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Gender Differences in Students' Attitude Towards Mathematics at UiTM Terengganu

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Abstract

This study aims to investigate the potential impact of gender in students' attitude towards Mathematics among students in UiTM Terengganu. A random sampling of 86 students have been selected for this study. Independent sample t-test was used to examine the effect of gender on students' attitude towards Mathematics. The finding concluded that there is no significant difference in students' attitude towards Mathematics between gender. Even though there is no difference between gender, the study found that the students' attitude towards Mathematics is considered as not very satisfactory. Therefore, the management of the university should focus on the empowerment of students' attitude to improve the quality of students' achievement in Mathematics.

Keywords: students' attitude, gender differences, Mathematics achievement

Introduction

Mathematics is a very important subject in the academic curriculum either in primary, secondary or tertiary level. Individuals who are brilliant in Mathematics tend to develop their paths in science, technology, engineering and Mathematics (STEM) stream. Simultaneously, it will help the nation by producing the professionals in many important fields. In order to achieve the objectives, schools or academic institutions are to put extra efforts in the learning of Mathematics in ensuring students' success in the subject. Attitude has a prominent factor in students' achievements in mathematical studies in which it can be in positive or negative feelings. As stated by Kiranjit Kaur (2017), attitude towards Mathematics is the liking or disliking, approving or disapproving the subject, which implies a positive or negative attitude towards Mathematics. A significant number of educational researchers have reported a considerable gender differences in students' attitude towards Mathematics (Da'inna, 2016; Amalu, 2016; Boran, Aslaner & Cakan, 2013; Lee & Anderson, 2015; Yenilmez, & Ozabaci, 2003). The findings by Kosgey, Manduku & Bii (2015) clearly indicated that both boys and girls have positive attitudes towards the learning of Mathematics despite the facts that boys were more positively inclined than girls. Elsi (2017) found that the students' attitudes towards Mathematics differed by gender, field, and Mathematics score. According to Mohd Fadzil, Mohd Hasrul & Noriah (2018) through the findings of their study, have revealed that there was no relationship between age, gender and attitude of gifted students towards Mathematics. In UiTM Terengganu, most program will have at least one Mathematics subject which includes Diploma in Office and Management System. Pursuant to the high failure rate in MAT111, a research has been conducted. Therefore, the objective of this study is to investigate the potential impact of gender in students' attitude towards Mathematics in UiTM Terengganu.

Methodology

A sample survey was undertaken involving a total of 86 students out of 108 students registered for Mathematics subject at UiTM Terengganu. This sample size is recommended by Sekaran & Bougie (2016). The combination of stratified random sampling and systematic random sampling were used in this study. Under stratified random sampling, the number of students for each gender was determined proportionately. Then, the systematic random sampling was used to select the students for each

Copyright © 2020 Virtual Symposium on Teaching and Learning (VSTL2020) e-proceeding. gender. A questionnaire was distributed to the selected students during their common test in class. The students were asked 15 questions on their attitude towards Mathematics and they need to rate (5 Likert-scale rating) their level of agreement for each question. The data was analyzed using Statistical Package for Social Science (SPSS). Descriptive analysis was used to gauge an overview of the students' profile. Meanwhile, inferential analysis was carried out to test the following hypothesis using the Independent sample t-test:

H₁: There is a significant difference in students' attitude towards Mathematics between male and female students.

Findings

Table 1 shows the demographic profile of the students. Majority of the students are female with 86% and the rest are male (14%). There are 77.9% students from part 1, 19.8% from part 2 and 1.2% from both part 3 and part 5. Most of the students scored D (43%) for Mathematics subject in Sijil Pelajaran Malaysia (SPM) examination. Only 10.5% of students scored A while the others scored B (11.6%), C (16.3%) and E (18.6%).

