is largely determined by the strategy and management carried out by the teacher. In the Education Administration Lecturer Team at Education University of Indonesia revealed that teaching is not only about transferring knowledge, but also a number of behaviors that will become the ownership of students. Ade Rukmana, et al. (2010: 103). Thus it is important for a teacher to master classroom management in order to form active and fun learning activities. Seeing that most teachers have implemented classroom management well, with the facilities prepared, have been managed and utilized optimally. Apart from facilities, time management and the learning process have been designed in such a way that the child looks enthusiastic about learning. Through this research, the researchers will see the implications of classroom management on students' achievement, and as the object of research is Grade VI primary school students Lab School, FIP-UMJ. Indonesia.

Formulation of the problem

Based on the background, problem identification and problem limitation, the researchers formulate the following problems:

1. How is the implementation of classroom management in Grade VI students at SD Labschool FIP-UMJ Indonesia?
2. How is to improve students' achievement at Grade VI SD Labschool FIP-UMJ. Indonesia?
3. How is the effect of classroom management implementation on students' achievement at Class VI SD Lab School FIP-UMJ. Indonesia?

Research purposes

1. To find out and analyze the implementation of classroom management in Grade VI students at SD Lab School FIP-UMJ Indonesia.
2. To find out and analyze how to improve students' achievement of Class VI at SD Labschool FIP UMJ Indonesia.
3. To determine and analyze the effect of classroom management implementation on students' achievement of Class VI SD Lab School FIP-UMJ. Indonesia.

2. Literature Review

Definition of Management

Classroom management is an education aspect that is often the main concern of prospective teachers, new teachers, and even experienced teachers. This is because prospective teachers, new teachers, and experienced teachers want their students to learn optimally. Teachers must be able to convey learning material, and be well accepted by students. Soekarno argued that: a. Management is the process of leading, guiding and facilitating the efforts of people organized in formal organizations in order to achieve predetermined goals; b. Management is the process of planning, organizing, mobilizing and controlling. Management is also an effort to use various sources to achieve goals. As the opinion of Dedi Sudirman, (1996:23), which states that "management is associated with all efforts to achieve certain goals by making the best use of existing resources.

Activities carried out, in management, are of course based on predetermined planning and have goals that must be achieved. To be able to achieve the maximum goal, then compiling a plan must be adjusted to existing material sources. Thus from the above opinions it can be concluded that management is an effort to lead, guide, through the planning, organizing, mobilizing and monitoring processes to achieve certain goals by making the best possible use of existing resources.

Definition of Classroom Management

Classroom is seen as a complex and interactive environment. In the classroom there are interactions of various subjects to support the learning process. These subjects include students, teachers, various learning media, props, facilities and infrastructure and so on. Thoifuri (2008: 127), argues that class is a place of learning in which there is a teacher who delivers lessons to students with the same material and time. A pleasant learning process is closely related to friendly, conducive and comfortable classroom conditions. This requires the action of a teacher to manage the class well. Even though the teacher's teaching method is fun for students, if the class conditions get less attention, it will be difficult to build students' enthusiasm for learning, thus students' achievement will also be difficult to increase. As expressed by Ahmad Rohani (2010:142), that the teachers' efforts in creating what is expected to be effective in some considerations; first, the factors that can support the creation of favorable conditions in the teaching and learning process are known. Second, it is known as problems. It is expected and usually occurs and can damage the teaching and learning climate. Third, the mastery of various approaches in classroom management and knowing when and for which problems an approach is

used.

Classroom management is the teacher's skill to create and maintain optimal learning conditions and restore them when things happen that can disrupt the learning atmosphere. Thus classroom management includes a series of processes carried out by the teacher in striving for the success of the learning process. Erdogan and Kurt (2014:12) stated that classroom management is a familiar term that describes how teachers act in building a mutually supportive learning environment in developing students' academic potency and socio-emotional skills in order to create that teaching and learning activities can run accordingly with predetermined achievements. A similar opinion was also stated, namely that classroom management is a teacher's skill to create a conducive learning climate, and to control it if there is a disruption in learning. Classroom management is a proactive action by creating an interactive classroom environment between teachers and students or students and students as a manifestation of education management and school management. Salman Rusydie (2011:24), classroom management is all efforts made to create an effective and fun teaching and learning atmosphere and can motivate students to learn well and according to their abilities.

Some of the opinions above can be concluded that classroom management is all efforts made to create a conducive and interactive learning climate and can motivate students to learn well and according to their abilities, where this action is a manifestation of education and school management.

Classroom Management Principles

A teacher who already knows the concept of classroom management must also be able to understand the principles in applying it. The principles of class management are aimed at the effectiveness of applied management and can minimize problems that arise. Aho, et.al (2010: 397), explain that the principles in classroom management are illustrated as student knowledge, teacher personality, emotional state, caring, uniqueness of educational situation, school operational environment and social context. This is expected to be able to bridge actions and ways of thinking. Furthermore, according to Salman Rusydie, the principles of class management include: a. Teachers must be enthusiastic and enthusiastic; b. Teachers must be able to provide challenges; c. Teachers must be flexible; d. Emphasize the positives; e. Cultivation of self-discipline. Management principles are enthusiasm, challenge, variety, flexibility, emphasis on positive things and cultivation of self-discipline. From some of the opinions above, the principles of classroom management are enthusiastic, challenging, varied and emphasize positive things.

