

**THE INFLUENCE OF CLASSROOM
PSYCHOSOCIAL LEARNING ENVIRONMENT
TOWARDS STUDENTS' MOTIVATION IN
LEARNING MATHEMATICS IN SECONDARY
SCHOOLS**



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UNIVERSITI MALAYSIA SABAH

**FACULTY OF PSYCHOLOGY AND EDUCATION
UNIVERSITI MALAYSIA SABAH
2017**

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**THIS THESIS SUBMITTED IN FULFILLMENT FOR
THE DEGREE OF MASTER OF EDUCATION**

**FACULTY OF PSYCHOLOGY AND EDUCATION
UNIVERSITI MALAYSIA SABAH
2017**

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LEARNING ENVIRONMENT TOWARDS STUDENTS'
MOTIVATION IN LEARNING MATHEMATICS IN
SECONDARY SCHOOLS**
DEGREE : **MASTER OF EDUCATION
(KURIKULUM & PENGAJARAN)**
VIVA DATE : **21 JUNE 2017**

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DECLARATION

I hereby declare that the works in this thesis is my own except for quotations, excerpts, equations, summaries and references, which have been duly acknowledged.

27 June 2017

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ACKNOWLEDGEMENT

I would like to thank Faculty of Psychology and Education, University of Malaysia which gave me the opportunity to pursue this degree and access to the university facilities.

I would also like to express my sincere thanks and gratitude to my supervisor, Professor Vincent Pang Ah Fook, for his thoughtful guidance, patience and encouragement throughout the research. I also like to thank my co-supervisor, Dr Ho Chong Mun, for his support, advices and encouragement. Without them, this thesis would have never been completed.

I would like to extend my gratitude to all the lecturers who had provided me valuable information and encouragement to make this a better thesis.

Lastly, I would like to express my appreciation to my parents and friends for their support throughout the research as well as others who had directly or indirectly, contributed to this never-ending journey.

Thank you.

Voo Pei Yee
27 June 2017



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ABSTRACT

This study examined the relationships between classroom psychosocial learning environment and students' motivation in learning mathematics for secondary school students. It also examined the influence of the two classroom psychosocial factors: student-teacher relationship and peer interaction towards students' motivation in learning mathematics. A modified version of "What Is Happening in This Class" questionnaire (WIHIC) (Fraser, 1998) was used to measure the classroom psychosocial learning environment and Mathematics Effectance Motivation scale (Fennema and Sherman, 1976) was used to assess motivation. A sample of 443 Form Four students from five public secondary schools in Kota Kinabalu district were involved in this study. Relationships between the two classroom psychosocial learning environment factors and students' motivation were examined using Pearson's correlation and multiple regression analyses. The results of the analysis revealed correlation between student-teacher relationship and motivation ($r = 0.404$, $p < 0.05$) and peer interaction and motivation ($r = 0.259$, $p < 0.05$). The regression analyses also indicated that there was a significant influence of student-teacher relationship on students' motivation in learning mathematics. Student-teacher relationship was the unique predictor for students' motivation.



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ABSTRAK

PENGARUH SUASANA PEMBELAJARAN PSIKOSOSIAL KELAS TERHADAP MOTIVASI PELAJAR DALAM MEMPELAJARI MATEMATIK DI KALANGAN PELAJAR SEKOLAH MENENGAH

