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The Ability among Bachelor Industrial Logistic Students toward Mathematics

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Abstract: Mathematics is one of the important subjects that are taught at either in schools or universities. However, usually most of the students are less interested in mathematical subject. This study presents on the ability among Bachelor Industrial Logistic students in University Kuala Lumpur Malaysian Institute of Industrial Technology (MITEC) towards mathematical knowledge. As everyone knows, Mathematics is one of the compulsory subjects in Malaysia whether during school time or higher education. There's always had a report in previous studies that students cannot cope with the subjects especially in Mathematics and Sciences. Thus, the purpose of this study is to identify the ability of the said students towards Mathematic's knowledge using statistical tools and identifies any opportunities for coming research. From the results, we can conclude that there is a relationship between the results in Mathematics among the Bachelor of Industrial Logistics students based on the difference levels of education before studying at Unikl MITEC. It is also shown that most of the students came from STPM background level and we can see that the female students got much better results compared to the male students. Besides that, this study also presents the history and why Mathematics is so important nowadays.

Key words: Mathematical knowledge, higher education, sociology of science, MITEC, STPM

INTRODUCTION

Mathematics is the study of topics such as quantity, space, rate, changes and numbers. There is a different of opinions among mathematicians and philosophers as to the exact scope and definition of mathematics itself. Mathematics is a field of knowledge that train someone's mind think logically and systematic in solving problems and make some good decisions. Naturally, mathematics encourages learning and challenge thinking.

Mastering in mathematical subject among students whether in primary school level, secondary school level or higher education is very important. To be good in Mathematics, it must begin from grassroots namely from number base, the usage and way of solving by using the suitable methods (Ismail and Ahmad, 2012).

According to David (2011), students come into school with differences in background knowledge, confidence and ability to stay on task and in the case of mathematics and quickness. In school, those advantages can get multiplied rather than evened out. One of the reasons is that teaching methods are not aligned with what cognitive science tells us about the brain and how learning happens. In particular, mathematics teachers often fail to make sufficient allowances for the limitations of working memory and the fact that we all need extensive practice to gain mastery in just about anything.

Students who struggle in mathematics usually have difficulty remembering mathematics facts, handling word problems and doing multi-step arithmetic. Despite the widespread support for "problem-based" or "discovery-based" learning, studies indicate that current teaching approaches underestimate the amount of explicit guidance; "scaffolding" and practice children need to consolidate new concepts. Asking students to make their own discoveries before they solidify the basics is like asking them to compose songs on guitar before they can form a C chord.

According to Rutschow and Schneider (2011), the goal of developmental education is simple, to prepare students to engage in college-level work so that they can earn a credential in their field of choice and leave school qualified for a greater range of jobs and salaries. With this goal in mind, 2 and 4 year institutions have established a system for preparing academically underprepared students for college level work by devising a sequence of semester-long courses aimed at improving their skills. Generally, focused on improving student's reading, writing and math abilities, most community colleges offer sequences of two to four levels of preparatory work in each of these subject areas. Students are placed into these classes based on their scores on a common placement test which is designed to assess whether they have the skills to enter directly into college-level courses.

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Mathematics learning and capability to achieve good grades in mathematics examinations was not only attributed to some unique talent, great effort or good discipline from an individual but also to favorable attitudes and interest in mathematics (Kasimbu, 2004). Formation of such attitudes can depend on several factors to which the student got exposed while learning such as motivation he/she got from teachers or parents; readiness to learn; mathematical concepts and difficulty or organization of memory of what was learned (Kasimbu, 2004).

According to Kasimbu (2004), attitudes formed by students when learning mathematics tend to remain for a long time and these attitudes may help him/her to learn mathematics better. This is so if the attitudes were favorable. But this may not always be the case. Students also form unfavorable attitudes as they learn mathematics in schools. Findings of Orora (1986) indicate that pupils in primary schools who have very positive attitudes towards learning mathematics have interest to do more mathematics later. Most students join form one with positive attitudes, only to change their attitudes towards learning mathematics later in secondary school.