Approach in Classroom Management

Burden in Yasar (2008:15), states that classroom

management is the level of control that teachers give to students and classes. Burden classifies the classroom management approach into 3 main clusters including; the intervening model (high control approach), the interacting model (intermediate control approach) and the guiding model (low-control approach). In addition, Ali Imron et al (2003:46), said that the approach to classroom management includes 3 things, namely the behavior change approach, the socio-emotional climate approach and the group process approach. As for behavior change approach, the basis of this approach is behavioral psychology. This psychology suggests that: (1) all behavior is the result of learning, and (2) there is a psychological process that can be used to explain the learning process, such as positive reinforcement, negative reinforcement, law and elimination. This approach views that in order to foster the desired behavior, the teacher must provide negative reinforcement or positive reinforcement, whereas to reduce deviant behavior, the teacher can use negative stimuli, the elimination of rewards, and time out (canceling the opportunity for students to receive rewards in the form of objects or activities liked). Apart from positive and negative reinforcement, there are primary and secondary reinforcement. Primary reinforcement is reinforcement that cannot be learned and is always necessary for life (food, air and water) while secondary reinforcement is reinforcement that is learned (praise, affection, money and so on).

The socio-emotional climate approach, the presence of psychological factors in learning will provide an important contribution. Psychological factors will always provide a foundation and ease in achieving optimal learning goals. The basis of this approach is clinical psychology and counseling. The assumption is that effective classroom management and effective teaching is a function of the relationship between teachers and students, as well as students and students, while teachers occupy a central position for the creation of a good socio-emotional climate. The socio-emotional approach is an approach based on the establishment of a good relationship between teachers and students.

These three opinions can be concluded that this socio-emotional approach aims to improve good interpersonal relationships between teachers and students and between students. Group process approach. This approach is known as the socio-psychological and group dynamics approach. The group process approach refers to learning experiences that take place in school, occur in social groups, and class is seen as a social system that has characteristics like other social systems. In this approach, teachers must: (1) Create cohesive groups, (2) Assist students in developing and developing productive group norms and meeting the needs of learning objectives. That teaching small groups and individually can be done in the following ways: a. Developing organizational skills, by providing motivation and making variations in assignments; b. Guide and facilitate learning, which includes

strengthening, initial processes, supervision, and learning interactions; c. Space usage planning; d. Clear, challenging, and interesting assignments. In summary, this opinion can be concluded that teaching small groups require preparation and high creativity in order to achieve conducive learning.

Teacher Activities in Classroom Management

The teacher's activity in the classroom is a manager, who has a number of roles to shape learning activities. Akan and Basad (2013:147), state that the classroom is a place to produce educational and learning activities in schools with good, planned, targeted, and appropriate facilities and infrastructure as well as activities based on real life. With this learning environment it is hoped that it can increase individual interest in learning and ensure their participation in the learning process. The teacher's activities in classroom management are as decision makers, planning experts, as improvisers, as researchers, as expert planners. The teacher's role in classroom management includes: informant, organizer, motivator, director, initiator, transmitter, facilitator, mediator and evaluator. The teacher acts as an educating teacher. He does not only teach subjects according to his expertise but also educates the younger generation of his nation. As a teacher, he is in charge of managing students' learning activities at school. This opinion can be concluded that the teacher has complex activities. He not only acts as a material provider but is also responsible for managing and conditioning the class so that learning activities can run effectively.

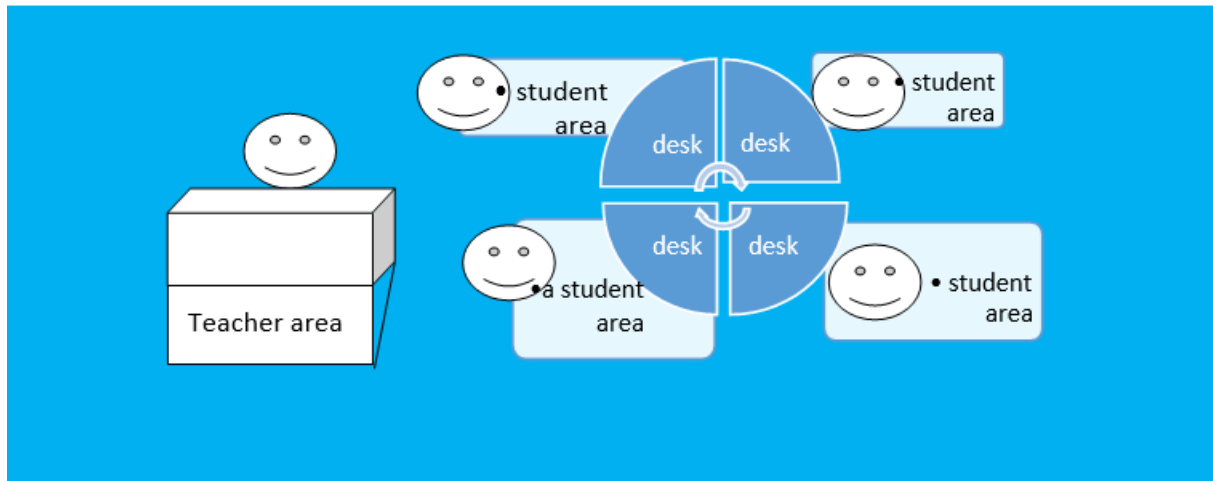
Classroom Management Aspects

Class management actions are actions taken by teachers in order to provide optimal conditions. Pieper in Dobrescu and Emilia (2014:466), explains that an important aspect of classroom management is to create a dynamic climate that will increase students' interest in supporting autonomy, initiative, and optimal academic results. The teacher's actions can be in the form of preventive measures, namely by providing both physical and socio-emotional conditions so that students can feel comfortable and safe to carry out the learning process. Other actions can be in the form of corrective action against deviant student behavior and damage the optimal conditions for the ongoing teaching and learning process. A series of activities carried out by teachers in classroom management include student management and learning facility arrangements. As it is known that the current curriculum has treated students as learning subjects, not as learning objects. Thus in the learning process, students must play an active role by utilizing various sources and the teacher only acts as a

facilitator and motivator. However, it should be noted that in the classroom there are various kinds of characters, from the many people who are in the class, we will find that they are very diverse, both in terms of character, emotion, intellect, behavior and tendencies and habits.

