

Students' Opinion towards Mathematics Course in Mengubah Destini Anak Bangsa (MDAB) Program

Suriyati Ujang^{1*}, Syafiza Saila Samsudin², Nur Hidayah Masni Abdullah³

^{1,2,3}Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (Pahang)

26400 Bandar Tun Abdul Razak Jengka, Pahang Darul Makmur

suriyatiujang@pahang.uitm.edu.my, syafi915@pahang.uitm.edu.my, nurhidayah @pahang.uitm.edu.my

*Corresponding Author

Abstract: Mengubah Destini Anak Bangsa (MDAB) Program is a program inspired by YAB Dato' Seri Najib Bin Razak, the Prime Minister of Malaysia. This program has been offered at Universiti Teknologi MARA since 2010. Through this program, students are enrolled in Pre-Diploma program. Passing the Pre-Diploma program will enable them to further their study to the diploma level. However, there are some issues involving the MDAB students. There are numbers of the students who did not achieve good results or fail in mathematics courses at diploma level. Thus, this study was conducted to look at the perception of the MDAB students towards Mathematics and the correlation between their perception and their mathematics' result. Sample for this research are first semester's students who enrolled for MAT111 and MAT112 (male=27 and female=48). The best PLUM model to explain the variation exist in the MAT037 result is Model 1 which comprised of variables preferences of the students toward the subject and the Mathematics' lecturers also their efforts in learning mathematics. This shows that if the students like Mathematics, they will do extra exercises and always attend the classes. The preferences towards lecturer also influenced the student to like the course. Model 1 also proved that the student's effort as one of the variables that explained the students' performances in MAT037. The efforts comprised of having consultation with the lecturers, having group discussion and also doing exercises from the assignment and past years questions.

Keywords: MDAB, Mathematics, Achievement, Attitude

1. Introduction

The MDAB program has been introduced in order to help the less fortunate students to further their study in higher educational institution. The SPM results of these students are not compatible for them to enroll in any higher level program offered by public universities. Pre-diploma programs both in Commerce and Sciences are designed to cater these students. The minimum requirement to enroll in these programs is four distinctions in any SPM subjects besides passing both Mathematics and English. Under MDAB program, the students are channeled either to Pre-Diploma in Commerce or Pre-Diploma in Science based on their SPM qualification.

There are four courses offered in Pre-Diploma (Commerce) program namely; English for Pre-Diploma (ELC030), Essential Mathematics (MAT037), Entrepreneurship (ENT028) and "*Pengantar Pembangunan Insan*" (CTU001) (UiTM, 2014). The students have to pass all these courses in order for them to further to diploma level. They will be offered the diploma programs based on their preferences and the grade point average (GPA) achieved the Pre-Diploma level.

Mathematics is one of the courses offered and compulsory to pass at the diploma level. Unfortunately there are numbers of students who failed to perform in Mathematics. Moreover, some of them failed and were dismissed from the diploma program because of Mathematics course. Therefore, it is important to study the perception of the students towards Mathematics specifically. The results of this study may be used to help lecturers to focus on improving their teaching and learning processes by trying interesting methods and skills in their classes.

2. Literature Review

Mathematics has been described as a difficult subject by many students. Their perception towards mathematics eventually related to their result. Low (2006) stated that, there are significant relation between interest in mathematics and their performance. There are also significant relation between teachers and student achievement in mathematics.

According to Michelli (2013), there is a relation between attitude and achievement in mathematics. Students who have a positive attitude towards mathematics tend to perform well and make and improvement in this subject.

Some researchers also found that female students perform better in mathematics compared to male students (Hassan, Murat, Helena, 2012; Michelli, 2014; Sabitha and Mofidul, 2010). However, an earlier research done by Muhammad and Syed (2008) stated that gender does not contribute to the performance of the students.

Therefore, this exploratory study was conducted to look at the perception of the MDAB's students towards mathematics and the correlation between their perception and their mathematics' result.

3. Research Hypothesis

The percentage of failing in Mathematics course during Diploma level among former MDAB students are high. Therefore, this study is to check their perception toward Mathematics whether it is related to their achievement. Hence, certain criterion such as student's preferences, effort, confidence level and opinion checked whether they influenced their performance.

4. Research Methodology

4.1 Respondents

The sample consisted of 75 former MDAB program students. The students are those who enrolled in Mathematics course namely Essential Mathematics (MAT037). The course covered the usual introductory topics of Mathematics. Most of the participants are female (64%) and the rest are male (36%). The respondents' results in Mathematics during SPM level were collected. About 17.3%, 5.3%, 28% obtained A, B and C respectively and the rest scored below C. Meanwhile, only 38.7% of the respondent took additional mathematics as one of their subjects during SPM. From all 75 respondents, only 36.3% got at least C for English at SPM level. All students participated as the respondent on a voluntary basis by answering a questionnaire distributed during their Mathematics class.

