

# THE QUALITY OF TEACHING AMONG SECONDARY BOARDING SCHOOLS' MATHEMATICS TEACHERS

Norazman Arbin<sup>1</sup>, Sazelli Abdu<sup>1</sup> Ghani<sup>1</sup>, Mohd Syafarudy Abu<sup>2</sup>, Firdaus Mohamad Hamzah<sup>3</sup>, Siti Noor Asyikin  
Mohd Razali<sup>4</sup>

<sup>1</sup>Department of Mathematics  
Sultan Idris Education University  
Perak, Malaysia

<sup>2</sup>Institute of Engineering Mathematics  
Perlis University Malaysia  
Perlis, Malaysia

<sup>3</sup>Unit of Fundamental Engineering Studies  
National University Malaysia  
Selangor, Malaysia

<sup>4</sup>Department of Mathematics and Statistics  
Tun Hussein Onn University Malaysia  
Johor, Malaysia

**Abstract** The main goal for all students is to gain excellence academically. One of the important factors is through teaching quality especially on teachers' instructions. One of the factors that determine the quality of teaching is the students' perception. The aim for this research is to identify the mathematics teachers' quality of teaching at boarding secondary school. This study focused on students' perception, based on genders on the quality of teaching of their teachers and, its relationship with the former's mathematics achievement. This research was carried out in four boarding schools, involving 120 form four students as the sample of the study. The instrument employed was a set of questionnaires comprising 21 items. The data obtained was analysed by using two types of statistical analysis. The descriptive statistics was used to obtain the frequency and mean for each of the dimensions of the teachers' quality of teaching, while the inferential statistic was used to ascertain the relationship between students' perceptions on their mathematics teachers' quality of teaching and the students' mathematics achievement. Finally, the t-test was used to investigate the difference in perceptions between the genders. The result showed that the students from those schools had positive perception on their teachers' quality of teaching. There was a significant relationship between the male students' perception on the quality of their teachers' teaching and male students' achievement. However, there was no significant relationship between the female students' perception on the quality of their teachers' teaching and the female students' mathematics achievement. On the other hand, statistically the result also indicated that the students' perception regardless of gender on their mathematics teachers' quality in teaching did not influence their achievement in mathematics. The findings of this

research could be used as a guideline for teachers in order to enhance the quality of teaching and learning.

**Index Terms**— quality of teachers' teaching.

## I. INTRODUCTION

Undoubtedly, the main goal of students in school is to attain academic excellence. As a core group in school, these students need to be given utmost priority by the school authority by providing them quality education. The quality of the teachers' instruction can be considered as the main factor to achieve the said goal. Hence, teachers must always maintain the excellence of their classroom's instructions. The quality of teaching and learning in the mathematics classroom has always been a major concern for many countries according to [1]. Thus, the learning process could be more meaningful with a sustainable effort in improving the classroom instructions [2]. Undeniably, continuous improvement in the quality of teaching and learning is the key to the success of the present education development in Malaysia as stated by [3]. This clearly shows that the quality of teaching and learning is an important element in education that should be emphasized. The quality of teaching and learning through intensive preparation by the teachers will allow the classroom instructions to be more systematic and organized. This assertion is supported by [4], which states that teachers must strive to carefully prepare their lesson plans before the beginning of each lesson. The teaching preparation should include the teaching approaches adopted by the teacher,

students' involvement and the interaction between teachers and the students [5].

The quality of education refers to the success of a school that manages to create an educational environment that allows students to achieve their academic potentials effectively [6]. Meanwhile, [7] states that *'teaching necessarily begins with a teacher's understanding of what is to be Learned and how it is to be taught'*. Thus, the decisions made by teachers before, during, and after the lesson are very important for the students as well as for the teachers in improving the quality of the classroom instructions. The quality of teaching and learning might also involve other factors as stated below. According to [8], in the context of education, the students' negative perceptions on the quality of teaching and learning may also be influenced by the unsatisfactory classroom facilities. Perception on the teaching quality is an important aspect that should be seriously considered to improve students' achievement especially in mathematics.