Kajian ini menyelidiki hubungan antara suasana pembelajaran psikososial kelas dengan motivasi pelajar dalam mempelajari matematik di kalangan pelajar sekolah menengah. Kajian ini juga menyelidiki pengaruh dua faktor psikososial kelas: hubungan pelajar dengan guru dan interaksi rakan sebaya terhadap motivasi pelajar dalam mempelajari matematik. Soal selidik "What Is Happening in This Class" (WIHIC) (Fraser, 1998) yang telah diubahsuai digunakan untuk mengukur suasana pembelajaran psikososial kelas dan skala Mathematics Effectance Motivation (Fennema dan Sherman, 1976) telah digunakan untuk mengukur motivasi. Seramai 443 pelajar Tingkatan Empat dari lima sekolah menengah awam di daerah Kota Kinabalu dipilih sebagai sampel kajian ini. Hubungan antara dua faktor pembelajaran psikososial kelas terhadap motivasi pelajar diselidik dengan menggunakan corelasi Pearson dan analisis regresi. Keputusan analisis menunjukkan korelasi antara hubungan pelajar dengan guru dengan motivasi ($r = 0.404, p < 0.05$) dan interaksi rakan sebaya dengan motivasi ($r = 0.259, p < 0.05$). Analisis regresi juga menunjukkan hubungan pelajar dengan guru mempengaruhi motivasi pelajar dalam mempelajari matematik secara signifikan. Hubungan pelajar dengan guru merupakan peramal unik bagi motivasi pelajar.



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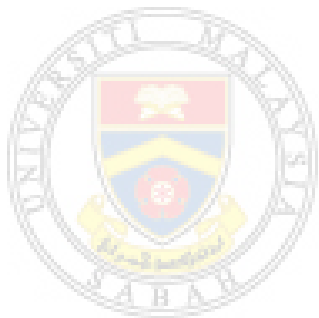


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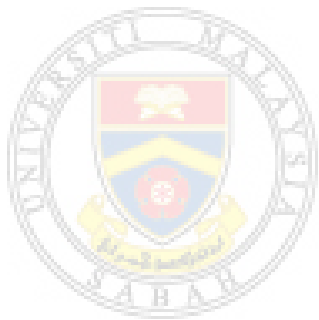
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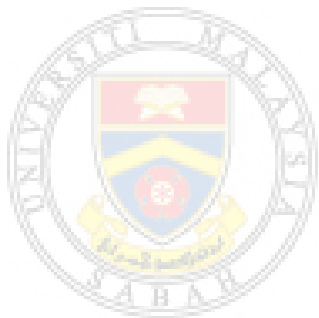
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LIST OF ABBREVIATIONS

PMR	Lower Secondary Assessment
SPM	Malaysia Certificate of Education
TIMSS	Trends in International Mathematics and Science Study
WIHIC	What is Happening in This Class



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CHAPTER 1

INTRODUCTION

1.1 Introduction

Of many facets of humanity, education is ranked as one of the most integral aspect. It transcends all races, ethnic groups, socio-economic standings, religions and political viewpoints. In Malaysia, education is an ongoing effort towards the development of individuals' potential and to produce individuals that are capable to contribute to the nation (Minister of Education, 2006). To become a developed nation, we need quality science and technology education. Alongside with this, our country has made science and technology as the primary focus. In this context, mathematics plays a fundamental role and becomes a core subject in school. As such, the achievement of mathematics is of concern. It is believed that motivation affects students' performance and motivation itself is facilitated by classroom psychosocial learning environment such as student-teacher relationship and peer interaction (Ryan and Deci, 2000b). The present study is to investigate the relationship between classroom psychosocial learning environment towards students' motivation in learning mathematics. It also examines the influence of two classroom psychosocial factors: student-teacher relationship and peer interaction and students' motivation in learning mathematics.

1.2 Background of Study

The system of education in Malaysia has been changing since independence. According to the national philosophy, education in Malaysia is to produce individuals who are intellectually, spiritually, emotionally and physically balanced. Consequently, the content of the mathematics curriculum is modified to suit the philosophy and goals of mathematics education both at primary and secondary level (Noor Azlan Ahmad Zanzali, 2007).

In Vision 2020, the sixth challenge is to create a scientific and technological society, to be a country that is innovative, progressive, has science competency

and as a leader in science and technology. This society is also expected to use the most up-to-date technologies to contribute to the future civilization (Noordin Yahaya, Azizi Yahaya, Jamaludin Ramli, Shahrin Hashim and Zurihanmi Zakariya, 2010). To actualize the above challenge, our country has to own a large pool of human resource which is expert in science and technology. In other words, Malaysia needs more expertise in these two fields to increase the power of competition.

