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The Attitude of Teachers and Students towards Mathematics Instruction in Secondary Schools in Orhionmwon Local Government Area of Edo State

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Abstract
The study investigated the attitudes of teachers and students towards mathematics instruction in secondary schools. Two research questions guided the study. The study adopted survey design. A sample of twenty three (23) students and twenty three (23) mathematics teachers were selected from secondary schools in Orhionmwon Local Government Area. The data were elicited through the use of questionnaire which was administered on the respondents, scored, analyzed and evaluated using the simple frequency and percentages. The findings among others showed that there was good and positive attitude of teachers towards the teaching of mathematics in secondary schools in spite of the shortcomings that have bedeviled the teaching profession and particularly in the teaching of mathematics. Based on this, it is therefore recommended that teachers of mathematics should be motivated, well equipped and be psychologically prepared to teach the subject in the secondary school.
Keywords: Teachers, students, attitude, performance, mathematics

Introduction:

In explaining the important of school, Odhiambo and Ogwel (2013) see schools as social organization with defined rules and procedures that determine the degree of activities and behaviour of each member. They added that the teaching of mathematical concepts, and skills the students encounter in school, shape their understanding, aptitude, and ability to solve problems as well as their confidence and disposition toward mathematics.

Mathematics the world over plays a pivotal role in students' life; it is a bridge to science, technology and other subjects offered in any formal educational system. The poor academic performance of students in Senior School Certificate Examination (SSCE) Mathematics has been a subject of concern to many people including parents, administrations, educators, psychologists and counsellors. The problem of poor academic performance of students in mathematics is so great that it has resulted into tension, depression and social maladjustment among some secondary school students who are not able to attain the desired grades required for admission into higher

institutions (Adeyemi, 2008). Government, parents and guardians are complaining about this situation. Mass failure of students in external examination has been attributed to a number of factors which include teacher's factor (low qualification, problem of inexperienced mathematics teachers, poor salaries/allowance, poor supervision, organizational climate (open and close), inadequate coverage of the syllabus, inadequate assignments to students, lack of appropriate teaching methods etc) and students' factors (poor ability of students, underage, unwillingness to learn, negative peer groups influence, lack of mathematics textbooks, among others).

A study carried out to determine the relationship between teacher experience and students' performance in mathematics found that teachers' experience and competence were the prime predictors of students' performance in all subjects in secondary school in Edo State Nigeria (Adeyemi, 2008). Asante (2012) pointed out that few students take mathematics and those who do so do not perform well because of lack of motivation, reinforcement and negative attitude. 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 learners, the teacher, and 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 examples or opinions of parents, teachers and friends. This is mimicry or imitation, which also has a part to play in learning and learning situation. In this case, the learner draws from his teachers' disposition to form his own attitude, which may likely affect his learning outcomes.

In analyzing the factors that contribute to students' indifferent attitude towards mathematics as a school subject, Akinbode (2005) asserts that teachers' approaches of teaching mathematics are complex thereby making the comprehension of the subject difficult. Bandura (1971) in his observational theory demonstrated that behaviours are acquired by watching another (the model, teachers, parents, mentor, friend) that performs the behaviour. The model displays it and the learner observes and tries to imitate it. Invariably, teachers are role model; their 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. There is no gain saying that 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. Udhiambo (2013) opines that for teaching and learning of mathematics to be interesting and stimulating, there has to be motivation on the part of the teachers

and the learners so as to ensure the development of positive attitude and subsequently maximum academic achievement.

Several research findings have confirmed the hypothesis that teachers' attitudes in teaching affect their students' achievement. Alao and Adeleke (2000) found that the effect of teachers' attitude towards assessment practices on students' achievement and their attitude towards mathematics was positive. Chako (2000) reported, in a study of teacher and student characteristics as correlates of learning outcomes in mathematics, that teachers' attitudes towards teaching significantly predict students' attitudes as well as achievement in mathematics. Teachers' attitude towards teaching is one of the major contributors towards explaining the variance in students' cognitive achievement. Ogunniyi (1982) found that students' positive attitude towards science could be enhanced by the following teacher-related factors: (i) Teachers grounded knowledge of the subject-matter and their making science quite interesting (ii) Teachers' resourcefulness and helpful behaviour (iii) Teachers' enthusiasm (iv) The availability of instructional materials in teaching the subject (v) Ability of the subject teacher to have clear definition of the subject (vi) Ability to employ teaching methods that will help the students gain more attention than ever before (vii) When teachers' approaches to the teaching of the subject is not complex thereby making the comprehension of the subject easy. (viii) Ability to use the real teaching styles so as to enhance their attitude positively (ix) the use of reinforcement and constant motivation. (x) Characteristics of the teachers and their experiences and behaviours in the classroom contribute to the learning environment of their students.