It is possible that the learning process will occur with various methods and approaches adopted by the teacher. Teachers must be able to manage students so that they are able to follow learning scenarios comfortably and conductively. In student settings, the actions taken include: a. the teacher must observe and condition the behavior and discipline of students in order to be able to follow the learning process well; b. Teachers must be able to attract and maintain students' motivation and attention during the learning process using appropriate methods and fun teaching methods.

Safe, comfortable and beautiful classroom condition will be the dream of students. Thus, in addition to the teacher being able to manage students, the teacher must also be able to manage the class in such a way as to create a class that is conducive and enjoyable for students during the teaching and learning process. The arrangement of learning facilities consists of several things that must be considered, including: adequate ventilation, adequate lighting, seating layout must be comfortable and adjusted to the learning model and method used, comfortable classroom as possible with supporting decorations and posters, placement of learning facilities and infrastructure neatly arranged, maintaining the cleanliness and tidiness of students by forming team duties, forming student management organizations. Classroom management activities include two aspects that need to be considered, namely: Teaching and learning conditions and situations, Teaching and Learning Conditions and Situations, Physical Conditions, The physical environment where learning is very influential on the learning process. The physical environment is favorable and has minimum requirements to support the increasing intensity of the learning process of students and has a positive influence on the achievement of teaching goals. The physical environment in question includes: a room for teaching and learning that the learning space should allow students to move freely while carrying out learning activities. The size of the class room depends on the type of activity and the number of students. If a classroom with a certain number of students makes it impossible to carry out a learning activity, the teacher can take advantage of learning in the practicum room or studying outside the classroom. Seats should be set in a moving class manner, or it can be arranged face to face between students to be more effective, because it allows students to have a dialogue with each other, as shown below:



Source: Ade Rukmana, et,all. (2010:103).

Ventilation and Lighting

The space is adjustable, and ventilation and lighting are important assets for a comfortable learning atmosphere. Ventilation arrangements should be sufficient to ensure student health. The windows must be large enough so that the heat from the sun can enter the room and the exchange of oxygen and carbon dioxide gases can run smoothly so that the classroom remains in fresh conditions. Arrangements for the storage of facilities and infrastructure should be stored in a special place and easily accessible when needed. Items that have high practitioner value and can be stored in the classroom such as textbooks, curriculum guides, personal cards and so on should be placed in such a way that they do not interfere with student learning activities. The socio-emotional conditions in the classroom will have a considerable influence on the effectiveness of achieving teaching goals.

The type of leadership, the role of the teacher, the type of teacher leadership, or the administrator will color the emotional atmosphere in the classroom. Teachers who tend to be authoritarian will produce apathetic and aggressive student attitudes. Both of these attitudes will be a source of obstacles to class management both individually and in groups because students will be active only when the teacher supervises. The laissez-faire leadership type will create unproductive learning conditions even though there is leadership. This type is only suitable for students who have an active character, are full of willingness, take initiative and are not always waiting for direction. However, it is known that the character of students like this tends to be a minority.

Hadari Nawai (1997:95), argues that, the type of teacher leadership that emphasizes more on a democratic attitude is a type of leader who is active, dynamic and directed, who tries to take advantage of everyone for the benefit, progress and development of the organization. This attitude can help create a favorable learning climate for the creation of optimal conditions for teaching and learning. Teachers'

attitudes in dealing with complex students must be wise. When dealing with students who violate school rules, the teacher must remain patient and friendly with the belief that student behavior can be improved. A friendly attitude and giving appreciation for students who excel are also necessary for a teacher. Students will tend to be enthusiastic and motivated if they gets the attention and appreciation of the teacher.

The teacher's voice can also influence the learning process of students in the classroom, a relatively low but clear voice with a relaxed sound volume will encourage students to be more courageous in asking questions. Sound pressure must also be varied so that students do not feel bored and are more enthusiastic about participating in learning activities. Thus volume and pressure are also factors that determine the success of the educational process. Report Card Development, Fostering good relations between teachers and students in classroom management issues is very important. With a good relationship between teachers and students, it is hoped that students will always be happy, enthusiastic and full of passion, being optimistic in learning activities. If students show challenges in their level of ability alone, it is often helpful for the teacher to make notes about the assignment in the student agenda or send home weekly progress reports to communicate short-term improvements. So based on Anita's opinion, it is necessary for the teacher to pay close attention to planning, action and evaluation.

Organizational conditions, routine activities that are organized both at the class level and at the school level will prevent problems in classroom management. With routine activities that have been clearly regulated and have been communicated to students openly so that it is clear to them, it will instill in each student good habits and regularity of behavior. These activities include: Lesson Substitution. Routine matters in changing lessons must also be arranged in an orderly manner. For example, when activities that require moving rooms there should be a grace period for students. The movement of students from one room to

another is led by the class leader, the rooms are clearly marked, students are obliged to tidy up the room and their used equipment after the activity is finished.

The flag ceremony activity must have determined the turn to lead the flag ceremony, both from the teacher and from the ceremony participants. So that all participants know what time they have to start, what kind of uniform to wear, are there any school announcements, who should give advice, directions and so on. Discipline and Rules, class management is how students can develop a disciplined attitude properly. An orderly and disciplined learning atmosphere does not spontaneously form by itself. To realize this condition, it is necessary to have a management or a series of planning activities. Regarding classroom management, the teacher and students form an agreement to obey the rules that are applied in the classroom. The rules are arranged based on the results of the teacher's discussion with students in order to form an order that is not burdensome but is able to form disciplined conditions.