Kerlinger (1985), as cited in Adesoji and Yara (2008) described mathematics as the language of science. On the other hand, Okebukola (1992) referred mathematics as the core of science and technology. Fehr (1996) suggested that mathematics is important in scientific and technological research. According to Noordin Yahaya *et al.* (2010), our society has to incline towards mathematics to achieve our national aspiration.

Mathematics is integral in the development of science and technology. On top of that, mathematics has accorded a central place in the school curriculum and become one of the most important subjects in secondary schools. Mathematics is specifically needed in the field of engineering, architecture, business, accountancy, industry and administration (Noordin Yahaya *et al.*, 2010).

Various factors have been adduced for performance of students in mathematics. It has been reported that children's learning motivation in particular subject is crucial in their school performance, especially in mathematics (Wigfield and Eccles, 2000). Gardner (2006) also stated that students with high levels of motivation tend to perform better. Motivated individuals are believed to have higher motives to engage themselves in relevant activities and show higher persistence in activities. A motivated person has higher desires to achieve goal and show greater satisfaction in the activities (Gardner, 2006). In a research, Hassan Afzal, Cheung, Imran Ali, Muhammad Aslam Khan and Kashif Hamid (2010) also concluded that motivational factors are the predictors of students' academic achievement. Clearly, motivation strongly influences students' desire to participate in the learning process and becomes one of the determinants to succeed in academic.

Researchers have suggested that motivation is the only factor that directly affects academic performance. Bronfenbrenner (1979, cited in Vivian Khamis, Samir Dukmak and Hala Elhoweris, 2008), in his eco-system approach, stated that home, school and societal influence are all essential aspects to understand the development of human. Studies by Sass (1989) and Zimmerman, Bandura and Martinez-Pons (1992) also claimed that teachers, peers, classroom environment, subject matter and students themselves may contribute to students' learning motivation.

Majority of classroom learning environments' studies have been conducted in the developed countries for four decades. The amount of time that students spend in the classrooms justifies the quest to understand what goes on in their 'homes away from home' (classroom) environments (Opolot-Okurut, 2010:267). Fraser, Fisher and McRobbie (1996) opined that there could be different perceived learning environments within the same classroom. Therefore, it is important to examine and improve classroom environments. Several studies have been conducted to predict students' outcomes from their perception of classroom psychosocial environment using different instruments (Abdul Majeed, Fraser and Aldridge, 2002; Chionh and Fraser 2009; Fraser and Fisher, 1982; Hall, 2007; McRobbie and Fraser, 1993), including instrument development and validation (Fraser, 1982;1998; Fraser and Treagust, 1986; Mahmood Khalil and Vered Saar, 2009), and cross-national studies (Aldridge and Fraser, 2000; Aldridge, Fraser and Huang, 1999). The findings of these studies showed that there is an association between students' outcomes and learning environments.

The environment where mathematics learning occurs is an important factor in the development of mathematics self-efficacy and motivation (Friedel, Corlina, Turner and Midgley, 2010). In social and psychological context, learning environment can also affect students' performance and attitudes (Fraser 1978,1998; LaRocque, 2008). Classroom learning experiences, such as teachers' interpretations of students' success and failures and social comparison with peers' performances influence students' perceptions of their academic results (Bandura, 1997; cited in Deacon, 2011). Teachers play an important role in the classroom because their actions significantly affect students' motivation (Mc Combs and Whisler, 1997). A

study of Vivian Khamis *et al.* (2008) proved that students who are having good relationship with their teachers are normally correlated with higher learning motivation.

It becomes clearer that classroom psychosocial learning environment, student-teacher relationships and peers interactions have direct impact on students' learning motivation. Therefore, mathematics educators in school should be aware of their students' needs and provide appropriate learning environment that promotes positive interactions.

