THE RELATIONSHIPS BETWEEN INFLUENCING FACTORS AND CRITICAL THINKING SKILLS AMONG UNDERGRADUATES OF EARLY CHILDHOOD EDUCATION IN PUBLIC TERTIARY INSTITUTIONS

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ABSTRACT

This study aims to identify the relationships between influencing factors and critical thinking skills among undergraduates of early childhood education in public tertiary institutions. The study also analyses the contribution of the influencing factors towards critical thinking skills. Quantitative approach with survey research design was adopted for this study. A number of 226 undergraduates who enrolled in early childhood education programme from public tertiary institutions were chosen as the respondents. Data were analysed using descriptive and inferential analyses. The descriptive analysis explained the level of critical thinking skills and the influencing factors of the critical thinking skills. The inferential statistics which involved Pearson correlation and multiple regression analyses explained the relationships and contribution between the studied variables. The findings showed that the respondents have a moderate level of critical thinking skills which was (M = 50.60, SD = 8.467) The environment factor was at a high level (M = 4.14, SD = 0.530) while the quality of teaching factor was at a moderate level (M = 3.52, SD = 0.553) and the motivation factor was also at a moderate level (M = 3.44, SD = 0.529). Pearson correlation analysis showed that there were significant relationships between the environment and the critical thinking skills $r(226)= 0.757$, ($p<0.001$), the quality of teaching $r(226)= 0.454$, ($p<0.001$), as well as the motivation $r(226)= 0.425$, ($p<0.001$) among the undergraduates of early childhood education in the public tertiary institutions. The overall results of the multiple regression analyses indicated that the contribution of influencing factors towards the critical thinking skills was 43.10% ($R^2= 0.431$, $p<0.005$) and the best predictors of influencing factors was the environment ($\beta= 0.426$). As a conclusion, identifying the factors that influence the critical thinking skills among the undergraduates of early childhood education is important to enhance the education programmes offered by the public tertiary institutions. The implication of the study highlights the needs to consider the influencing factors of critical thinking skills in order to plan and implement effective curriculum and pedagogy for the undergraduates of early childhood education in public tertiary institutions.

HUBUNGAN ANTARA FAKTOR PENGARUH DAN KEMAHIRAN PEMIKIRAN KRITIS DALAM KALANGAN PRASISWAZAH PENDIDIKAN AWAL KANAK-KANAK DI INSTIUSI PENGAJIAN AWAM

ABSTRAK

Kajian ini bertujuan untuk mengenal pasti hubungan antara faktor pengaruh dan kemahiran pemikiran kritis dalam kalangan prasiswazah pendidikan awal kanak-kanak di institusi pengajian tinggi awam. Kajian ini juga menganalisis sumbangan faktor-faktor yang mempengaruhi kemahiran pemikiran kritis. Pendekatan kuantitatif dengan reka bentuk kaedah tinjauan telah digunakan dalam kajian ini. Seramai 226 prasiswazah pendidikan awal kanak-kanak dari institusi pengajian tinggi awam telah dipilih sebagai responden. Data dianalisis menggunakan analisis deskriptif dan analisis inferensi. Analisis deskriptif menerangkan tahap kemahiran pemikiran kritis, dan faktor pengaruh kemahiran pemikiran kritis manakala analisis inferensi yang melibatkan Korelasi Pearson dan analisis regresi berganda menerangkan hubungan dan sumbangan antara pembolehubah yang dikaji. Hasil kajian menunjukkan responden mempunyai tahap kemahiran pemikiran kritis sederhana iaitu (M = 50.60, SP = 8.467). Faktor persekitaran berada pada tahap yang tinggi (M = 4.14, SP = 0.530), faktor kualiti pengajaran berada pada tahap sederhana (M = 3.52, SP = 0.553) dan faktor motivasi juga pada tahap yang sederhana (M = 3.44, SP = 0.529). Analisis Korelasi Pearson menunjukkan terdapat hubungan yang signifikan antara persekitaran dan kemahiran berfikir kritis $r(226)= 0.757$, ($p<0.001$), kualiti pengajaran $r(226)= 0.454$, ($p<0.001$), dan motivasi $r(226)= 0.425$, ($p<0.001$) dalam kalangan prasiswazah pendidikan awal kanak-kanak di institusi pengajian tinggi awam. Secara keseluruhan, keputusan analisis regresi berganda menunjukkan bahawa sumbangan faktor pengaruh terhadap kemahiran pemikiran kritis adalah 43.10% ($R^2= 0.431$, $p<0.005$) dan peramal terbaik faktor pengaruh adalah faktor persekitaran ($\beta= 0.426$). Sebagai kesimpulan, mengenal pasti faktor pengaruh terhadap kemahiran pemikiran kritis dalam kalangan prasiswazah pendidikan awal kanak-kanak adalah penting untuk penambahbaikan program pendidikan awal kanak-kanak yang ditawarkan di pusat pegajian tinggi tempatan. Implikasi kajian ini menekankan bahawa keperluan untuk melaksanakan kurikulum dan pedagogi yang berkesan untuk prasiswazah pendidikan awal kanak-kanak di institusi pengajian tinggi awam.