Malaysia intends to be a developed nation by the year 2020. Thus, she needs individuals to have skills in various fields. Mathematics is one of the important subjects to help produce individuals with high skills. Therefore, mathematics needs to be understood and mastered by students. Therefore, quality teachers teaching mathematics are essential. However, according to [9], one of the problems in education is the low quality of the teaching instructions among teachers, especially in mathematics. This situation is of great concern to the public [10]. As teachers play an important role in education, the researchers of this study wished to explore more on this matter. Many previous studies have shown that there is no significant positive relationship between the teachers' teaching quality and students' achievement [11]. However, according to [1], effective teachers are those who can produce excellent students in the examination. This finding is supported by [12] who states problems that occurred in the teaching and learning process are due to the lack of self-knowledge and the low quality of teaching by the teachers. In his research exploring the differences between the new teachers and experienced teachers, [13] pointed out that the teacher itself is one of the main factors affecting the students' achievements. Research by [14] highlights the added value of education in Tennessee that shows differences in achievements between students who were taught by the high quality teachers and those who were taught by the low quality teachers. This clearly shows that the quality of teachers gives different effects on students' achievement. The evaluation of the "Success for All Programs" in Baltimore and Philadelphia showed a good performance by the students who were taught by trained, focused and motivated teachers [15].

The quality of education at the school level can be seen from different perspectives. However, this study focused more on the teaching quality of mathematics teachers during classroom instructions. The researchers of this study have noted that not much effort had been made to examine students' perception on the mathematics teachers' quality of teaching and its relationship with the students' achievement [8]. Therefore,

in this research, an investigation into the differences in perceptions on the mathematics teachers' quality of teaching and learning by the mathematics teachers at boarding secondary schools as well as the relationship between perceptions and the students' achievement in mathematics was carried out. This study focused on several dimensions of the mathematics teachers' teaching quality such as teaching, evaluation, subject and incentives. The dimension of teaching refers to the teaching methods and strategies employed by the mathematics teachers during instructions while the dimension of evaluation focuses on the formative evaluation that includes exercises given in the classrooms, discussions between the teacher and the students and between students themselves and also homework given to the students. As far as the dimension of subject is concerned, the main focus is on the teachers' mathematical content knowledge and general pedagogical knowledge. The final dimension of incentives refers to the motivational talks, encouragement, rewards and punishments meted out by the teachers to the students.

### I. Objective of The Study

The objectives of the study were to:

- a) Determine the students' perceptions on their mathematics teachers' quality of teaching (teaching, evaluation, subject and incentives) of the boarding secondary schools.
- b) Determine the relationship between the students' perceptions on their mathematics teachers' quality of teaching (teaching, evaluation, subject and incentives) and the students' mathematics achievement.
- c) Determine whether there was any significant difference between the male students' and the female students' perceptions on their mathematics teachers' quality of teaching (teaching, evaluation, subject and incentives)

### II. Methodology

This study employed a quantitative survey design. Four boarding secondary schools were chosen randomly from a list provided by the Perak Education Department. The population for this study was Form Four students from these schools. They were specifically chosen due to their maturity and being uninvolved in any national examination. Thirty students were selected randomly from each school. For this research, a questionnaire was constructed and face validity was obtained from two experts. A pilot study was conducted prior to the actual research to check the suitability of the language used and clarity of the questions posed. From this pilot study, a reliability coefficient of 0.82 was obtained (Cronbach's alpha). Thus, the questionnaire was used in the actual research without any alteration. Two types of statistical analysis were used to analyze the data obtained. First, the descriptive statistics was used to obtain the frequency and mean for each of the dimensions of the quality of teaching. Secondly, the inferential statistics namely the Pearson Moment correlation was used to analyze data to ascertain the relationship between students' perceptions on their mathematics teachers' quality of teaching (teaching, evaluation, subject and incentives) and the students'

mathematics achievement. The *t*-test was used to investigate the difference in perceptions between the male and the female students.

### III. Findings and Discussion

The findings and discussion were based on a survey which consisted of three research questions. Students' perceptions for each dimension on the quality of teaching were categorized according to TABLE (1).

TABLE I. Levels of Perception for Each Dimension on Quality of Teaching

Scale	Perception	Category
1.00 – 1.99	Very Low	Weak
2.00 – 2.99	Low	Moderate
3.00 – 3.99	Moderate	Good
4.00 – 5.00	Very High	Excellent

The research questions and the findings are as follows:

#### What was the students' perceptions on their mathematics teachers' quality of teaching (teaching, evaluation, subject and incentives) of the secondary boarding schools?