1.3 Statement of Problem

Mathematics plays a crucial role in bringing Malaysia to become a developed country as well as actualize the challenges of Vision 2020. As stated in the mathematics syllabus in Integrated Curriculum for secondary schools by Ministry of Education Malaysia (2006), mathematics is one of the compulsory subjects in Malaysia Certificate of Education (SPM) together with other science subjects. However, according to Malaysia Examination Board (Effendi Zakaria, Lu and Md Yusoff Daud, 2010), students' achievements were unstable and vary from time to time. Mathematics achievement level of Lower Secondary Assessment (PMR) showed small fluctuation in percentage from time to time. The rise of the passing rate will increase students in the science stream in SPM level. In Malaysian education system, grade D indicates that students can only achieve the basic performance. On the other hand, grade E shows that students have a very poor performance. This becomes one of the indicators that reflect the level of students' achievements in mathematics (Effendi Zakaria *et al.*, 2010). Therefore, there must be an effort to improve this situation.

The report of the Trends in International Mathematics and Science Study 2011 (TIMSS) reveals that Malaysia shows continuous declination in both mathematics and science achievement. Moreover, the passing rates of SPM mathematics were 90.6% and 93.6% in year 2007 and 2008 respectively. Though the passing rates were high, there were only 14.8% candidates scored A1 and A2 in the SPM mathematics paper in the year 2007 and 16.8% of total candidates scored A1 and A2 in the year 2008 (Noordin Yahaya *et al.*, 2010).

In Sabah, the performance of mathematics is not satisfying, especially in Kota Kinabalu district. The passing rate of SPM mathematics in year 2008 was 81.8%. This result was disappointing as the national passing rate was 93.6%. The result was improved to 83.8% in year 2010. However, the grade point average (GPA) was 5.00 which indicated that most candidates scored C+. Obviously, students' achievement in mathematics is not satisfactory (Effendi Zakaria *et al.*, 2010). This should be taken seriously as Malaysia needs a large pool of human resource which is expert in science and technology to achieve the national aspiration and to compete with neighboring countries. Furthermore, the objective of mathematics education is to train students in solving numerical problems especially those related to their daily life (Noordin Yahaya *et al.*, 2010).

In America, the low achievement in mathematics education has been discussed in several studies (Ke and Grabowski, 2007). A research by Middleton and Spanias (1999) indicated that the enjoyment of American students in learning mathematics dropped dramatically from primary to high school. In addition, although students feel that mathematics is important, the number of students who want to learn more mathematics is declining steadily. Study also revealed that similar problem is experienced by Nigerian (Adesoji and Yara, 2008). The mathematics performance of Nigerian students in secondary schools have been poor over decades. Mathematics is not popular among Nigerian secondary school students.

The declination of mathematics achievement has become a major concern. Various reasons have contributed to the poor performance of students in mathematics. A report of Lim (2006) points out that many teachers in Malaysia believe that teacher-centered approach is sufficient. Explanation with enough examples is more practical to achieve most learning objectives. It is too time consuming to allow students to construct their knowledge through student-centered activities. Furthermore, examination oriented culture is prevailing in Malaysian society. Public examination results is usually used as a yardstick of school academic performance. Moreover, the school principals tend to use students' achievement in examinations as a yardstick to evaluate teachers' teaching ability and competency.

Consequently, many teachers believe that their core duty is to ensure that students pass and achieve good results in the public examinations. The major duty of teachers is to ascertain that they have finished the whole syllabus and have given a large amount of pass year examination questions before the examination. As a result, students lack motivation (Lim, 2006).

In addition, for more students, mathematics is seen to be tough and confusing (Noor Azlan Ahmad Zanzali, 2007). Motivation is one of the key variables in learning (Jurisevic, Glazar, Pucko and Devetak, 2008). Lack of motivation will prevent students from progressing through the curriculum. It will also add the frustration level in the classroom. Some students cannot score good results in mathematics because they lack motivation that will push them to learn mathematics (Noordin Yahaya *et al.*, 2010).