CONTENTS

CHAPTER 4 FINDINGS

CHAPTER 5 SUMMARY, DISCUSSION, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS FOR THE FUTURE RESEARCH

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

APA	American Philosophical Association
CCTS	California Critical Thinking Skills Test
CCTT	Cornell Critical Thinking Test
CLA	Collegiate Learning Assessment
CTS	Critical thinking Skills
ECE	Early childhood education
EECE	Early Child Care and Education
ITE	Institute of Teacher Education
MOE	Ministry of Education
MOHE	Ministry of Higher Education
MQA	Malaysian Qualification Agency
MWFCD	Ministry of Women, Family and Community Development
MYCT	Malaysian Critical Thinking Skills Instrument
NSPC	National Standard Preschool Curriculum
SPSS	*Statistical Package For The Social Science*
TEP	Theory of Educational Productivity
WGCTA	Watson-Glaser II Critical Thinking Appraisal

CHAPTER 1

INTRODUCTION

1.1 Introduction

Education sector is one of the sectors which contribute to the development of human capital. Regarded as development agent, this sector also bridges knowledge, training, potential, interest and other human quality elements as human capital to a more dynamic, innovative and progressive dimensions in order to achieve the country's aspiration in becoming a developed and high income nation. Thus, the role of education is to shape the quality of the students not only from the aspects of academic, co-curriculum and personality but also a paradigm shifts in enhancing human capital quality through innovation and intellectual capability.

The twin forces of globalisation and internationalisation have put a critical demand on the education system in Malaysia to transform dynamically in measuring up to the global needs of the 21st century and achieving the advanced nation status vision by 2020. One of the key challenges in this perspective is to prepare students with real life skills for tomorrow's knowledge based economy that will enable them to be relevant individuals who are capable of creativity and innovative skills to be able to compete in the global labour market. Hence, the National Education Blueprint (2013-2025) is grounded based on high-performing systems which promote a transformation of the Malaysian education system in line with the vision of Malaysia's National Philosophy in achieving world class status. The objectives of the blueprint advocate a set of refined articulation of the specific skills and attributes which include cognitive skills, creative thinking, critical thinking, innovative thinking and reasoning.

Critical thinking skills are essential skills for life, work, and function effectively in all other aspects of life. Recent trends in the education domain emphasize the importance of critical thinking skills for academic success and life. Critical thinking has been called one of the most important attributes for success in the 21st century (Huitt, 1998). Critical thinking is reasoned, reflective thinking focused on deciding what to believe or what to do (Ennis, 1996). Meyers (1986) argued that for students to reach their fullest potential in today's society, they must learn to think and reason critically.

People think critically when they are trying to solve a problem, assess an argument, decide about a belief, or make a decision in general. In this respect, individuals

who have the tendencies of critical thinking can cause differences in economics and social studies having higher cognitive skills. In other words, it is a conscious and deliberate process involving the interpretation and evaluation of information or experience.

1.2 Background of the Study

Early childhood education is a challenging educational field. From early childhood through adolescence, children's cognitive functioning changes greatly. Social and intellectual activities need a great deal of cognitive functioning. Children form concepts of the nature of knowledge that contributes to abilities to reflect on one's thought processes and evaluate the reasoning of others (Pillow, 2008). A teacher is an agent of change. Teachers are expected to play a role to bring positive changes for the students and school. In addition to the role played in the context of the curriculum, learning and evaluation, a teacher is also exemplified by the students in terms of personal habits that make. Hence, Malaysia Education Blueprint (PPPM 2013-2025, 2012) stated prepare the nation to be competitive at the international level and producing a balanced education as a fundamental aspiration of students.

Education system in Malaysia focuses on rote learning instead of thinking skills (Rajendran, 2004; Marina & Shaharom, 2011). Consequently, students are fundamental may not be able to generate creative ideas on what have been learned and apply critical

thinking skills. Education in Malaysia is generally exam-oriented learning, the conventional teaching and learning cause students to learn by rote memorization as preparation to pass in the examination (Mohd. Ali & Shaharom, 2003; Toh, 2003; Masrah, 2010). Thus, students' ability is measured by performance in examination. However, there are many obstacles to promote thinking skills among students. Among the biggest factor affecting these obstacles is emphasis on examinations and emphasis on the memorization of facts or information which promote thinking skills among students.

The factors that cause the level of thinking skills of students with teaching methods that are presented by teachers. Effective teaching can enhance learning in students (Esah Sulaiman, 2003). According to Tang (2012), the process of teaching and learning in Malaysia is still teacher-centred approach and less attention to the cognitive development of students' thinking. Therefore, teacher-centred approach is less effective for improving students' thinking skills as teacher-centred approach students do not engage actively in learning.

