

TEACHERS AND STUDENTS ATTITUDE TOWARDS MATHEMATICS IN SECONDARY SCHOOLS IN SIAYA COUNTY, KENYA

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ABSTRACT

The study found out the relationship among teachers' attitude and students' performance in mathematics Kenya certificate of secondary education (KCSE). The study is an ex-post facto type, which adopted descriptive survey design. Three research questions were answered in the study.

The subjects for the study were one hundred and seventy one (171) students and twenty three (23) mathematics teachers selected from secondary schools in Siaya County, Kenya. Two research instruments were used for data collection. The data were analyzed using simple frequency and percentages. The findings revealed that there was good and positive attitude of teachers towards the teaching of mathematics in secondary schools in spite of the shortcomings that has bedeviled the teaching profession and particularly in the teaching of mathematics. It is very important that teachers of mathematics should be motivated, well equipped and be psychologically prepared to teach the subject in the secondary schools.

Keywords: Teachers and Students attitude, Performance in mathematics, Kenya

INTRODUCTION

Schools are social organizations with defined rules and procedures that determine the degree of activities and behaviour of each member (Mbithi, 1974).The teaching of mathematical concepts and skills the students encounter in school shapes their understanding, their ability to solve problems and their confidence in, and disposition toward Mathematics (Too, 2007).

Mathematics the world over plays a pivotal role in student lives, it is a bridge to science, technology and other subjects offered in any formal educational system.

A large part of bad performance in national examinations in Kenya is contributed by poor performance in Mathematics. Consequently the Kenya secondary school examination (KCSE) Mathematics results continue to cause concern to all the stakeholders in the education sector. This was compounded in 2003 when the Government of Kenya implemented the Free Primary Education (FPE) policy that resulted in higher primary school enrolments countrywide. Therefore, there is serious and urgent need for intervention.

Studies and reports have established the causes of the appalling state of Mathematics (KNEC, 2006; O'Connor, Kanja & Baba, 2000; SMASSE, 1998; Too, 1996).These causes were identified as (a) inadequate coverage of syllabus (b) inadequate assignments to students (c) lack of appropriate teaching methods and (d) Negative attitude of students towards Mathematics. Recent study carried out to determine the relationship between teacher experience and students' performance in mathematics found that teacher experience and competence were the prime predictors of students' performance in all subject in secondary

schools in Ondo state Nigeria (Adeyemi, 2008). Odhiambo (2006) pointed out that there is a shortage of mathematics teachers in Kenya but in urban schools the problem is not as pronounced.

Mji and Makgato (2006) in South Africa, pointed out that few students take mathematics and those who do so do not perform well because they are not motivated which ultimately may lead to mass failures.

An attitude is a point of view about a situation; it is a way of thinking. It is an inward feeling expressed by outward behaviour. It has implications for the learner, the teacher, the social group with which the individual learner relates. Attitudes are formed as a result of some kind of learning experiences. They may also be learned simply by following the example or opinion of parent, teacher or friend. This is mimicry or imitation, which also has a part to play in the teaching and learning situation. In this respect, the learner draws from his teachers' disposition to form his own attitude, which may likely affect his learning outcomes.

Bandura (1971) in his observational theory demonstrated that behaviours are acquired by watching another (the model, teacher, parent, mentor, friend) that performs the behaviour. The model displays it and the learner observes and tries to imitate it.

Teachers are, invariably, role models whose behaviours are easily copied by students. What teachers like or dislike, appreciate and how they feel about their learning or studies could have a significant effect on their students. Unfortunately, however, many teachers seldom realize that how they teach, how they behave and how they interact with students can be more paramount than what they teach. In a nutshell, teachers' attitudes directly affect students' attitudes. Teachers' attitudes are in turn, influenced by their culture and belief system.

Teachers' attitudes towards their students in school must be favourable enough to carry students along.