Now a day, the current emphasis on accountability and standardized testing, schools and teachers face increased pressure to improve achievement for all students. Understanding which factors or constructs contribute to the variation in student math achievement has been a central issue to researchers, teachers and policy makers (Ottmar *et al*., 2011).

As in our country Malaysia, Mathematics is an important subject in daily life that put it as a subject that must be taught starting in primary school level and secondary school. In accordance with situation and the importance of mathematics subjects, Malaysian Ministry of Education (KPM) decided each student required to take math in primary school level and secondary school.

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The mathematical interest is clearly with the position as core subject in UPSR examination, PMR and SPM. Approval in distinction level is important for those who wish to continue study anywhere at Public Institutions of Higher Educations (PIHE) or Private Institutions of Higher Educations (PVIHE) in the area of science, engineering, computer science, architecture and so on (Malaysian Ministry of Education, 2012).

A curriculum that is designed for a Higher Education Institution is based on the university function in the context of the country in which the function is reflected the mission and vision of a university (Mohini and Fatmahanim, 2010). As in Unikl MITEC, Mathematics is one of the core subjects that the students compulsory to pass to get the scroll. Hence in this research, we want is to identify the ability of the said students towards Mathematic's knowledge using statistical tools and identifies any opportunities for coming research.

Literature review: Study on factors that determining student achievement in various levels whether in school or universities levels always attractive the researchers. Usually, these researches are carried out by the researcher aiming looking for weakness of education system, variables which influence directly or indirectly on academic achievements. Hence, it will help the direction of education system in Malaysia to be better and more effective.

Since 1960's, scholars and policymakers have explored the relationship among teacher characteristics, teacher behaviors and students achievement (Hill *et al*., 2005). Besides that, Good *et al.* (1983) conducted several experiments in mathematics teaching and found the teachers who employed such active teaching practices had students who performed better in terms of basic skills but not problem solving.

In United States of America (USA), the Third International Mathematics and Science Study (TIMSS) examined eight-grade Mathematics teaching in United States and six higher-achieving countries. A range of teaching systems were found across higher-achieving countries that balanced attention to challenging content, procedural content, procedural skill and conceptual understanding in different ways (Hiebert *et al*., 2005).

This study critically reviews work by leading researchers in the era of understanding of gender differences. According to Koehler (1990) there were probably more research studies published on gender and mathematics than any other area between 1970 and 1990. Fennema (2000) concluded that while many studies had been poorly analyzed and included sexist interpretations, there was evidence to support the existence of differences between girl's and boy's learning of mathematics, particularly in activities that required complex reasoning; that the differences increased at about the onset of adolescence and were recognized by many leading mathematics educators. Salmon (1998) concurred with the notion that gender differences increase at secondary school level, particularly in situations that require complex reasoning. In the absence of an African position

disputing such views, it suffices to assume that similar differences might occur in the Southern African contexts.

In Mathematics, mastery and skill in mathematical solutions requires good in mathematical basics and knowledge. If the level of student's mastery is weak on mathematical basic or basic concepts mathematics, this will cause them become less interested to learn it. According to Hassan and Chung (2007), this problem solving skill need to be nurtured since school bench more so students can decide effectively. Mathematical mastery from primary level is very important so that it will affect interest until high level. With this, teachers or lecturers have to do the lesson planning that is effective to help students build and dominate effective techniques. Low student achievement and weaknesses in mathematics must be addressed and taken care more carefully. This is because, weakness on this subject will affect student learning in an educational institution.

According Norlia *et al.* (2006), weakness in these subjects can lead to lack of opportunities for further education to a higher level and follow certain courses that require additional knowledge and skills in mathematics. Therefore, it is important to use a variety of methods to improve student achievement in mathematics. One such way is through a strategic approach to learning or learning styles.

According to Othman *et al.* (2014), negative view of mathematics that most of the students considered difficult and tedious affect mathematics achievement, particularly among students in higher education institutions. Therefore, the failure of percentage is increasing and that will concern from all parties. Thus, various teaching and learning strategies have been taken to but still lacking impacted.