Akbariah (2011) stated in the international scenario, most of the higher education abroad has issued a mandate requiring formal teaching of critical thinking skills to all university courses. In Malaysian context, these drastic change are still in a preliminary stage, but efforts towards change are still going on. At the university level, all faculty members are required to integrate generic skills such as critical thinking, creativity and effective communication in the teaching and learning process.

In the Malaysian context, the Malaysian Institute of Higher Learning interprets soft skills as incorporating aspects of generic skills which include non-academic skills such as communicative, critical thinking and problem solving, team work, life-long learning and information, entrepreneurship, ethic and professional moral, and leadership. These are the seven soft skills to be embedded in the curriculum at institutes of higher learning (Ministry of Higher Education Malaysia, 2006). The tertiary institutions took the challenge by introducing soft skills into Bachelor of Teaching programmes since 2007 with the aim of developing soft skills among pre service teacher in the universities.

At the same time, the Ministry aims to transform the Institute Teacher Education (ITE) into a world-class teacher training university by 2020 as stated in the Malaysia Education Blueprint (PPPM 2013-2025). To do so, the Ministry will review the current preservice training curriculum to ensure that undergraduates are adequately prepared to teach the higher-order thinking skills and critical thinking skills desired of Malaysia's students.

In summary, the Ministry of Education Malaysia (2013) has recognised the aim of equipping Malaysian students with thinking skills as central to all their endeavours in order to actualise the vision of the national education philosophy. Therefore, there is a need to explore critical thinking skills among undergraduates of early childhood and factors influencing.

1.3 Statement of the Problem

Preparing teachers adequately to meet the demands to achieve universal primary education is a global challenge around the world (Goh & Gopinathan, 2008; United Nations Educational, Scientific and Cultural Organization (UNESCO), 2007). Currently, the field of teacher education is undergoing a major shift – a turn away from the main focus on specifying the necessary knowledge for teaching towards specifying teaching practices that entail knowledge and doing (Grossman, Hammerness, & McDonald, 2009; McDonald, Kazemi, & Kavanagh, 2013; Zeichner, 2012). This movement is stepping up to the change of preparing better student teachers to raise the quality of learning for students in the 21st century.

Lack of ability critical thinking skills leads to many social problems such as suicide, which is an acute worldwide issue and it has become an epidemic in Asia (Jin & Lee, 2011). In fact, the basic concepts of critical thinking being able to understand or figure out what the problem, conflict or contradiction and to direct thinking to the specific purpose of solving the problem. It is important that children learn to reason about information critically since it is not always accurate (Wirawani & Ismail Sheikh, 2014). As consequence, the teachers of early childhood education as an agent of change and expected to play a role to bring positive changes for students and schools.

One of the key findings from the research by Higher Education Leadership Academic (AKEPT) 2011 (Ministry of Education, 2012) indicated that 50% of teachers

observed failed to deliver their lessons effectively, particularly to inculcate higher order thinking skills which is one of the six key student attributes as embodied in the National Education Blueprint 2013-2025 (Ministry of Education, 2012). A total of 46% teaching staff lack qualifications as a constraint reported by principles and this situation admitted by MOE that some candidates enrolling in teacher training institutions did not meet minimum requirements of academic achievement at the secondary level in recent years (Malaysia Economic Monitor, 2013).

The tertiary institutions still practice exam-orientated learning which emphasizes more on low level cognitive activities like memorizing, remembering and understanding (Mohd. Ali et al., 2003). Students learn rote memorization as a preparation to pass in the examination. Thus, students' ability is measured by performance in examination. In fact, the role of tertiary institutions especially in education is to constantly improve the quality of students in order to provide quality teachers for the schools (Rasimah, Rohaizad, Yeop & Anuar, 2008). Besides that, limited tertiary institutions that offer subjects focus critical thinking and creative skills in education programs (Akbariah, 2011). As a consequence, the graduates are less skillful and have low ability in critical and higher order thinking skills in order to apply the knowledge they have learned well in many different situations for solving problems that arise in daily life (Yee, Jailani, Widad, Razali, Tee & Mimi Mohaffyza, 2015).

In the Malaysian context, a study found that after eleven years of school, students are still unable to apply critical thinking in their schools or real world situation (Rosnani

& Suhailah, 2003; Mohd Majid Konting, Norfaryanti, kamaruddin, Nor Azirawani, Adam & Abdullah, 2007). Besides that, Dian Hikmah and Mohd Zaidi (2016) stated that an unemployment problem among graduates keeps increasing and one of the reasons is the graduates' lack critical thinking skills and problem solving skills. Hence, it is important to find out the factors influencing critical thinking skills for the undergraduates especially for early childhood education. This is because, children are found to be able to think critically as early as three years old (Wirawani et al., 2014). Although critical thinking is seldom included in preschool curriculum, children are found to be able to think critically when they interact with their peers and adults (Pillow, 2008). The early childhood education teachers have huge responsibilities in order to guide the children in the way of thinking since they are young.