From the above, we can say that teachers' role towards the teaching of mathematic is of paramount importance. They (teachers) play significant roles in shaping the attitudes of students towards the learning of mathematics; they serve as facilitators of learning; undoubtedly, the success and display of positive attitudes by the students for mathematics depend to a large extent on the classroom teacher as he is the one that synthesizes, translates and disseminates thoughts into action. A common hypothesis with respect to the relationship between teachers' experience and students' 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 (Gibbon & Shea, 1997).

In order to improve on any aspect of education, it is imperative to evolve a well-articulated teacher education programme that will prepare the teacher for the leadership role they are expected to play (Odhiambo & Ogwel, 2013). The nation's overall development is inextricably tied to its educational system. If this is correct, then there is the need to introduce quality into the system. Many educationists believed

that they 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 (teacher); the teacher is an indispensable factor in the effective administration of any education system.

Teachers' effectiveness and attitude towards mathematics could be said to be important factors in the teaching and learning of mathematics. The declaration in the policy document underscores this assertion. This declaration in the policy document underscores the need for teachers' effectiveness in the schools. Ministry of Education (2007) conceptualizes 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. It is therefore very imperative that the teacher should see teaching as an attempt on his own part to transfer what he has learnt to his students.

In a study on teacher's effectiveness at the classroom level using the Tennessee Value – added assessment system and a similar database in Dallas by Sanders and Rivers (1996), they found that differential in teacher effectiveness is a strong determinant of differences in students' learning. The study further revealed that students who are assigned to several ineffective teachers have significantly lower achievement and gains in achievement than those who are assigned to several highly effective teachers in sequence. It is the various dispositions that the teachers display at work that betray their devotion, and this has greatly affected the attitudes of students towards learning generally and in particular, the learning of mathematics and hence their poor performance in the subject. Many of these teachers have no mastery of the curriculum content, the organization is highly detestable. Teachers' affective reactions to work are not as good as they should be in many schools, and their reaction to work not quite encouraging. Yet, teachers are looked upon as instrument of social progress and change.

The teachers of mathematics should employ teaching styles/methods that will make the students gain more attention than ever before. The social interaction that exists between the teachers and the students that form effective interaction in the school must be strengthened. The interactions which may be direct or indirect must have a lot of influence on the students' attitudes to learning/performances. It is against this background that this study investigated the attitudes of teachers/students towards mathematics instruction in schools.

Attitudes are favourable or unfavourable tendencies towards a subject, individuals or a given situation. They cannot be seen directly but can be inferred from the things individuals do. They have powerful influence on everyone's likes and dislikes. 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 their teaching can lead to student's learning. This means that effective classroom management by the teacher breeds good students' attitude.

Attitudes are manifested in conscious experience, verbal reports, gross behaviour and psychological symptoms. Onocha (2007) defines it as mental and neutral state of readiness, organized through experience, exacting a directive or dynamic influence upon the individual's response to all objects and situations. We are of the opinion that attitudes are adaptation to abstractions or generalization about functioning in the environment, especially the social environment that are expressed as predispositions to evaluate an object, concept or symbols. Odhiambo (2013) added that attitudes include both the affective, or the core feeling of liking or disliking, and the cognitive or belief element which describes the object of the attitude, its characteristics and its relation to other objects.

Attitudes can be formed through parent's influence, by what they see and hear from their teacher, peer groups etc. Since behaviour is the outward expression of attitudes towards individuals or things, the implication is that for such behaviour to be changed, the attitude will have to be modified; and of course to modify an attitude, one has to find out factors that influence or give rise to such attitudes. The present study was out to investigate the relationship between teachers' attitudes and students' academic achievement with a view to confirming or annulling the above assertions.

Purpose of the study

The purpose of the study is to investigate teachers'/students' attitudes towards mathematics instruction in secondary schools. Specifically, the study aimed at:

1. Determining students' attitude towards mathematics.
2. Determining teachers' attitude towards mathematics.

Research questions

1. What is the students' attitude towards mathematics?
2. What is the teachers' attitude towards mathematics?

Methodology

The survey design was adopted for the study. Two research instruments were used. These were Attitude of Students' Towards Mathematics Scale (ASTMS) and

Mathematics Teacher Questionnaire (MTQ). The ASTMS was administered on the students while the MTQ was administered on the teachers.