The four dimensions on the quality of teaching evaluated were teaching, assessment, subject and incentive were derived from responses given by the respondents. TABLE (2) shows the analysis concerning the mean level of perception for each dimension.

TABLE II. Dimension of Quality Teaching and Learning

Dimension	Mean		Standard Deviation (std)	
	Male	Female	Male	Female
Teaching	3.85	3.72	1.01	1.09
Evaluation	4.05	4.01	0.61	0.79
Subject	3.25	3.79	0.97	0.89
Incentive	4.09	3.67	0.62	1.02

From TABLE (2), the mean values for the dimensions of evaluation and incentive for male students of the boarding schools were 4.05 and 4.09 respectively. This showed that these dimensions fell under the excellent category. Meanwhile, as far as the female students were concerned, only the dimension of evaluation fell under the excellent category. For the male students, the mean values for teaching and subject fell under the good category, while for the female students, three dimensions fell under the same category.

#### Analysis of Hypothesis Testing

#### Was there a significant positive relationship between students' perception on their mathematics teacher' quality of teaching (teaching, evaluation, subject and incentives) and the students' mathematics achievement?

TABLE (3) shows the analysis on the correlation between students' perception on the quality of their mathematics teachers' teaching and the students' mathematics achievements.

TABLE III. Correlation Between Students' Perception on The teaching quality of the Mathematics Teachers and Their Achievement in Mathematics

Teaching and Learning Quality	Pearson Correlation Sig. (2-sample) N	Mathematics Achievement	
		Male	Female
		-0.35	-0.01
		0.00	0.78
		65	55

TABLE (3) shows the correlation between students' perception on their mathematics teachers' quality of teaching and the students' mathematics achievement. From the table above, there was a negatively weak but insignificant correlation between the student' perceptions and their mathematics achievement based on the value of  $r = -0.35$  and  $r = -0.01$  for the male and female students respectively. The *p*-value of 0.78 for female students which was above the significant level (0.05) and this showed that the null hypothesis was not rejected, which indicated that there was no significant relationship between female students' perception and their mathematics achievement. Although the mean scores showed that the female students' perception fell under good and excellent categories, however this did not guarantee that the female students' mathematics achievement would be equally good. On the other hand, for the male students ( $p=0.00$ ), the null hypothesis was rejected, which indicated that there was a significant relationship between the male students' perception and their mathematics achievement.

#### Was there any significant difference between the male students' perception and the female students' perception on the teaching quality of their mathematics teachers (teaching, evaluation, subject and incentives)?

TABLE (4) shows the *t*-test results concerning the difference in perceptions between the male and female students.

TABLE IV. The t-Test Results Concerning the Difference In Perceptions Between The Male and Female students

	N	Mean	std	t	df	Sig
Teaching and Learning Quality				0.82	118	0.37
Male	65	3.94	0.81			
Female	55	3.92	0.92			

TABLE (4) shows a mean score of 3.94 (std = 0.81) for the male students, and 3.92 (std = 0.92) for the female students. Both the mean values gave a positive overview of the students' perception on teaching quality of their mathematics teachers. The result from *t*-test analysis indicated that there was no significant difference between the male students' and the female students' perception on their mathematics teachers' quality of teaching ( $t(118) = 0.82$ ), with a *p*-value of 0.37 where  $p > 0.05$ . Therefore, the null hypothesis was not rejected. Overall, this gave an indication that the students' perception (regardless of gender) on their mathematics teachers' quality in teaching did not influence the students' achievement in mathematics.