A preliminary study was conducted in year 2016, there were 120 undergraduates of early childhood education from one of a public tertiary institution in Malaysia who took the critical thinking skills survey. The result showed that majority of the undergraduates of early childhood education are at poor level (Poon, Mazlina & Wong, 2018). This is supported by the studies of (Goh & Matthews, 2011; Choy & Cheah, 2011) which stated that undergraduates did not seem to understand the requirement needed to cultivate critical thinking skills among students during practicum. The early childhood education's teachers are expected to assist children with physical, cognitive and social development (Wirawani et al., 2014). They need to observe children's development in every aspect and encourage those developments. These teachers are trained teachers and expected to deliver what is learned in the tertiary level into practice once they are put into

service in preschools and kindergartens. Therefore, early childhood teachers should master in critical thinking skills before to teach the children.

The Malaysian Qualification Agency (MQA) stated that there are needs to introduce soft skills into pro-forma (syllabus); have to improve the learning of all courses to cover three aspects of affective, cognitive and psychomotor learning. Besides that, have to revise the courses for professional components in order to produce teachers who can help students in mastering 3M skills and appreciate pure values and soft skills as well as assisting skilled teachers to handle pupils with learning disabilities. From the reports given by MQA, it is clear that the *Program Ijazah Sarjana Muda Penguruan* (PISMP) syllabus lacking in the teaching aspect of critical thinking or soft skills explicitly being reprimanded, an affective to affective aspect that is critical thinking is viewed as an important aspect in the formation of a quality teacher of trainees.

None of the research look at the factors influencing critical thinking skills among undergraduates of early childhood education in public tertiary education in Malaysia. In fact, students' ability to think critically has become a major concern among educators and psychologists especially in higher education level. Hence, researchers should try to study the factors influencing the acquisition of critical thinking skills. In the Malaysian context, most of the researches are concerned in the level of critical thinking skills and the relationships between critical thinking skills and achievement by using a different of techniques and methods (Marina Ali, 2006; Siti Rahayah & Nor Azaheen, 2010; Akbariah, 2011; Marina Ali et al., 2011; Rajendran, 2011; Nor' Azah & Shamsia, 2012;

Wan Norehan, 2013; Aziz, Safiah & Zanariah, 2014; Norfadelah, 2015). Only small part of the research has studied the factors associated with critical thinking skills. Therefore, there is a need to explore factors influencing the critical thinking skills especially in early childhood education.

There has been little research on the links between motivation and critical thinking skills among undergraduates early childhood education in public tertiary institutions. According to (Garcia & Printrich, 1992; Lai, 2011) a lot of factors contributed to rich decision making and critical thinking skills. One of the influencing factors that enhance critical thinking skills is motivation. Most researchers view critical thinking as including both skill and disposition. Thus, like metacognition, motivation appears to be a supporting condition for critical thinking in that unmotivated individuals are unlikely to exhibit critical thinking (Lai, 2011). Previous studies have examined the links between motivation and learning strategies but not the links between motivation and critical thinking skills.

Quality teaching can influence the critical thinking skills (Sabri Mohd, 2008; Mahapoonyanont, 2012; Thongnuypram, 2013). The National Higher Education Strategic Plan 2007-2020 enlisted seven strategic thrusts which include improving the quality of teaching and learning in higher education to increase the student's critical thinking skills (MQA, 2007). Critical thinking skills are also influenced by environment (Sabri Mohd, 2008; Mahapoonyanont, 2012; Thongnuypram, 2013; Rohmani & Agung, 2016). The environment included classroom, social media, family and peer environment influencing

critical thinking skills. However, in Malaysian context, there is limited research on the quality teaching and environment influencing critical thinking skills particularly in early childhood education.

Despite more than a decade of studies in this area and a variety of models proposed to explain the factors influencing critical thinking skills (Schanz, 2010; Mahapoonyanont, 2012; Thongnuypram, 2013; Kettler, 2014; Budsankom, Sawangboon, Damrongpanit & Chuensirimongkol, 2015; Mortellaro, 2015; Akgun & Duruk, 2016; Mohd Azhar, 2016; Rohmani et al., 2016). The result showed that no specific factors influencing critical thinking skills in Malaysian context. Thus, there are mixed results. Hence, the researcher needs to study which variables have both direct and indirect influence critical thinking skills, the researcher has gained an interest in investigating the factors influencing critical thinking skills among undergraduates of early childhood education in tertiary institution.

In summary, based on the problem statements, teacher education programs need to meet the expectations created by the increasing demand in developing the students' thinking skills and should effectively incorporate teaching for thinking into their curricula. Furthermore, there is a lack of research investigating the factors influencing critical thinking skills among undergraduates early childhood education in public tertiary institutions. Therefore, there is a need to explore undergraduates early childhood education current critical thinking skills and factors influencing the development of these abilities. From the findings of this study, policymakers and teacher educators can have a

better picture on the factors which have the most influential impacts on critical thinking skills and thus, design a curriculum that can boost the level of critical thinking skills.