4.2 Instruments

The data was collected through a self-developed questionnaire. The questionnaire contains 43-items. Likert scale was used to record the responses ranging from 1= *Strongly Agree* to 5 = *Strongly Disagree*. The questionnaire is divided into 3 parts; A, and B. Part A is the demographic questions. Part B is the section for former MDAB students meant to measure their opinion on MAT037, the lecturers and their learning style when they were previously registered during the pre-diploma program.

4.3 Procedure

The mean score was calculated to check the students' opinion towards Mathematics course, MAT037. The questions asked in the questionnaire were grouped into few components. The IBM SPSS version 22 was used to analyze the data. The Cronbach alpha was checked to make sure the internal consistency of the components scale. The multicollinearity was checked through correlation matrix. Since there are multicollinearity exist few models was fitted to check the best fitted model. The dependent variable is the MAT037 results which are an ordinal variable; hence Polytomous Universal Model (PLUM) was used to find the best fitted model. The odd ratio estimate was used to check the nature of the relationship between the dependent and independent variables.

5. Findings and Discussion

Table 1 is based on the questions given to check the opinion of the students towards MAT037 course. The mean score of the first question is to check whether MAT037 was easy for the students. The mean score of 2.2667 shows that the students agree that MAT037 was easy. Students also agree that MAT037 gives them confidence for them to excel in learning Mathematics. Beside they also agreed that MAT037 and MAT111 or MAT112 are related. However, the students tend to agree that they do not have to try hard in learning MAT037. In conclusion, this shows that students agree that MAT037 is an easy course and at the same time they tend to agree that they do not have to try really hard for the course.

Table 1. Mean Score for Opinions towards MAT037

	Mean	Std. Deviation
MAT037 was easy for me	2.27	.88
MAT037 gave me the basic that I need for MAT112 or MAT111	1.93	.79
I think I will excel in Mathematics after learning MAT037	2.21	.83
MAT037 gave me the confidence in learning Mathematics	2.08	.82
I don't need to try hard for MAT037	3.15	1.02
I think MAT037 and MAT112 or MAT111 are related	2.20	.90

The questionnaire was divided into 4 items which to measure the students opinion towards MAT037, students' preference towards Mathematics course or the lecturer's learning style, effort of the students in learning Mathematics and their confidence level in Mathematics.

Table 2. The Items for each component

Items
<u>Component 1: Preference toward the subject or lecturer's approach ($\alpha = 0.873$)</u>
1. I like Mathematics
2. I do lots of Mathematics exercises
3. I always attend my Mathematics class
4. I like my Mathematics lecturer
5. I enjoy the way Mathematics is taught in class
6. My lecturer influence me to like Mathematics
<u>Component 2: Students' Effort ($\alpha = 0.704$)</u>
1. I do past years questions
2. I met with Mathematics lecturer for consultation
3. I always have group discussion
4. I always do my own assignment
<u>Component 3: Opinion towards MAT037($\alpha = 0.891$)</u>
1. MAT037 was easy for me
2. MAT037 give me the basic that I need for MAT112 or MAT111
3. I think I will excel in Mathematics after learning MAT037
4. MAT037 give me the confidence in learning Mathematics
5. I think MAT037 and MAT112 or MAT111 is related
<u>Component 4: Confidence level ($\alpha = 0.680$)</u>
1. I don't have any Mathematics problem
2. I think Mathematics is an easy subject
3. I don't need to try hard for MAT037

As stated by Sekaran (2003), reliabilities in the 0.70 range are acceptable and those over 0.80 are good. The reliability statistics, Cronbach’s alpha for all components exceeded the minimum value of 0.6 at 0.902. This shows the internal consistency of the components in the scale.

Table 3. Correlations

		Opinion	Efforts	Confidence	Preferences
Opinion	Pearson Correlation		.606**	.465**	.218
	Sig. (2-tailed)		.000	.000	.062
Efforts	Pearson Correlation			.360**	.143
	Sig. (2-tailed)			.002	.226
Confidence	Pearson Correlation				.052
	Sig. (2-tailed)				.658

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows that, there are correlation between the variables. Hence, few models were fitted to choose the best model that fit the data well. Since there are multicollinearity exist between the independent variables, the following models were proposed.