Class Management Objectives

In general, the purpose of classroom management is to support the achievement of the goals of the learning process, namely that students succeed in maximizing knowledge through the teaching and learning process that is carried out. Allen (1986:7), states that there are two main objectives in classroom management including socialization (interaction between students and teachers) and courses. One of the main reasons students love school is that it is a place where they can hang out and socialize with their friends. The role of the classroom management process is to create conducive, effective and efficient teaching and learning conditions. Classroom management is carried out to create and maintain conducive and optimal conditions for the implementation of learning activities effectively and efficiently. Another opinion also suggests that classroom management aims to create optimal conditions for the teaching and learning process to take place effectively.

According to the Director General of Early Childhood Education and the Director General of Primary Education of the Republic of Indonesia (1996:110), quoted by Ade Rukmana in the UPI Education Administration Lecturer Team, that the objectives of classroom management are as follows: a. Realizing classroom situations and conditions, both as a learning environment and as a study group, which allows students to develop their abilities as much as possible; b. Removing various obstacles that can hinder the realization of learning interactions; c. Provide and organize learning facilities and furniture that support and enable students to learn in accordance with the social, emotional and intellectual environment of students in the classroom; d. Fostering and guiding students according to their social, economic, cultural and individual characteristics. Creating

a good social atmosphere in the classroom so that this condition can provide satisfaction, an atmosphere of discipline, intellectual, emotional development, attitude and positive appreciation for students. Class management aims to help students work in an orderly manner, so that the goals of teaching effectively and efficiently in the classroom can be achieved”.

This opinion can be concluded that the purpose of classroom management is to create a conducive learning environment by providing and arranging supporting facilities, fostering and guiding students according to their backgrounds and eliminating various obstacles that hinder learning interactions.

Barriers to Classroom Management

During the implementation of classroom management, of course the teacher will find obstacles that cause the teacher to experience difficulties in achieving the targets to be achieved. These obstacles can come from several factors including the following: A learner or teacher can also be an inhibiting factor in implementing the creation of a favorable atmosphere in the learning process. Inhibiting factors that come from learners, namely:

a. Learner Leadership Type

Ahmad Rohani argues that the type of learner leadership in managing an authoritarian and less democratic learning process will foster students' passive attitudes.

b. Monotonous Learning Format

Monotonous learning formats will cause boredom, frustration and disappointment for students which will eventually become a source of disciplinary violations.

c. Learner Personality

A successful learner is required to be warm, fair, objective and flexible so that a pleasant emotional atmosphere is built in the learning process. Attitudes contrary to this personality will cause classroom management problems.

d. Learner Knowledge

Martinis Yamin (2013:54), argues that the limited knowledge of learners about management problems and management approaches, both theoretical and practical. Discussing this problem with peers will help improve classroom management skills in the learning process.

e. Learners' Understanding of Students

Martinis also revealed that the limited opportunities for learners to understand the behavior of students and their backgrounds can be caused by the lack of efforts of learners to deliberately understand students and their backgrounds, perhaps because they do not know how or because the burden of teaching learners is beyond their reasonable

limits.

Student factors, According to Maman Rahman, students' lack of awareness in fulfilling their duties and rights as members of a class or a school can be the main factor causing problems in class management. Likewise, the personal factors of students include fatigue, lots of playing, and sleepiness while studying. In addition, family factors are also very influential. The behavior of students in the classroom is a reflection of the condition of their family. The authoritarian attitude of parents will be reflected in the behavior of students who are aggressive or apathetic. Habits that are not good in the family environment such as disorder, disobedience to discipline, and excessive freedom or too restrained will be the background that causes students to violate discipline in class.

Facility factor, is an obstacle in class management. These factors include: a. Number of students in the class, "There are two points of view related to establishing the right class size. If the class size is too large, the number of students is directly related to improving the quality of teaching. However, in terms of financing, the reduction in the number of students in one class will certainly result in increased funding that must be spent; b. The size of the classroom, that there is no optimal class size for all situations. The optimal class size must be related to the nature of the learning objectives to be achieved. The classroom must be proportional to the number of students and consider students to move in the class and the class must be modified so that it becomes a comfortable and enjoyable room for students.

According to Loisell in Milan Rianto (2007), class design is an absolute necessity because the study room must be conducive, visibility, accessibility, flexibility, safe, comfortable, beautiful and pleasant. Availability of tools, the insufficient number of books or other tools that are not in accordance with the number of students who need them will cause classroom management problems. This room psychologically will influence thinking, activity, and acting for students. It is feared that narrow classrooms and school environments will give birth to graduates who are apathetic, uncreative and have narrow minds.

Class Management Functions

The function of class management is actually the implementation of management functions that are applied in the classroom by the teacher to support the learning objectives they want to achieve. These functions include: Planning, organizing, leading and controlling. Planning, that planning is the process of determining what to do and how to achieve it. Thus planning is making a target that will be achieved in the learning process that will be carried out. The application of the PBSC concept, in organizing the class, personally each teacher has competence, in line with this, quoting the views of Iswan, et al (2020:122). In the journal *International Journal of Psychosocial*

Rehabilitation, ISSN: 1475-7192. The application of concept / management theory about personal balanced scorecard in Islamic education a process or series of activities that integrate resource processes by competitiveness and it must be integrated in the stages of implementation of the management function, in this case the class management process is not free from the ability of an educational institution, one of its aspects is the condition, infrastructure, and the ability to provide a budget. Thus what is done is, set carefully, goals and actions. Apart from that, the actions taken include reviewing appropriate resources and methods and techniques.