1.4 Research Objectives

Specifically, the objectives of this research are as follows:

1.4.1 To identify the critical thinking skills level among undergraduates of early childhood education in public tertiary institutions;

1.4.2 To identify the environment level among undergraduates of early childhood education in public tertiary institutions;

1.4.3 To identify quality of teaching level among undergraduates of early childhood education in public tertiary institutions;

1.4.4 To identify motivation level among undergraduates of early childhood education in public tertiary institutions;

1.4.5 To determine the relationships between environment and critical thinking skills among undergraduates of early childhood education in public tertiary institutions;

1.4.6 To determine the relationships between quality of teaching and critical thinking skills among undergraduates of early childhood education in public tertiary institutions;

1.4.7 To determine the relationships between motivation and critical thinking skills among undergraduates of early childhood education in public tertiary institutions; and

1.4.8 To determine the contribution of environment, quality of teaching and motivation towards critical thinking skills among undergraduates of early childhood education in public tertiary institutions.

1.5 Research Questions

Research questions were formed in order to allow the researcher to achieve the objectives of the research. The research questions were specifically answering the following questions:

1.5.1 What is the critical thinking skills level among undergraduates of early childhood education in public tertiary institutions?;

1.5.2 What is the environment level among undergraduates of early childhood education in public tertiary institutions?;

1.5.3 What is the quality of teaching levels among undergraduates of early childhood education in public tertiary institutions?;

1.5.4 What is the motivation level among undergraduates of early childhood education in public tertiary institutions?**;**

1.5.5 What is the relationship between environment and critical thinking skills among undergraduates of early childhood education in public tertiary institutions?;

1.5.6 What is the relationship between quality of teaching and critical thinking skills among undergraduates of early childhood education in public tertiary institutions?;

1.5.7 What is the relationship between motivation and critical thinking skills among undergraduates of early childhood education in public tertiary institutions?; and

1.5.8 What is the contribution of environment, quality of teaching and motivation towards critical thinking skills among undergraduates of early childhood education in public tertiary institutions?

1.6 Hypothesis

H1: There is a significant relationship between environment and critical thinking skills among undergraduates of early childhood education in public tertiary institutions.

H2: There is a significant relationship between quality of teaching and critical thinking skills among undergraduates of early childhood education in public tertiary institutions.

H3: There is a significant relationship between motivation and critical thinking skills among undergraduates of early childhood education in public tertiary institutions.

H4: The variance in the critical thinking skills among undergraduates of early childhood education in public tertiary institutions are significantly explained by environment, quality of teaching and motivation.

1.7 The Theoretical Framework of the Study

In education, a curriculum is broadly defined as the totality of student experiences that occur in the educational process. According to (Wiles, 2008; Kelly, 2009) stated the term often refers specifically to a planned sequence of instruction, or to a view of the student's experiences in terms of the educator's or school's instructional goals. The curriculum includes the aims, objectives, teaching content, teaching strategies, assessment methods, and other components of learning and teaching in classrooms. Malaysia's emphasis on education provides equal opportunity to all school-age children. Equality and right to education are fundamental liberties enshrined in the Federal Constitution.

In the context of study, researcher applies teaching and learning strategies as a part in curriculum. Framework of the study is built based on four constructs of the constructs of the critical thinking skills by Siti Rahaya, Zolkefli, Rodiah, Nur Ashiqn, Shahrir, Basri and Nor Azheen (2008c) and environment, quality of teaching and

motivation established under the Theory of Educational Productivity (TEP) as shown in Figure 1.1. Siti Rahaya et al. (2008c) explains that the critical thinking skills should be viewed in four subscales which are reasoning, analytical and logical, disposition and assumption. Cognitive skills alone are not sufficient; therefore, willingness, ability, willingness consistent, motivation or inclination also plays a role in the efforts towards the effectiveness of critical thinking.

The theoretical framework of the study adapts from Theory of Educational Productivity (TEP) by Walberg, Fraser and Welch (1986) which is used to study the relationship between variables simultaneously and the formulation of the literature relevant factors that demonstrate the relevance of critical thinking and a variety of variables. Theory of Educational Productivity (TEP) is convenient to use because it combines with multiple variables in line with what is proposed Terenzini, Springer, Pascarella and Nora (1995) and Tsui (1998). TEP stated the variables that affect academic learning is made up of seven groups, namely (1) classroom morale, (2) peer group, (3) mass media, (4) family, (5) motivation, affect, self-concept, (6) instruction quality and (7) ability, IQ, previous achievement. In this study all seven variables that have an affinity with critical thinking are classified as work in the three groups' motivation, quality of teaching and environment (environment classroom, family, peers and mass media).