Table 4. Proposed Models

Variables	Significant Variables	Pseudo R-Square	Model Fitting
Model 1	Preferences Efforts	Both Nagelkerke = 0.277 Cox and Snell =0.238	Sig = 0.000
Model 2	Preferences Confidence	Preferences Nagelkerke = 0.151 Cox and Snell =0.130	Sig = 0.006
Model 3	Preferences Opinion	Both Nagelkerke = 0.234 Cox and Snell =0.202	Sig = 0.000
Model 4	Confidence Efforts	Efforts Nagelkerke = 0.174 Cox and Snell =0.15	Sig = 0.002
Model 5	Confidence Opinion	Opinion Nagelkerke = 0.152 Cox and Snell =0.131	Sig = 0.006
Model 6	Efforts Opinion	Efforts Nagelkerke = 0.199 Cox and Snell =0.172	Sig = 0.001

All proposed models in explaining the variability exist in the Mathematics result shows significant value in model fitting which is less than 0.05. Therefore the Polytomous Universal Model (PLUM) is suitable to model the data obtained in which the dependent variable are ordinal type of variable. Model 1 and Model 3 enlighten the most in explaining the variation exists in the result of the students during MDAB program. Based on the significant variables, Model 1 and 3 explaining the variation in the result significantly which is less than 0.05 levels.

However, the best model to explain the variation exist in the MAT037 result is Model 1 which comprised of variables preferences of the student’s toward the subject and the Mathematics’ lecturers and their efforts in learning the subject. This is due to the value obtained from the pseudo R-square Nagelkerke shows that Model 1 explained about 27.7% of the total variation in the MAT037 result compared to only 23.4% by Model 3.

From Table 5, the significance level shows that student’s preferences and effort are all related to MAT037 results. They all have positive coefficients. For variable preference, a one unit increase in preference (i.e., going from 0 to 1), expect a 1.071 increase in the ordered log odds of achieving a higher level of result in MAT037, given all of the other variables in the model are held constant. For variable effort, a one unit increase in effort (i.e., going from 0 to 1), expect a 1.328 increase in the ordered log odds of achieving a higher level of result in MAT037, given all of the other variables in the model are held constant.

Table 5. The estimates of Model 1.

		Estimate	Std. Error	Wald	Sig.
Threshold	[MAT037 = 1]	5.688	1.464	15.092	.000
	[MAT037 = 2]	6.955	1.542	20.344	.000
Location	PREFERENCE	1.071	.395	7.347	.007
	EFFORT	1.328	.438	9.174	.002

6. Conclusion and Recommendation

In conclusion, students agreed that MAT037 is an easy course and at the same time they tend to agree that they do not have to try really hard for the subject.

The best PLUM model to explain the variation exist in the MAT037 result is Model 1 which comprised of variables preferences of the student's toward the course and the Mathematics' lecturer also their efforts in learning the course. This shows that if the students like Mathematics, they will do extra exercises and always attend the classes. The preferences towards lecturer also influenced the student to like the course. Model 1 also proved that the student's effort as one of the variables that explained the students' performances in MAT037. The efforts comprised of having consultation with the lecturers, having group discussion and also doing exercises from the assignment and past years questions.

For future research the researcher may investigate the Mathematics performance of the former MDAB students in the diploma level. This would give a holistic view whether the mathematics course Essential Mathematics (MAT037) is sufficient in helping the students to perform excellently in Mathematics course at the diploma level.

7. References

- Hassan, A., Murat, C., & Helena, M. S. (2012). A research of the effect of attitude, achievement and gender on Mathematics Education. *Acta Didactica Napocensia*, Vol 5 (1). Retrieved from http://dppd.ubbcluj.ro/adn/article_5_1_5.pdf.
- Low, A.N. (2006). Hubungan antara minat, galakan ibubapa dan pengajaran guru dengan pencapaian Matematik di kalangan pelajar Tingkatan Empat di Daerah Pontian Johor. Honors Theses. Retrieved from http://www.fp.utm.my/ePusatSumber/pdf/fail/ptkghdfwP2/p_2006_6910_1ecef9f4e3384d5cbe54a8145214f6eb.pdf.
- Michelli, P. M. (2014). The relationship between attitudes and achievement in Mathematics among fifth grade students. Honors Theses. Retrieved from http://aquila.usm.edu/cgi/viewcontent.cgi?article=1162&context=honors_theses.
- Muhammad and Syed (2008). Students' attitude towards Mathematics. *Pakistan Islamic and Social Review*. Vol 46(1), 75-83. Retrived from <http://pu.edu.pk/images/journal/pesr/PDF-FILES/5%20FAROOQ%20Students%20Attitude.pdf>.
- Pelan Pengajian Pra-Perdagangan, Universiti Teknologi MARA (2014).
- Sabitha, M., & Mofidul, I. (2010). Attitude of secondary students towards Mathematics and its relationship to achievement in Mathematics. *International Journal of Computer Technology and Application*, Vol 3 (2), 713-715.
- Sekaran, U. (2003). *Research Methods for Business – A Skill Building Approach (4th ed)*. New York: John Wiley & Sons.