When the learner exhibits the expected behaviour or response, the value attached determines very significantly the effectiveness of the learning processes in any aspect of education. Kibe *et al* (2008) stipulates that for teaching and learning of science to be interesting and stimulating, there has to be motivation on the part of both the teacher and the learner so as to ensure the development of positive attitude and subsequently maximum academic achievement.

It has been observed that teachers teach science in a way that merely requires the pupils to listen, read and regurgitate. This depicts negative attitude to teaching. Several research findings have confirmed the hypothesis that teachers' attitude either towards science or towards science teaching affect their students' achievement in and attitudes towards science. Alao and Adeleke (2000) found that the effect of teachers' attitude towards assessment practices on students' achievement and their attitude towards mathematics was positive. In the same vein Onocha, (1985) reported in one of his findings that teachers' attitude towards science is a significant predictor of pupils' science achievement as well as their attitude.

Chako (1981) reported in a study of teacher and student characteristics as correlates of learning outcomes in mathematics that teachers' attitude towards teaching significantly predict students' attitude as well as achievement in Mathematics. Aduda (2005) found that teachers' attitude towards mathematics teaching is one of the major contributors towards explaining the variance in students' cognitive achievement. Mutahi (2008) confirmed that teachers' attitude towards Integrated Science teaching affect their students' attitude to and achievement in the subject while Balozzi (2004) found significant causal relationship between the teachers' attitude and students' achievement in Integrated Science.

Teachers' attitude towards the teaching of Mathematics plays a significant role in shaping the attitude of students towards the learning of Mathematics. Ogunniyi (1982) found that students' positive attitude towards science could be enhanced by the following teacher-related factors: (a) Teachers' grounded knowledge of the subject-matter and their making science quite interesting. (b) Teachers' resourcefulness and helpful behaviour (c) Teachers' enthusiasm

From the above we can say that the role of the teacher as facilitator of learning and the contributions to students' achievement is paramount. Njuguna (2005) was of the opinion that the success of our science programme depends greatly on the classroom teacher as he is the one that synthesises, translates and disseminate all our thoughts into action.

It can be argued to some extent that the characteristics of the teachers and their experiences and behaviours in the classrooms, contribute to the learning environment of their students, which in turn will have an effect on student outcomes. It is also important that we do not undermine the role of the parents in affecting student learning.

A common hypothesis with respect to the relationship between teachers' experience and student achievement is that students taught by more experienced teachers achieve at a higher level, because their teachers have mastered the content and acquired classroom management skills to deal with different types of classroom problems (Gibbons et al, 1997). Furthermore, more experienced teachers are considered to be more able to concentrate on the most appropriate way to teach particular topics to students who differ in their abilities, prior knowledge and backgrounds (Stringfield and Teddlie, 1991).

Orado (2008) was of the view that in order to improve on any aspect of education, it is therefore imperative to involve a well articulated teacher education programme that will prepare the teacher for the leadership role they are expected to play. The nation's overall development is inextricably tied to its educational system. If we accept these views, then there is the need to introduce quality into the system. Most educationists believed that there could be no meaningful socio-economic development without the right type and appropriate quality of education. To become an educated person requires the combination of several factors and processes. At the centre of the processes is the presence of an educator. The teacher is the most indispensable factor in the effective administration of any education system.

In his opinion Waititu (2008) said that no matter what amount of resources we might put into the nation's education system, without properly prepared and motivated teachers, we can never expect from the system.

The importance of teacher in the meaningful education at all levels is reflected in the National Policy brief on Education No.18 August (2010) that declares that no educational system may rise above the quality of its teachers. This declaration in the policy document underscores the need for teacher effectiveness in our schools. Ministry Of Education (2007) conceptualises teachers' effectiveness as the managerial skills essential for enhanced classroom control and discipline. It is the teacher's competence, ability, resourcefulness, and ingenuity to efficiently utilize the appropriate language, methodology and available instructional materials to bring out the best from learners in terms of academic achievement. To Orado, (2008) teachers are said to be effective when their teaching can lead to students' learning. Nothing has been taught until it has been learnt and this happens when the teacher succeeds in causing a change in behaviour in the learner. It is therefore important that the teacher must see teaching as an attempt on his own part to transfer what he has learnt to his students. Despite conventional wisdom that school inputs make little difference in student