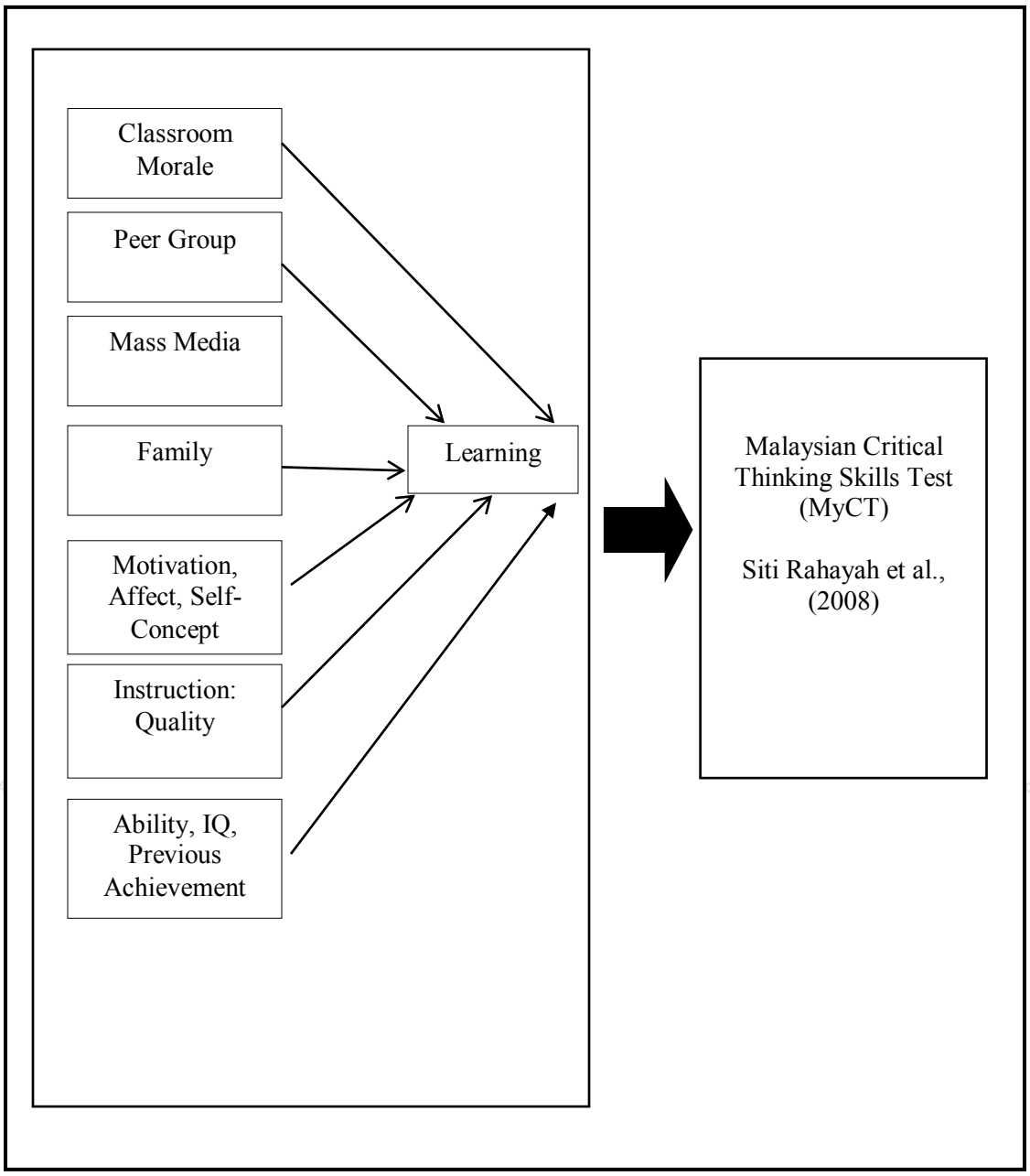

Figure 1.1. Theoretical Framework of the Study

1.8 Conceptual Framework of the Study

The study included four constructs which are environment, quality of teaching, motivation and critical thinking skills. Critical thinking skills are a cognitive activity, associated with using the mind. Learning to think in critically analytical and evaluative ways mean using mental process such as attention, categorization, selection, and judgment. Critical thinking skills are divided into four subscales measured by the reasoning, analytical and logical, disposition and assumptions. Environment factor divided into four subscales which are classroom, family, peers and mass media, followed by quality of teaching and motivation.