Achievement without appreciation is the main source of these problems. Without a thorough appreciation of the achievements is the source of this problem. Students are seen not able to understand and apply knowledge of neither current nor future. Value is an entity that needs to be developed in the teaching and learning of evoking we have learned so that the meaning of life, universal travel wisdom and greatness of the Creator is known, recognized, appreciated and fully internalized.

The development of values in education, especially math is important to help students master mathematics that knowledge has important position in the classification of philosophy even be a liaison between the fields of Sharia with basic human needs.

Michelle (2013) reviews a research on the effectiveness of interventions and reforms that seek to improve the math preparedness and success of high school students entering college. She said that a major challenge facing many of today's students as they pursue a postsecondary degree is their lack of academic preparedness for college-level coursework and in particular, for college-level math. Entering college underprepared in math has a number of consequences. One of the consequences is it poses an obstacle to completing a college-level math course which can be a struggle for beginning postsecondary students, regardless of their initial course placement in college.

Students enter college underprepared in math for a number of reasons-some did not take enough math in high school; some did not take the math they need for their college degree program; some did not master the math they took in high school and/or some forgot the math they learned in high school (Fike and Fike, 2012). Additionally, students may feel frustrated or may struggle in their first math course in college because college placement exams are imperfect indicators of academic readiness; the exams misplace some students who are prepared for college math coursework into math remediation and misplace others who need additional support with basic math concepts into college-level coursework (Clayton *et al*., 2012).

Academic under preparedness in math not only poses an obstacle to college math success but also can have an impact on an individual's overall well-being if it hinders college progression and completion. The gap in earnings between high school and college graduates has been rising since the 1970s and beyond their economic returns, college degrees are connected to many other positive outcomes, including higher levels of civic participation, healthier lifestyles, greater job satisfaction and economic, educational and health benefits that are passed down to one's children (Baum *et al*., 2010). Leaving school without basic math skills can have far-reaching consequences: Quantitative literacy which includes competency in the arithmetic and algebraic applications that are taught in high school or developmental math has a strongly predictive relationship with a young adult's probability of employment and can explain much of the wage gap between African American and White young adults (Batiz, 1992).

Research objectives: The main objective of this research is to determine whether there is any relationship between the results in Mathematics among the Bachelor of Industrial Logistics students based on the difference levels of education before studying at Unikl MITEC. Other research objectives in this study are:

- Determine which study background prefer to further their study at Unikl MITEC
- Determine which genders have better results based on the results at university level

Research interest: The findings of this study are expected to provide information about student's perceptions of teaching and learning problems in Unikl MITEC especially in Mathematics. Other than that, this study also identify whether the genders influence the results in Mathematics or not.

It is hoped that these findings represent a starting point for creating a teaching and learning methods that are more suitable to the students, especially from flow techniques and skills. Indirectly, it can improve the quality of science teaching and learning of mathematics and be able to produce students with a strong mathematical foundation, so that they can be applied in their respective fields.

MATERIALS AND METHODS

Study design: This research is a data research which is from the causal comparative. This method was chosen because of the limitations of the limited time and consideration in terms of cost and energy. In addition to collecting the data is very quickly, it is also widely used in the study to describe the relationship between gender and relationship between SPM's results with universities subjects. This research also involves only a small group. Therefore, the uses of data methods are appropriate.

Study population and sample: The study population comprised 170 first semester students who take course Bachelor in Industrial Logistics at the Universiti Kuala Lumpur MITEC, Johor Bahru. Of the total population is 112 students have been randomly selected as samples for bachelor in the study. Selection is based on the number of samples to determine the sample size tables that have been submitted by Krejcie and Morgan in Chua Yan Piaw.

Research instruments: The instrument or data used for this study is taken from the examination results of the students. The examination results consist of results from previous schools and results from bachelor's semester. Then, the data from previous school will be comparing with the latest one.

Overall analysis: From Table 1, it is shown that 31 students were female and 81 students were male. From the research, we can see the levels of schools before them entering the university were diploma, STPM and foundation. From Table, we can see that most of the students were from STPM background education (Fig. 1 and 2).