learning, a growing body of research suggests that schools can make a difference and a substantial portion of that difference is attributable to teachers. Studies of teachers' effectiveness at the classroom level using the Tennessee Value-Added Assessment System and a similar database in Dallas, Texas, have found that differential teacher effectiveness is a strong determinant of differences in student learning. The studies further revealed that students who are assigned to several ineffective teachers in a row have significantly lower achievement and gains in achievement than those who are assigned to several highly effective teachers in sequence (Sanders and Rivers, 1996).

It is important to note that the various dispositions that our teachers display at work betrayed their devotion. This has greatly affected the attitude of students towards learning generally and in particular, the learning of Mathematics and hence their poor performance in the subject. Many have no mastery of the curriculum content and the organisation is highly detestable. Teachers' affective reactions to work are not as good as they should be in many of our schools. Yet, teachers are looked upon as instrument of social progress and change. This declining outlook calls for immediate diagnosis and treatment.

The present study investigates the relationship between teachers' attitudes and students' academic achievement with a view to confirming or annulling the above several claims.

RESEARCH QUESTION

What factors are responsible for motivating teachers' attitude towards teaching mathematics in secondary schools?

METHODOLOGY

The study adopted the expo-facto type using the descriptive survey design type. Frequencies and percentages were used in analyzing the data. Two research instruments were used. These were; Attitude of Students' Towards Mathematics Scale (ASTMS) and Mathematics teachers Questionnaire (MTQ).

The ASTMS was an adapted instrument from the modified Fennema-Sherman Mathematics Attitude Scales. It consisted Section A that dealt with the student's name, age, gender, class, name of school and county. Section B consisted of 14 questions made up of seven (7) negatively worded and seven (7) positively worded items to which the students were expected to respond to by expressing their degree of endorsement or resentment on a four point scale of Totally Agree (TA) (4), Agree (A) (3), Disagree (D) (2) and Totally Disagree (TD) (1). ASTMS was piloted on 48 Secondary School form four students in four different schools in Homa Bay County. Cronbach alpha coefficient (Cronbach, 1951) was computed to determine its reliability and the value obtained was 0.77. Mathematics teachers Questionnaire (MTQ) was developed by the researcher by modifying the Third International Mathematics and Science Study (TIMSS) questionnaire. It consists of Section A which is made up of 10 questions dealing with the name of the school, gender, age, qualification, years of experience, students number in the mathematics class of teachers, allotted time in a week of teaching mathematics, number of hours spent on other and extra curriculum activities which has the options of "None", "less than or ≤ 1 hour", "1-2 hours", "3-4 hours", "more than or ≥ 4 hours". Section B consists of 14 items which deal with the attitude of teachers towards the teaching of mathematics and has the options "Totally Agree (TA) (4)", "Agree (A)(3)", "Disagree (D) (2)" and "Totally Disagree (TD) (1)". MTQ was given to Mathematics teachers in secondary schools and District Education Quality Assurance Officers for upgrading. The MTQ was administered on 4 secondary Schools and 12 mathematics teachers

in Homa Bay County. The Cronbach alpha was used to determine the reliability coefficient. The value obtained was 0.69.

RESULTS AND DISCUSSION

Teachers' attitude towards the teaching of mathematics plays a significant role in shaping the attitude of students towards the learning of mathematics. The result of this study confirmed this because teachers' and students' attitude was significant and can be used to predict students' performance in mathematics. The results also agrees with that of Onocha (1985) who reported in one of his findings that teachers' attitude towards science is a significant predictor of pupils' science achievement as well as their attitude towards science. The result also agrees with that of Miji and Makgato (2006), Chiriswa (2003), and Yeya (2002). Also, Ogunniyi (1982) found that students positive attitude towards science could be enhanced by teachers enthusiasm, resourcefulness and helpful behaviour, teachers' thorough knowledge of the subject matter and their making science quite interesting.