Table 1
Profile of the students

	Category	Frequency	Percentage (%)
Gender	Female	74	86
	Male	12	14
Part/Semester	1	67	77.9
	2	17	19.8
	3	1	1.2
	5	1	1.2
SPM's Mathematics Grade	A	9	10.5
	B	10	11.6
	C	14	16.3
	D	37	43.0
	E	16	18.6

The reliability of the items used to measure students' attitude towards Mathematics was conducted using Cronbach' Alpha. It measures the internal consistency of the items, that is, how closely related a set of items as a group. Based on the value of Cronbach's Alpha (0.878) shown in Table 2, it indicates good internal consistency of the items in the scale.

Table 2
Reliability Statistics

Cronbach's Alpha	Number of items
0.878	15

Overall, the mean score of students' attitudes towards Mathematics obtained from the students was 3.1938 with the standard deviation of 0.6030 as shown in Table 3. This finding showed that the attitude of the students towards Mathematics in the university is not very satisfactory and need to be improved.

Table 3
Descriptive statistics

	Number of students	Mean	Standard deviation
Students' attitude towards Mathematics	86	3.1938	0.6030

The Independent t-test requires that the variable to be approximately normally distributed within each group (male and female) and the variances of the two groups are equal in the population.

George & Mallery (2010) stated that the values for skewness and kurtosis between -2 and +2 are considered acceptable to prove normal univariate distribution. The result obtained in Table 4 shows that

Copyright © 2020 Virtual Symposium on Teaching and Learning (VSTL2020) e-proceeding. the skewness and kurtosis for both male and female are between -2 and +2. Therefore, the normal assumption is not violated for both groups.

Table 4

Test for normality			
	Gender	Skewness	Kurtosis
Students' attitude towards Mathematics	Female	-0.006	1.437
	Male	-0.143	-0.071

Levene's Test of Equality of Variances was used to test the equality of variances between the two groups. Based on the result obtained in Table 5, it is shown that the group variances can be treated as equal ($F = 0.210$; $p = 0.648$).

Table 5
Test for Equality of variances

Levene's Test for Equality of Variances		
	F	Sig.
Equal variances assumed	0.210	0.648

The analysis was then continued with the Independent t-test to determine whether there is a significant difference in students' attitudes towards Mathematics between male and female students. Table 6 shows that the female students obtained higher mean score in attitude ($M = 3.2770$; $SD = 0.6097$) than the male students ($M = 2.9889$; $SD = 0.5377$). However, this difference is not significant ($t = 1.274$; $df = 84$; $p = 0.206$). Thus, hypothesis 1 is rejected. Therefore, it can be concluded that there is no significant difference in students' attitudes towards Mathematics between male and female students in the university.

Table 6
Independent t-test

Gender	N	Mean	Standard Deviation	df	T	p-value
Female	74	3.2770	0.6097	84	1.274	0.206
Male	12	2.9889	0.5377			

Conclusion

The purpose of this study is to compare the attitude towards Mathematics among female and male students at UiTM Terengganu. According to the test conducted, it is concluded that statistically there was no significant difference between students' gender according to the attitudes towards Mathematics. This finding is in line with some studies include Batool et al. (2020) which found that the existence of gender difference in attitude towards Mathematics was not significant, while Lee and Anderson (2015) showed that both male and female had a very similar attitudes towards Mathematics when the sample was taken as a whole. Other researchers (Lindberg, Hyde, Petersen, & Linn, 2010) also have concluded that the gender gaps in attitudes toward Mathematics are insignificant.

Based on the research findings, it is recommended for the university management and educators assessing students' attitude towards learning Mathematics. The problems associated with negative attitudes towards Mathematics' mathematical ability and about the usefulness of this subject should be addressed, so that with the possible solutions taken, the students' performance in Mathematics might be enhanced. Regardless of the gender difference, it still depends on the type of Mathematics involved, and math-skill level of the students. Therefore, these factors may be useful for researchers in this area to investigate further in relating to gender and attitudes towards Mathematics.

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