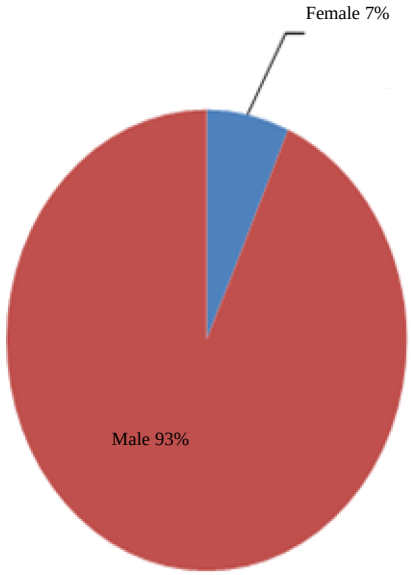

Fig. 1: Percentage of students with diploma background that entering Unikl MITEC

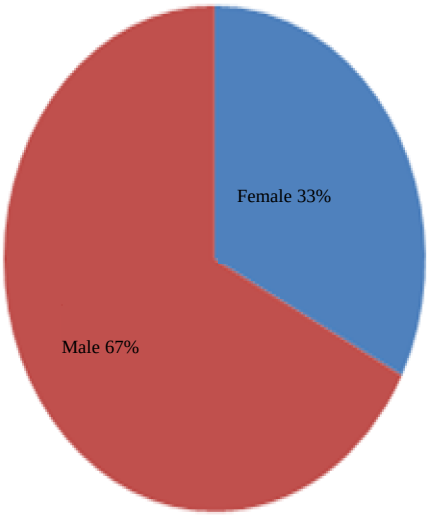

Fig. 2: Percentage of students with STPM background that entering Unikl MITEC

Table 1: The background education of the students before entering Unikl MITEC

Gender	No. of students	Diploma	STPM	Foundation
Female	31	1	30	0
Male	81	14	62	5

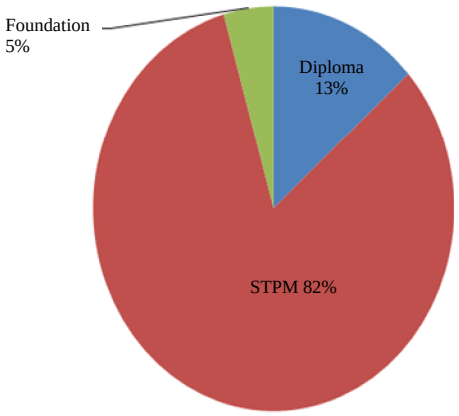

Fig. 3: Percentage of background educations students

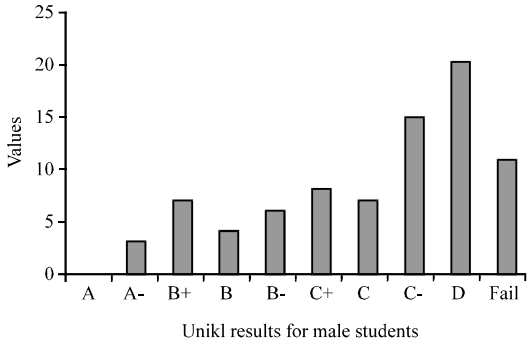

Fig. 4: Results for bachelor industrial logistic males students

Figure 1 show the percentage of students with diploma background which is 7% for female and 93% for male. Meanwhile, Fig. 2 shows the percentage of students with STPM background which is 33% for female and 67% for male. By referring to Table 1 as for foundation students, 100% were for male students. From the both graphs, we can conclude that most of the students from this batch are male students.

As mentioned before this, mostly of the students were come from STPM background. From Fig. 3, we can see that 82% of the students were come from STPM background studies. While, there were only 13 and 5% come from diploma and foundation backgrounds.