The result showed that 13 teachers representing 56.5% did not agree that mathematics is primarily an abstract subject while 10 teachers representing 43.5% agreed that mathematics is an abstract subject.

Majority of the teachers 16 representing 69.6% were affirmative on the idea that mathematics is primarily a formal way of representing the real world while very few of the teachers 7 representing 30.4% did not agree with this view. Similarly 19 teachers representing 82.6% believed strongly that mathematics is primarily a practical and structured guide for addressing real situations while 4 teachers representing 17.4% were of the contrary opinion. Majority of the teachers (18) representing 78.3% believed that if students are having difficulty, an effective approach is for the teacher to give them more practice during the class. 17 teachers representing 73.9% strongly believed that some students have a natural talent for mathematics and others do not while 6 teachers representing 26.1% do not believe this. More than one representation (picture, concrete material, symbol set etc) should be used in teaching any mathematics topics was widely accepted by majority of the teachers 18 representing 78.3% as a way of improving on the attitude of the students to learning mathematics. Most of the teachers 15 representing 65.2% strongly agree with the idea that mathematics should be learned as a set of algorithms or rules that cover all possibilities while 8 teachers representing 34.8% did not agree with this views. 16 teachers representing 69.6% strongly agreed that a liking for and understanding of students are essential for teaching mathematics while 7 teachers representing 30.4% did not agree with this view.

21 teachers representing 91.3% did not agree that mathematics is a very difficult subject to teach while only 2 teachers representing 8.7% agreed that the subject is very difficult to teach. 20 teachers representing 87% did not agree that they were compelled to teach mathematics while only 3 teachers 13% strongly agreed that they were compelled to teach the subject. This may be due to the attitude to work of these teachers who do not have the love of the students at heart neither do they love the subject and the teaching profession. These types of teachers are those that get into teaching just to earn a living and not for the sake of the students. Similarly 21 teachers representing 91.3% did not agree that they teach mathematics because they have no option while only 2 teachers representing 8.7% agreed that they had to teach mathematics because they had no option. 17 teachers representing 73.9% did not agree that they were not competent to teach some topics in mathematics effectively while only 6 teachers representing 26.1% frankly agreed that they were not competent to teach some topics in mathematics effectively. 14 teachers representing 60.9% strongly agreed that shortage of equipment does not give room for effective teaching of mathematics while 9 teachers

representing 39.1% disagree with this view. Majority of the teachers (18) representing 78.3% agreed that mathematics teachers should be given special stipend to motivate them to teach mathematics while the remaining 5 representing 21.7% teachers did not agree with this view. From the consensus of the opinions and the results of the findings, it can be inferred that teachers attitude towards the teaching of mathematics was good in spite of the various shortcomings that is associated with the teaching of mathematics in the secondary schools.

CONCLUSION

The learning of mathematics depends on the way it is presented to the learner, the way the learner actively interacts with the learning experiences presented to him and the environment within which the learning takes place. With the current increase in scientific knowledge the world over, much demand is placed and emphasis is laid on the teacher, the learner and the environment in the whole process of teaching and learning of mathematics. Teachers' attitude towards the teaching of mathematics plays a significant role in shaping the attitude of students towards the learning of mathematics. Teachers' attitude towards science is a significant predictor of pupils' science achievement as well as their attitude towards science. Students' positive attitude towards science could be enhanced by teachers' enthusiasms, resourcefulness and helpful behaviour, teachers' thorough knowledge of the subject matter and their making science quite interesting. All these factors could also be applicable to mathematics learning since mathematics is regarded as the language of science. It is on this premise that the attitude of the teacher, his (her) disposition to the subject, students, classroom environment could make or unmake the attitude of the students towards the learning of mathematics. The attitude of the mathematics teacher can mold the attitude of the students to want to learn or not. Hence the mathematics teacher should be psychologically prepared to teach the subject given that every other requirement is met.

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