Organizing is a process where the work is divided into components that can be handled and activities coordinate the results to be achieved so that the goals set can be achieved. So organizing, namely determining the resources needed to achieve organizational goals, designing management and giving authority to individuals who are competent in their fields. Leadership is related to the ability that a person has in influencing others, because it is essentially related to humans. Teachers become role models and leaders in the course of the learning process. Therefore, a teacher must have a firm and flexible and democratic attitude. Controlling, through planning that is done in advance, the teacher is obliged to ensure whether the course of the learning process is in accordance with the plan.

Learning achievement

The meaning of learning in general is the change in one's behavior. However, this opinion was developed by several experts, for example Slameto (2010: 2), argues that "Learning is a business process that is carried out by a person to obtain a whole new change in behavior, as a result of his own experiences in interaction with his environment. Meanwhile, Sardiman revealed that learning is a change in behavior or appearance, with a series of activities such as reading, observing, listening, imitating and so on. According to Gagne, quoted by Nurdin Ibrahim (2001: 487), explained that: "Learning is a change in human disposition or capabilities. Changes in showing performance (behavior) means that learning determines all the skills, knowledge, attitudes, and values that students acquire. In learning a variety of different behaviors are generated, such as knowledge of attitudes, skills, abilities, information and values. " Thus, learning is a change in behavior or appearance as a result of interaction with the environment through the process of reading, observing, listening, imitating and so on.

Factors Affecting the Learning Process

The success of a learning process will be influenced by many factors. Slameto classifies the factors that affect the learning process into 2 groups, namely: internal factors

including: physical factors, psychological factors, external factors, including: family factors, school factors, community factors, explaining in more detail about the factors that affect the learning process, namely: internal factors, including: attitudes towards learning, learning motivation, learning concentration, processing teaching materials, the ability to save learning outcomes, the ability to explore stored learning outcomes, learning outcomes performance, student self-confidence, intelligence and learning success, learning habits, the students' big dream.

Learning achievement

Learning achievement according to Nana Sujana (2000:22), is the abilities that students have after receiving their learning experiences. Learning achievement is a skill that consists of three types, namely the ability to face and adapt to new situations quickly and effectively, to know / use abstract concepts effectively, to know relationships and learn them quickly. Meanwhile, learning achievement according to Hadari Nawawi (1981:100), is the level of student success expressed in the form of scores obtained from test results regarding the amount of certain subject matter. Another opinion Syaiful Bahri said "The achievement of educational assessments is about the development and progress of students who are willing to master the learning materials that have been presented and the values contained in the curriculum." Mohamat Ali (2012:80), argues that high achievement in his field is not necessarily achieved by someone because he has talent. In other words, achievement requires a learning process or interaction with a concept, whereas intelligence without going through a learning interaction process is not an achievement.

Thus, learning achievement is not only knowing or using abstract concepts effectively, but also includes the ability to face and adapt to new situations quickly and effectively as well as to know relationships and learn them quickly which is expressed in the form of scores obtained from test results regarding a certain amount of subject matter.

Distribution in Learning Achievement

According to Winkel, (1996:244), the systematics of the division/classification of achievements is not based on a self-determined systematics (which is arbitrary), as occurs in the library catalogues, which classifies books in alphabetical order on the author's name, book title or topic. The taxonomy or classification is as follows: Cognitive domain, Knowledge, Comprehensive, Application, Analysis, Synthesis, Evaluation, Affective domain), Receiving, participation (responding), valuing, organization (organizing), formation of life patterns (characterization by value of value complex), Psychomotor domain (Psychometric domain), Perception (perception), Readiness (Set), guided movement (guided response), movement that is used (mechanical response), complex

movement (complex response), adjustment of movement patterns (adjustment), creativity (creativity).

Research methods

The method used in this research is the correlation research method, because the correlation method is a method to find out between two variables. The two variables to be investigated are usually coded X and Y variables. This correlation method is carried out by distributing questionnaires to grade VI students to measure the implementation of classroom management carried out by the teacher. Then to get data about student achievement, namely score data of grade VI students.

Operational Definition of Variables

According to conceptual definition, class management is defined as a series of processes carried out by teachers to organize students and classrooms so that teaching and learning activities take place effectively, efficiently, attractively and pleasantly. The series of processes includes: classroom arrangement, student seating, ventilation and lighting arrangements, learning facilities and infrastructure, teaching aids, classroom decoration, and student grouping. Class management is carried out by the teacher to create and control a conducive classroom situation so that students can learn as best as possible for the smoothness of the teaching and learning process. Operational definition. The data used as variable X is in the form of a questionnaire containing questions about class management that are adjusted to the aspects described.

Variable Y (Learning Achievement)

Conceptual definition, learning achievement is a skill that consists of an educational assessment of the development and progress of students who are willing to master the learning materials that have been presented and the values contained in the curriculum, operational definitions, and data on student achievement.

Population and Sample

Population is the entire population which is intended to be investigated. In this study, researchers used a population of all Grade VI students of SD Lab School FIP-UMJ. Indonesia, which numbered 34 students. Sample, is part of the population that has certain characteristics or conditions to be studied. To determine the sample in this study, researchers took all students as many as 34 students who were used as samples in this study.

Data collection technique

The data collection technique used is to use: Questionnaire. This is a list of questions given to other

people who are willing to respond (respondents) according to user requests. Documentation, aimed at obtaining data directly from the research site, includes relevant books, regulations, activity reports, photographs, documentary films, and relevant research data. The instrument used was a questionnaire about the implementation of classroom management. Measurement of classroom management implementation, in the form of statements about teacher activities in class. The total number of statements in total is 20 items. The statement criteria have the following rating weights:

SL = Always the weighted value is 4

S = Often, the weighted value is 3

K = Sometimes the weight value is 2 TP = Never, given a value of 1

Indicators from the preparation of the questionnaire used in the study.