Figure 4 shows the results of Bachelor Industrial Logistic students for male students. From the graph, we can see that the graph is more skewed to the right. Most of the male students got D for their results. While there was no one got A's in the subject but only <5 students got A's. There were also >10 students who had fail with this subjects. From the data, the mean average marks of the male students were 49.33%. From the graph, we can

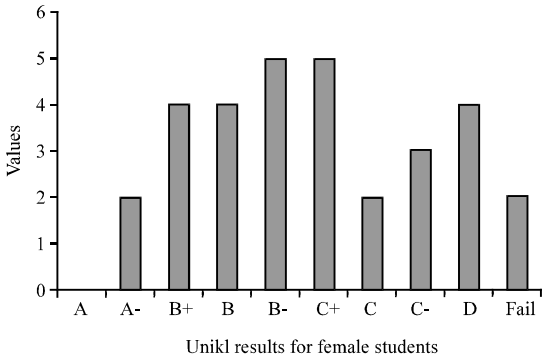

Fig. 5: Results for Bachelor Industrial Logistic females students

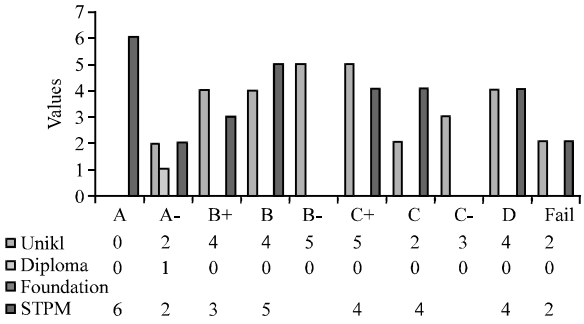

Fig. 6: Comparing the results in Unikl MITEC with the previous background study for female students

conclude that the results of the male students were weak and we have to identify the reasons for the next research.

Figure 5 shows the results of Bachelor Industrial Logistic students for female students. The graph is more likely look as a normal distribution graph. Form the graph; we can see that most of the female students got B- and C+ grades. There were no one got A's but for A- were 2 students. There were only 2 female students fail in this subject. From the data, the mean average marks of the female students were 62.10%. By comparing Fig. 4 and 5, it shows that the female students got much better results compared to the male students.

Figure 6 shows the results in Unikl MITEC with the previous background study for female students. From the graph, we can conclude that there was only slightly different between STPM results and university results. For A's grade, there was no one got A's during the university results but 6 students got A's for their STPM results. There was no one from foundation background for the female students.

Figure 7 shows the results in Unikl MITEC with the previous background study for male students. From the graph, we can see the graph is more skewed to the right. From the graph, we can conclude that there was only

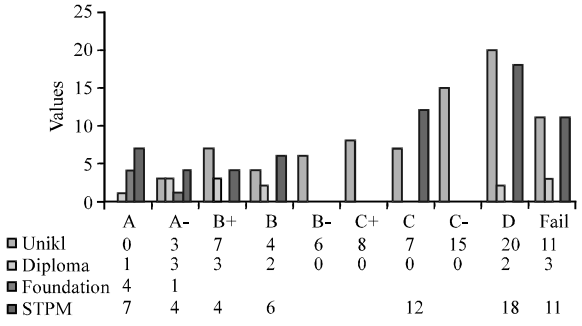

Fig. 7: Comparing the results in Unikl MITEC with the previous background study for male students

slightly different between STPM results and university results just like the female results. We can conclude that the results of the female students were much better compared to the male students.

CONCLUSION

By referring to the data of the previous background study for both male and female students, we can conclude that there is a relationship between the results in Mathematics among the Bachelor of Industrial Logistics students based on the difference levels of education before studying at Unikl MITEC. For the female students, we can see that there's only a slightly different by comparing the results. For the male students, there were no much different between the previous study and in the university level. As a conclusion, we can see that there were only slightly different in the results between the previous study and the university level for both genders. From the percentage background students, it is shown that most of the students came from STPM background level. Then, it is followed by diploma and foundation level. For the next research, we can do a survey why most of the STPM level students prefer to further study in Unikl MITEC. From the results, we can see that the female students got much better results compared to the male students. The mean average marks of the male students were only 49.33% while the mean average marks of the female students were 62.10%. In conclusion, it is shown that the both of the results were unsatisfactory. We can extend the research to the factor which influenced the results such as the methods of study, the facilities or the way of the teaching styles.

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