Students' performance is affected by learning motivation ((Wigfield and Eccles, 2000). Students' high intrinsic motivation has been shown to predict their subsequent mathematics performance (Gottfried, Fleming, and Gottfried, 1994). Several studies (Fortier, Vellerand and Guay, 1995; Gottfried, 1985, 1990) have showed that motivation is positively and significantly correlated to students' school achievement. Seifeddine (2011), in his study, also pointed out that the motivation is the most important determinant of success in mathematics classes. Students who are more intrinsically motivated demonstrate a higher tendency for achievement in mathematics. Higher level of motivation can be used to predict future mathematics achievement. As previously mentioned, the performance of mathematics in Kota Kinabalu district is not satisfying. Students lack motivation due to teacher-centered approach employed by majority of teachers. As noted, motivation is one of the most integral aspects in learning mathematics. Moreover, several studies (Tella, 2007; Aida Suraya Md. Yunus and Wan Zah Wan Ali, 2009; Broussard, 2002; Riffat-Un-Nisa Awan *et al.*, 2011; Seifeddine, 2011) have proven that motivation is the key determinant of students' performance.

As motivation is important in students' performance, it is necessary to examine the factors that may affect motivation. It has been suggested that psychosocial environments of the home, the classroom and the peer group are the

strong predictors of both achievement and motivation (Chionh and Fraser, 2009). Students are motivated to learn when they have a good relationship with their teachers. Peer group will also influence the learning motivation among students (Noordin Yahaya *et al.*, 2010). As classroom learning environments are important in students' learning motivation, there is a need of further researches for classroom psychosocial learning environment, specifically, student-teacher relationship and peer interaction related to motivation in learning mathematics.

1.4 Purpose of Study

The purpose of this study is to investigate the relationship between classroom psychosocial learning environments and students' motivation in learning mathematics for secondary school students. It also examines the influence of the two classroom psychosocial factors: student-teacher relationship and peer interaction towards motivation in learning mathematics.

1.5 Research Objectives

The aims of the study are to examine the correlations and influence of the classroom psychosocial learning environment (student-teacher relationship and peer interaction) towards students' motivation in learning mathematics for secondary school students. The objectives are as follows:

1. To determine the correlation between student-teacher relationship and motivation in learning mathematics among Form 4 students.
2. To determine the correlation between peer interaction and motivation in learning mathematics among Form 4 students.
3. To determine whether classroom psychosocial learning environment (student-teacher relationship and peer interaction) influences motivation in learning mathematics among Form 4 students.

1.6 Research Questions

The research questions are as follows:

1. Is there any significant correlation between student-teacher relationship and students' motivation in learning mathematics among Form 4 students?
2. Is there any significant correlation between peer interaction and students' motivation in learning mathematics among Form 4 students?

3. Does classroom psychosocial learning environment (student-teacher relationship and peer interaction) influence students' motivation in learning mathematics among Form 4 students?

1.7 Hypotheses of Study

The hypotheses of the study are:

- H₀₁ : There is no significant correlation between student-teacher relationship and students' motivation in learning mathematics among Form 4 students.
- H₀₂ : There is no significant correlation between peer interaction and students' motivation in learning mathematics among Form 4 students.
- H₀₃ : Classroom psychosocial learning environment (Student-teacher relationship and peer interaction) does not influence students' motivation in learning mathematics among Form 4 students

1.8 Significance of Study

The importance of the classroom learning environment has been recognized for 20 years (Aldridge *et al.*, 1999). Majority of the classroom learning environment research involved students in Western countries. This field originated in the United States with pioneering work of Walberg and Moos (Trickett and Moos, 1973; Walberg and Anderson, 1968), and followed by work in the Netherlands and Australia (Aldridge *et al.*, 1999).

Although majority of the classroom learning environment research involve Western countries, a number of significant studies have been carried out in Asian countries (Fraser, 1998). Several studies established the validity of classroom learning environment instruments that had been translated into Indian (Walberg, Singh and Rasher, 1977) and Indonesian (Fraser, Pearse and Azmi, 1982) languages, and these studies investigated relationship between students' outcomes and classroom environment perceptions. Researchers in Singapore (Chionh and Fraser, 2009; Wong and Fraser, 1996) and Brunei (Abdul Majeed *et al.*, 2002) also made important contributions to the field of learning environments. However, there is a dearth of empirical research which focuses on the effects of classroom learning environment on students' motivation in learning mathematics (Fraser, Malone and Neale, 1989). As noted above, motivation is one of the key variables in learning