Table 1. Variable X research instrument grays:

No.	Variable	Indicator	Item Number
1.	Classroom Management Implementation (Variable X)	Teaching and Learning Conditions and Situations	1-5
		a. Physical condition	6-10
		b. Socio emotional conditions	11-15
		c. Organizational conditions	15-20
		Discipline and order	

Data analysis technique

To obtain data on classroom management, use a frequency table with the help of the SPSS for Windows Version 22.0 program, to determine the effect of classroom management on learning achievement, first using the validity test, reliability test, normality test then linear regression analysis with the following formula:

Validity test

In this study, the level of validity of the questionnaire used content validity

Validity. Each statement is compiled based on existing theory in order to obtain a valid questionnaire. Then the questionnaire is arranged based on the grid, by first dividing each variable into indicators. To calculate the validity of the questionnaire, use a formula

$$Product\ Moment: r = \frac{N \sum XY - (\sum x)(\sum Y)}{\sqrt{(n(\sum X^2) - (\sum X)^2)(n(\sum Y^2) - (\sum Y)^2)}}$$

Information: r = correlation number X = score for each question item

Y = total score

N = number of tables

Reliability

The level of reliability is a measure of consistency and productivity. The questionnaire in this study was tested on 10 elementary school teachers. Testing reliability of Alfa

Cronbach namely $r_{11} = \frac{\sum St^2 - \sum p^2 q^2}{N-1}$

Information:

r11 = Reliability coefficient

N = Number of items

Σ = Constant number

St2 = Total variation

pi = The proportion of testers who answered correctly

qi = The proportion of testers who answered incorrectly (qi = 1. pi)

Normality test

To determine the normality of the data, researchers used the formula $K_2 = \frac{\sum i^3 - n i^2}{n^3 - 3n^2}$

n

Information:

I = up to ... i

N = Number of Linear Regression Test data

To find out whether the variable X partially has a significant effect on variable Y, the researchers used a simple linear regression formula. In this study, the significant level to be used is 5% or 0.05.

Simple linear formula:

Y = a + b. X Description:

Y: The dependent variable

X: The independent variable

A and b: constants

Research Findings

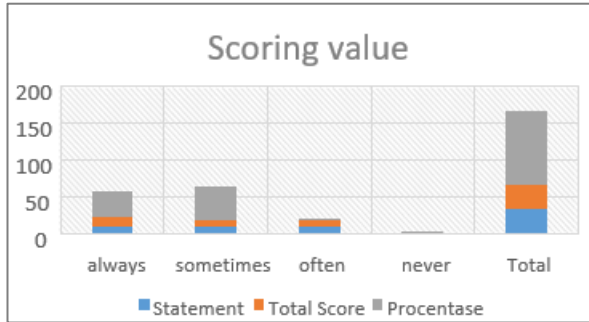
To obtain data for variable X is by distributing a questionnaire containing 20 items with alternative answers always, often, sometimes and never. The score for each statement with the answer is always given a weighting value of 4, answers are often given a weighted value of 3, answers are sometimes given a weighted value of 2 and answers are never given a weight of 1. Respondents filled out a questionnaire about the implementation of classroom management, totaling 34 respondents from each The statement items are scored then the results of the score are tabulated. After being scored, the percentage of the score results is made as follows:

Table 2. Percentage of Score Result

No.	Statement	Score Result	Percentage
1.	Always	12	54%
2.	Sometimes	10	45,3%
3.	Often	10	0,6%
4.	Never	2	0,1%
Total		34	100%

The data presented in this study are variable data X, namely the results of filling out the questionnaire, while variable Y is the result of the first semester Mid Term Test scores. appears (mode), while the size of the distribution to

be described is the standard deviation (standard deviation), and hypothesis testing, such as the following graph:



Graph 1. Scoring Result

Data Analysis

Validity test, using the product moment correlation formula, obtained rcount of 20 items, with a sample of 34 respondents, with a value of $\alpha = 0.05$.

To find out the validity of the items, the r_{count} value must be greater than $r_{table} = 0.273$. Rhitung value from the results of the validity test.

Table 3. Recapitulation of r_{count} value in the validity test research instrument

No.	r_{count}	r_{table}	Information
1.	0,69	0,27	Valid
2.	0,54		Valid
3.	0,34		Valid
4.	0,37		Valid
5.	0,37		Valid
6.	0,37		Valid
7.	0,56		Valid
8.	0,58		Valid
9.	0,60		Valid
10.	0,39		Valid
11.	0,66		Valid
12.	0,58		Valid
13.	0,34		Valid
14.	0,29		Valid
15.	0,70		Valid
16.	0,34	0,27	Valid
17.	0,30		Valid
18.	0,75		Valid
19.	0,79		Valid
20.	0,30		Valid

Reliability

Through calculations with SPSS version 22.0, the

Cronbach Alpha reliability coefficient value. The result of the above calculation means that the question instrument can be said to be reliable, meaning that the instrument can be trusted for data collection because the reliability coefficient exceeds 0.6.

Normality test

To determine the normal distribution of the data, the normality test was carried out by using the One-Sample Kolmogorov Smirnov test using the SPSS 22.0 for Windows program with a significance level of 0.05.

The hypothesis in the pretest data normality test is as follows:

H_0 : the sample comes from a normally distributed population

H_1 : the sample comes from a population that is not normally distributed the decision-making criteria are:

- 1) If the significance value is smaller than 0.05 then H_0 is rejected
- 2) If the significance value is greater than 0.05 then H_0 is accepted

After processing the data, the output display can be seen in Table 4.4

Table 4. Normality Tests of Normality Distribution

Class	Kolmogorov-Smirnov ^a		
	Statistic	Df	Sig.
Respondent	,063	90	,200*

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Based on the results of the normality test output using the *Kolmogorov Smirnov* test, the significance value is above 0.200. The significance value is greater than 0.05. Based on the decision making criteria, H_0 is accepted. This shows that the sample comes from a normally distributed population.