#### IV. Conclusion

The findings had shown that two of the null hypotheses were not rejected and one was rejected. Results from the first null hypothesis that was not rejected indicated that there was no significant relationship between the female students' perception on their mathematics teachers' teaching quality (teaching, evaluation, subject and incentives) and the female students' mathematics achievement. Meanwhile there was a significant relationship between the male students' perception on their mathematics teachers' quality of teaching and the male students' mathematics achievement, while for the female, there was no significant relationship. This could be due to the fact that most of the male students depended entirely on the instructions received during the mathematics lessons in schools. On the other hand, most of the female students received additional coaching from extra classes after school hours as well as diligently requesting assistance from the mathematics teachers themselves whenever they faced problems. In addition, the null hypothesis also showed that there was no significant difference between the male students' and the female students' perception on their mathematics teachers' teaching quality (teaching, evaluation, subject and incentives). Although the results showed that there was no significant relationship between the girls' perception on their mathematics teachers' teaching quality and their mathematics achievement, the researchers held the same belief as [1] and [14] that the mathematics teachers' teaching quality would ultimately determine the mathematics achievement of the students regardless of gender. Overall, the findings of this study rejected the findings of many studies including [11] that there is no significant relationship between the teachers' teaching quality and students' achievement. Nevertheless, this type of study needs to be carried out on a larger scale so that the result obtained would be more comprehensive.

Teachers must realize that their teaching roles would definitely affect students' learning. They should improve the quality of their teaching skills so as to subsequently produce quality students. Therefore, in order to enhance their teaching ability, mathematics teachers should participate in in-service professional development programs diligently. The mathematics teachers should also carry out reflections on their teaching methods and strategies employed continuously in order to improve their instructional skills. This would further

enhance the quality of the teachers' professionalism in teaching and consequently and hopefully have a significant impact on the students' achievement in mathematics. It is hoped that the findings of this study would help teachers, parents and school administrators to acknowledge the existence of the students' perception on their mathematics teachers' teaching quality and its effect on the latter's mathematics achievement. It must be stressed that mathematics teachers should implement various creative teaching methods so that the students would be interested to participate in the learning process and thus would be able to gain a better achievement in mathematics. In a nutshell, the mathematics teachers who undoubtedly play important roles in any school should always strive to improve the various aspects of their instructions so as to benefit their core clients, the students. Educational excellence does not only depend on the philosophy and the curriculum developed, but also requires excellent teachers who are highly motivated as well.

#### REFERENCES

- [1] W.S. Toh, Student centered pedagogy: Lets we forget, [http://219.93.129.238/mpblweb/research/2003\\_toh.htm](http://219.93.129.238/mpblweb/research/2003_toh.htm).
- [2] S.M.Tang and K.T. Lim, Journal of Teacher Education,3(1), 27-31 (2002).
- [3] S. Robiah, Inovasi kaedah pengajaran: Pengalaman di Universiti Kebangsaan Malaysia, National Conference on Teaching and Learning in Higher Education Proceedings, Universiti Utara Malaysia, 2000, pp 101-111.
- [4] L. Atan, Pedagogi Kaedah Mengajar, Petaling Jaya: Fajar Bakti Sdn. Bhd, 1986.
- [5] L. Atan, Psikologi Pendidikan, Kuala Lumpur: Dewan Bahasa dan Pustaka, 1978.
- [6] J. Rowley, Quality in Higher Education, 2(3), 237-255 (1996).
- [7] L.S. Shulman, Educational Researcher, 15(5), 4-14 (1986).
- [8] M. Guolla, Journal of Marketing Theory and Practice, 87-97 (1999).
- [9] K. Wayan, Jurnal Pendidikan dan Kebudayaan, 025, 21-25 (2000).
- [10] Jemaah Nazir Sekolah, Standard Kualiti Pendidikan Malaysia, Putrajaya: Kementerian Pendidikan Malaysia, 2001.
- [11] J. Saunder, The Journal Educational Thought, 12(3), 184-189 (1978).
- [12] W. Bakar, Kajian Perkembangan Pendidikan, 4 (2), 17-23 (1988).
- [13] J. Hattie, Teachers make a Difference What is the research Evidence? [www.docstoc.com/docs/2251792/Teachers-Makea-Difference](http://www.docstoc.com/docs/2251792/Teachers-Makea-Difference).
- [14] W.L. Sanders and J.C. Rivers, Cumulative and Residual Effects of Teachers of Future Students Academic Achievement, [www.mccsc.edu/~curriculum/cummulative%20and%20residual%20effects%20of%20teachers.pdf](http://www.mccsc.edu/~curriculum/cummulative%20and%20residual%20effects%20of%20teachers.pdf).

[15] R.E. Slavin, Contemporary Educational Psychology,  
21, 43-69 (1996).