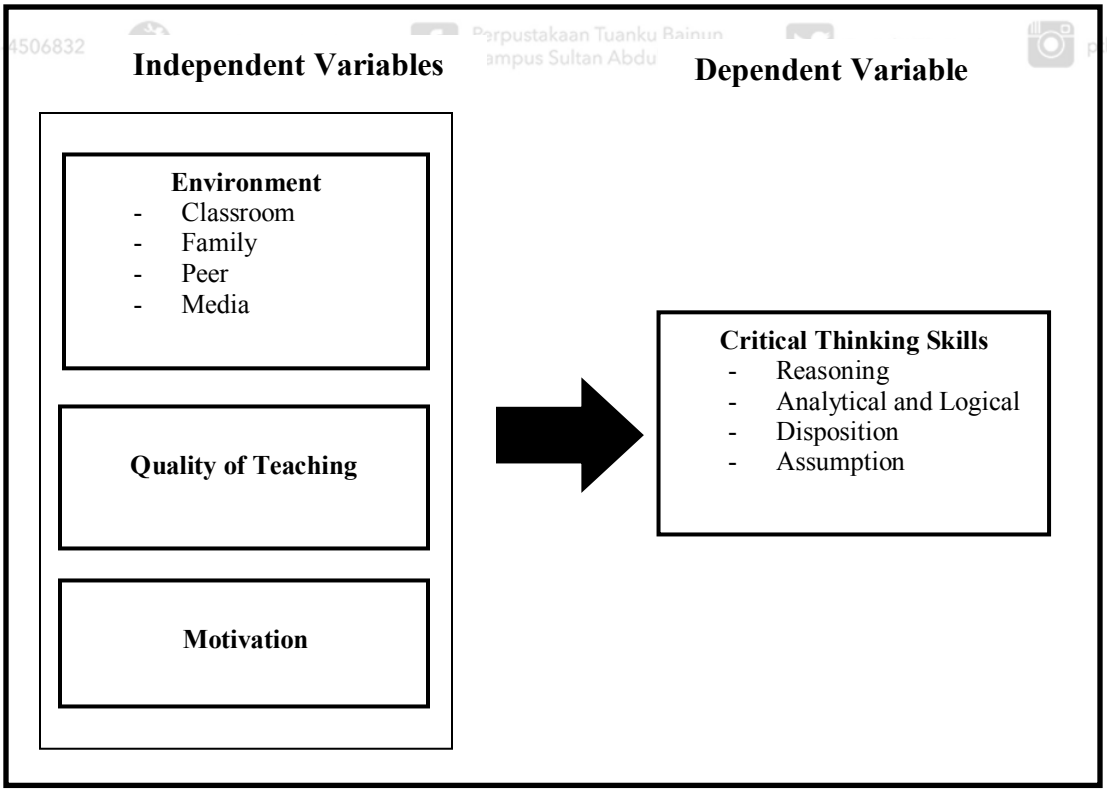

Figure 1.2. Conceptual Framework of the Study

The conceptual framework of this study was based on critical thinking skills constructs developed by Siti Rahayah et al., (2008c) and construct environment, quality of teaching and motivation under the Theory of Educational Productivity. The conceptual framework in Figure 1.2 shows the overall objectives of the study.

1.9 Significance of Study

To achieve all plans set out in the National Education Philosophy which is to produce students who are balanced in terms of physical, emotional, spiritual and intellectual meet the characteristics of developed countries that are competitive, students need to be open-minded and able to generate creative thinking and can give a good response to the things going around. Critical thinking is important to judge things from a different point of view, review the ideas and information known and to respond positively to a matter before a decision is made.

This study can be beneficial to some of the parties involved, especially the students. However, this study also brings benefit to some other party to produce graduates who have the critical thinking skills and problem solving. The samples are sufficient to describe the real situation of the performance critical thinking skills among undergraduates of early childhood education in public tertiary institutions.

1.9.1 Undergraduate / Student

This study can help students to identify the level of critical thinking skills, and give them greater awareness of the importance of these skills. In addition, it encourages students to improve their skills in any activity carried out by the university. Student involvement in the activities undertaken to give exposure to students in critical thinking skills and confidence to the workplace after graduation.

1.9.2 Educators

This study can provide guidelines for educators to identify factors that foster of critical thinking skills during carrying out activities in teaching at public tertiary institution. This study is expected to help educators, particularly in helping to improve the performance of students to master knowledge in preparation for the era of globalization and science and technology is so challenging.

1.9.3 Universities and Institute Teacher Education

This knowledge gap is critical to be fulfilled by providing information factors influencing critical thinking especially important for universities and institute teacher education in Malaysia. This study is beneficial to the formulation of the curriculum syllabus to include

components of critical thinking skills into the curriculum structure as a component of core courses in view of the importance of contribution of this component of teaching and learning as a whole to teachers.

1.9.4 Ministry of Education

This study provides information to the Ministry of Education in developing curricula related to teaching and learning, critical thinking, including criteria for the selection of teachers, the choice of teaching aids and textbooks, examination and monitoring of the implementation of the fostering curriculum critical thinking.

In summary, the future researchers can generate new methods, modules, techniques, instruments or new programs to improve critical thinking skills that are appropriate for Malaysian students or undergraduates.

1.10 Scope of the Study

This study examined the factors influencing critical thinking skills among undergraduates of early childhood education in public tertiary institutions. The focus of the study is on final year undergraduates of early childhood education in public tertiary institutions. The purpose of the study is because the researcher considers early childhood teachers are the

first to disclose the information and skills necessary to students especially in early childhood education students. To ensure the next generation gained the knowledge and skills of critical thinking in early stage, the early childhood education teachers are the most appropriate person to reveal knowledge about critical thinking skills.