Hypothesis Test

Based on the results of the normality test, it was found that the data were normally distributed, so that the average similarity test could be continued using linear regression through the SPSS 22.0 for Windows program using the Independent Sample T-Test with a significance level of 0.05. The hypothesis in the mean similarity test is as follows:

H_0 : Implementation of class management has no effect on learning achievement in Lab Elementary School, FIP-UMJ.

H_a : Implementation of class management has an impact on learning achievement in Lab Elementary School,

FIP-UMJ.

When formulated into a statistical hypothesis are as follows:

Ho: $\mu_1 = \mu_2$

Ha: $\mu_1 > \mu_2$

Because the test is carried out for one-party test, the test is based on the test criteria, namely "Accept Ho if $t_{count} \leq t_{1-\alpha}$ and reject if t has a significance level of 0.05". After processing the data, the t-test results can be seen in the following table:

Table 5. Descriptive Statistics

	Mean	Std. Deviation	N
Student achievement	87,37	7,048	34
Classroom Management Implementation	3,53	,261	34

Descriptive statistics table data above can be analyzed.

The number of respondents who became the sample was 34 people. The average value of learning achievement was 87.3 with a standard deviation of 7.04. The standard deviation of 7.048 means that if it is related to an average achievement of 87.37, the achievement will be between 87.37 ± 7.048 with an average management class score of 3.53.

Table 6. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,590 ^a	,348	,341	5,722

- a. Predictors: (Constant), Classroom Management Implementation
- b. Dependent Variable: Student achievement

Based on the summary table above, it can be finalists, that the influence between the implementation of classroom management, learning achievement is very positive, namely $r = 0.590$. The positive meaning is that the relationship between the X and Y variables is unidirectional, that is, the stronger the application of classroom management, the better the learning achievement obtained.

Table 7. ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1539,953	1	1539,953	47,039	,000 ^b
	Residual	2880,947	88	32,738		
	Total	4420,900	89			

- a. Dependent Variable: Student achievement
- a. Predictors: (Constant), Classroom Management Implementation

Analysis of the ANOVA Table:

1. Make a hypothesis in a sentence description.

Ho: Simple linear regression model cannot be used to predict that the implementation of classroom management

can affect learning achievement. Ha: A simple linear regression model can be used to predict that the implementation of classroom management can affect student achievement.

2. Test rules

a. Based on the comparison between F_{count} and F_{table}

If: $F_{count} \leq F_{table}$ then H_o is accepted

If: $F_{count} > F_{table}$ then H_o is rejected

Where the value of F_{count} from the ANOVA table is 47.039 and $F_{table} = 3.94$

b. Based on the probability value

If probability (sig) $> \alpha$ then H_o is accepted

If probability (sig) $< \alpha$ then H_o is rejected

Where: based on the test results in the ANOVA table the probability value (sig) = 0.00 and the significant value level 0.05, Comparing F_{table} with F_{count} and sig and α Turns out: $F_{count} = 47.039 > F_{table} 3.94$, then H_o is rejected Turns out: $0,00 < 0,05$, then H_o is rejected.

The decision, a simple linear regression model can be used to predict learning achievement that is affected by the implementation of classroom management.

Table 8. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	31,147	8,219		3,790	,000
	Classroom Management Implementation	15,929	2,322	,590	6,858	,000

a. Dependent Variable: Students' achievement

The regression equation test is used in two ways, namely: based on the t test and based on probability

1. Based on the t test

There are some steps below:

a. Make a hypothesis in the form of a sentence

Ho: there is no influence between class management and learning achievement. Ha: there is an influence between the implementation of classroom management on learning achievement.

b. Make a hypothesis in the form of a statistical model

Ho: $\rho = 0$

Ha: $\rho \neq 0$

c. Test rules

If $t_{-table} \leq t_{count} \leq t_{table}$ H_o is accepted

If $t_{count} > t_{table}$ then H_o is rejected

From the Coefficient (a) table, the $t_{count} = 3.790$ is obtained

The value of the t_{-table} can be found using the Student t_{-table} .

$$T_{table} = t_{(\alpha/2)(n-2)} = t_{(0,05/2)(90-2)} = t_{(0,025)(88)} = 1,960$$

d. Comparing t table with t count

It turns out that $t = 3.790 > t_{table} = 1.960$, so H_0 is rejected

e. Making decisions

There is a significant influence between the implication of classroom management on learning achievement.

Based on the probability technique, and the steps are

a. Making a hypothesis in the form of a sentence

H_0 : there is no influence between the implementation of classroom management on students' achievement.

H_a : there is an influence between the implementation of classroom management on students' achievement.

b. Making a hypothesis in the form of a statistical model

$$H_0: \rho = 0$$

$$H_a: \rho \neq 0$$

c. Determining the testing criteria

If: $\text{sig} \leq \alpha$ then H_0 is rejected

If: $\text{sig} > \alpha$ then H_0 is accepted

From the coefficient table (α), the value of $\text{sig} = 0.000$ is obtained

The value of α , because of the two-sided test, α is divided in two, so that the value of $\alpha = 0.05 / 2 = 0.025$

d. Comparing t table with t count

It turns out: $\text{Sig} = 0.000 < 0.025$, so H_0 is rejected

e. Making decisions

There is a significant influence between the implementation of classroom management on student achievement.