1.11 Limitations of the Study

This study is limited to matters that are restricted by the researchers. Among those limits are in terms of sample and factors studied. This study is specifically limited to the early childhood education of undergraduates in public tertiary institution. The samples are limited to the final year of the undergraduates who completed their teaching practice in the previous semester.

In addition, the researcher only focus critical thinking skills' components that will be the focus in this study as reasoning, analytical and logical, disposition and assumption. Besides that, the researcher only uses quantitative method to find the results.

The researcher must respect the confidentiality aspects, to improve quality, product quality and credibility of the study; researcher should be transparent and honest in handling the data. There are several factors that cannot be controlled, which may give the invalidity and may affect these findings. Among these factors are:

Maturity students can influence the findings. Students who were born in the early years of different maturity by students who were born at the end of the year. Emotional stability of students of varying can lead to students not able to give full attention to test critical thinking and result in answers that were inaccurate. A constraint of time to answer the exam is also one of the factors influencing the emotions of students.

1.12 Operational Definitions

The following are the operational definitions that were use in this study. The terms are as follows:

1.12.1 Critical Thinking Skills

Critical thinking skills are the cognitive skills associated with critical thinking. Interpretation, analysis, evaluation, inference, explanation, and self-regulation are the six cognitive skills central to critical thinking (Facione, 1990a). In the context of this study, critical thinking skills are reasoning, analytical logical, disposition and assumption towards undergraduates of early childhood education in public tertiary institutions.

1.12.2 Undergraduates

A student who is studying to be a teacher and who, as part of the training, observes classroom instruction or does closely supervised teaching in an elementary or secondary school, also called as intern, practice teacher (Razman, 1999). In the context of this study, undergraduates who will be selected for this study is final year undergraduates of early childhood education who completed their teaching practice in the previous semester in early childhood education in public tertiary institutions.

1.12.3 Motivation

Motivation is a theoretical construct used to explain behaviour. It gives the reason for people's actions, desires, and needs. Motivation can also be defined as one's direction to behaviour or what causes a person to want to repeat behaviour and vice versa (Elliot, 2001). In the context of the study, motivation refers to the interest of students to try to understand the related subjects of critical thinking towards undergraduates of early childhood education in public tertiary institutions.

1.12.4 Environment

Environment revealed the factors affecting the environment to enhance the effective teaching and learning processes are learning achievement, desirable characteristics of students, and processes of skill development including higher order thinking skills (Passarella, Wang, Trolian & Blaich, 2013). In the context of the study, environment consist of classroom environment, family environment, peers environment and mass media environment towards undergraduates of early childhood education in public tertiary institutions.

1.1.2.5 Quality of Teaching

Quality teaching is focused on student achievement including social outcomes and facilities high standards of student outcomes for heterogeneous groups of students (Powell & Bodur, 2016). In the context of this study, quality of teaching is all the processes that occur when students interact with lecturers and other students in the class where the main focus is the acquisition of knowledge and skills that tend to focus on academic disciplines towards undergraduates of early childhood education in tertiary institutions.

1.12.6 Reasoning

The reasoning is to identify students' reasoning abilities (Nor Hasnida, Siti Rahayah, Nor Azaheen & Roseni, 2010). In the context of this study, reasoning skills refers to focusing on skills of making a decision by undergraduates of early childhood regarding the case which should be trusted or that should be done. It could involve the process of coaching and assessing in order to support the reasons for belief.

1.12.7 Analytical and logical

Analytical and logical skills are to identify the target and relations real between arguments, questions, concepts, explanation or description that appears to show trust, justice, reason, information or opinion (Facoine & Facoine, 2011). In the context of this study, analytical and logical is to identify the ability undergraduates of early childhood education to make assumptions or conclusions based on facts and analysis.

1.12.8 Disposition

The disposition is to identify students' ability to think analytically and logically. Disposition is also related to the skills of rational thinking person, have an open mind, seeking precision and are always looking for alternatives to solve the problem (Philip,

1998). In the context of this study, disposition describes the attitudes, abilities, perceptions, beliefs and others that underlie behaviour undergraduates of early childhood education.

1.12.9 Assumptions

Assumptions skills refer to something that it considers correct. Usually it is something we've learned before, and never questioned him. It is part of the system or our beliefs. It is assumed beliefs are true and use it to interpret the world (Bassham, 2005). In the context of this study, assumption refers to undergraduates of early childhood education who are able to control their disposition clearly in a given problem.

1.13 Conclusion

Teachers are now expected to be persons who can prepare students with the critical thinking skills and 21st century learning skills. This is can be achieved through the aspirations and vision of teacher education and teacher training in keeping abreast with the future. It is crucial to review the factors influencing critical thinking skills among undergraduates of early childhood education in order to enhance and where necessary, transform its skills so that it will be able to produce teachers for the knowledge era and beyond.