3. Conclusion

1. Implementation of classroom management, in Class VI SD students. Lab. School FIP-UMJ. Indonesia., Proven based on the results of statistical tests using the t-test using the SPSS 22.0 for Windows program using the Independent Sample TTest (equal variance assumed) with a significance level of 0.05, it is known that $t_{count} = 3.790$ and t_{table} with $t_{1-\alpha} = t_{0.25} (88) = 1.645$.
2. How to improve students' achievement in Class VI SD Lab School FIP-UMJ. Indonesia, as evidenced by the statistical results of the average value, from the value of learning achievement is 87.37 with a standard deviation of 7.048. The standard deviation of 7.048 means that if it is associated with an average achievement of 87.37, the achievement will be between $87.37 + -7.048$ with an average score of classroom management implementation of 3.53
3. The effect of management implementation on student achievement of Class VI SD Lab School FIP-UMJ.

Indonesia. The results can be proven based on the results of statistical tests, and it turns out that $t_{count} = 3.790 > t_{table} = 1.960$, then H_0 is rejected, then $t_{count} > t_{table}$, then H_0 is rejected. Indonesia.

REFERENCES

- [1] Ali Abdi , "The Effect of Inquiry-based Learning Method on Students' Academic Achievement in Science Course," Universal Journal of Educational Research, Vol. 2, No. 1, pp. 37 - 41, 2014. DOI: 10.13189/ujer.2014.020104.
- [2] Aho, E ., Haverinen, H L., Juuso, H., Laukka, S., Sutinen, A. Teacher's principles of decision-making and classroom management; A case study and a new observation method. *Procedia - Social and Behavioral Sciences*. 9. 395-402, 2010. 10.1016/j.sbspro.2010.12.171
- [3] Akan D., Basar M. The effect of classroom activities on classroom management in the teaching-learning process: The case of Uşak City. *Mevlana International Journal of Education* 3(4), 147-165, 2013. <http://dx.doi.org/10.13054/mije.13.63.3.4>.
- [4] Allen J. Classroom Management: Students' Perspectives, Goals, and Strategies. *American Educational Research Journal* 23(3), 1986. 10.2307/1163059
- [5] Asep S., Ade, R. Education Management. UPI Educational Administration Lecturer Team. Publisher: PT. Alfabeta. Bandung. Indonesia, 2010.
- [6] Dedi Sudirman. *Management Basics, Prints to 1*. Publisher: PT. ARMICO. Bandung. Indonesia, 1996.
- [7] Dobrescu T., Emilia F G. Aspects Regarding Classroom Management and its Part in Making the Educational Process More Effective. *Procedia - Social and Behavioral Sciences*. 141. 465-469, 2014. 10.1016/j.sbspro.2014.05.082.
- [8] Erdogan M ., Kurt KA. Review of Research on Classroom Management in Turkey. *Procedia - Social and Behavioral Sciences*. 186, 9-14, 2015. DOI: 1410.1016/j.sbspro.2015.04.212
- [9] Gagne N I. Physics Learning Outcomes of Tanjung Sari Sumedang Open Junior High School, West Java (*Journal of Education and Culture*, No. 031, Year-7, September 2001). Indonesia, 2001.
- [10] Imron A I. *Education Management*. Publisher: Universitas Negeri Malang. Indonesia, 2003.
- [11] Iswan. Applying Personal Balanced Scorecard (PBSC) Concept in Islamic Education. *International Journal of Psychosocial Rehabilitation*, 24, 5, page: 120-127, 2020.
- [12] Maman R. *Class Management*. Jakarta: Dikbud Dikti PPGSD IBRD Loan Indonesia, 1999.
- [13] Nawawi H. *Education administration*. Publisher: Toko Gunung Agung. Jakarta. Indonesia, 1997.
- [14] Rianto M. *Classroom Management with Pakem Model*. Publisher: Dirjen PMTK. Jakarta. Indonesia, 2007.

- [15] Rohani A. *Teaching Management*. Publisher: PT. Rineka Cipta. Jakarta. Indonesia, 2010.
- [16] Sardiman. *Teaching and Learning Interaction & Motivation*. Publisher: PT. Raja Grafindo Persada. Jakarta. Indonesia, 2011.
- [17] Slameto. *Learning & Affecting Factors*. Publisher: PT. Rineka Cipta. Jakarta. Indonesia, 2010.
- [18] Soekarno. *Fundamentals of management*. Publisher: CV. Miswar. Jakarta. Indonesia, 1980.
- [19] Thoifuri. *Become an Initiator Teacher*. Publisher: STAIN Kudus Press. Semarang. Indonesia, 2008.
- [20] Yamin M. *New Paradigm of Learning*. Publisher: GP Press. Jakarta. Indonesia, 2013.
- [21] Yaşar S. Classroom management approaches of primary school teachers. Unpublished Master Thesis. Middle East Technical University, 2008.
- [22] Winkel. *Teaching Psychology*. Publisher: PT. Grasindo. Jakarta. Indonesia, 1996.
- [23] Rusydie S. *Classroom Management Principles*. Publisher: Diva Press. Yogyakarta. Indonesia, 2011.
- [24] Sanjaya N. *Learning in Competency-Based Curriculum Implementation*. Publisher: PT. Kencana Prenada Media Grup. Jakarta. Indonesia, 2005.
- [25] Bahri Yusof M S. *Using Feedback to Enhance Learning and Teaching*. Centre for Academic Excellence & Student Advisory and Development (CDAE), Universiti Sains Malaysia (USM).
- [26] Alshemmeri F., Putih A., Siraj S., Khan A., Abdallah N. *Art Ability and Academic Achievement in the Kingdom of Saudi Arabia: Role of Age and Sex*. *New Educational Review*, 26 (4), 238-247, 2011.

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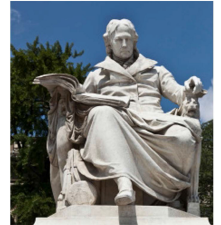
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