The ASTMS was an adapted instrument from the modified Fennema-Sherman (1976) mathematics attitudes scale, consisting of sections A and B. Section 'A' dealt with the students' biography such as name, age, gender, class, name of school, state and country; while section 'B' consisted of 12 questions made up of (6) negatively worded and (6) positively worded items to which the students were expected to respond to by expressing their degree of endorsement or resentment on a four points scale of Totally Agree (TA) = 4, Agree (A) = (3), Disagree (D) = (2) and Totally Disagree (TD) = 1. To establish reliability, ASTMS was administered on 46 Senior Secondary Schools I (SSS I) students in four different schools in Orhionmwon. Cronbach alpha coefficient (Cronbach, 1951) was computed to determine its reliability and the value obtained was 0.66. Mathematics Teachers' Questionnaire (MTQ) was adapted from the Second International Mathematics and Science Study (SIMSS) questionnaire. It consists of two sections, A and B. Section A which is made up of 10 questions dealing with the name of the schools, gender, age, qualification, years of experience, students' number in the mathematics class, allotted time in a week for teaching mathematics, number of hours spent on other extra curricula activities which has the options of 'none' 'less than 1 hour', '1 – 2 hours', '3 – 4 hours', 'more than 4 hours'. Section B consists of 12 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 administered to 10 mathematics teachers in 4 secondary schools. The Cronbach alpha was used to determine the reliability coefficient. The value obtained was (0.67). Frequency and percentages were used in analyzing the data generated from the instruments.

Presentation of results

Research Question 1: What is students' attitude towards Mathematics?

Table 1: Response on students' attitude towards mathematics
Table 1a: Teachers' behaviour and knowledge of the subject matter affects students' attitudes

Responses	Frequency	Percentage
Agreed	18	78.26%
Disagreed	5	21.74%
Total	23	100%

Table 1b: Mathematics is an abstract subject

Responses	Frequency	Percentage
Agreed	20	86.96%
Disagreed	3	13.04%
Total	23	100%

Table 1c: The use of picture, concrete materials, symbols set to enhance students' attitudes

Responses	Frequency	Percentage
Agreed	20	86.96%
Disagreed	3	13.04%
Total	23	100%

Table 1d: Inadequate instructional materials do not give students room for effective learning of Mathematics

Responses	Frequency	Percentage
Agreed	19	82.61%
Disagreed	4	17.39%
Total	23	100%

On the role of teachers' behaviour and knowledge of the subject matter in influencing students' attitudes, the results in table 1a show that 18 students representing 78.26% agreed while 5 students representing 21.74% did not agree. The result of this study in table 1a confirms that the tools to predict students' performance in Mathematics are both teachers' and students' attitude. On the issue of Mathematics being an abstract subject, table 1b showed that 20 students were affirmative representing 86.94% while 3 students representing 13.06% did not agree. In table 1c, 20 respondents representing 86.96% believed, while only 3 respondents representing 13.04% did not agree. On the issue of inadequate instructional materials (table 1d) 19 respondents were in affirmative representing 82.61% while only 4 were of different opinions representing 17.39%.

Research question 2: What is the teachers' attitude towards Mathematics?
Table 2: Teachers' attitudes towards mathematics

Table 2a: Mathematics is a practical and structural guide for addressing real world

Responses	Frequency	Percentage
Agreed	18	78.26%
Disagreed	5	21.74%
Total	23	100%

Table 2b: Mathematics is difficult to teach

Responses	Frequency	Percentage
Agreed	1	4.4%
Disagreed	22	95.6%
Total	23	100%

Table 2c: Motivating teachers via stipend to enhance their attitudes

Responses	Frequency	Percentage
Agreed	19	82.6%
Disagreed	4	17.4%
Total	23	100%

As shown in Table 2a (Mathematics as a practical and structural guide for addressing real world), majority of the teachers, 18 of them representing 78.26% were affirmative, while few of the teachers, 5 representing 21.74% did not agree with this view. In table 2b (responses on Mathematics is difficult to teach), 22 teachers representing 95.6% did not agree while only one teacher representing 4.4% agreed that the subject is very difficult to teach. Those who did not agree said that they were not compelled to teach the subject and again we suggest that those who agreed may be as a result of 'I don't care' attitude to work, and do not have the love and interest of the students at heart; no gain saying that this type of person picked teaching appointment simply because there was no other option left for him. So the love for the subject and the students are not there.

On the issue of motivating teachers via stipend to enhance their positive attitudes (table 2c), 19 teachers representing 82.6% agreed that as a way of motivation, Mathematics teachers should be given stipend, while the remaining 4 of the teachers representing 17.4% did not agree on motivating teachers via stipend. From the results and the consensus opinion of the respondents we can correctly say that teachers had good attitudes towards the teaching of Mathematics, in spite of the predicament facing the teaching of the subject "Mathematics".

Discussion of findings

Attitudes of teachers towards the teaching of mathematic play vital roles in determining students' attitude towards the learning of mathematics. The results of this study, as summarized in tables 1a to 1d, confirm this because the tools to predict students' performance in mathematics are both teachers' and students' attitudes. The results agree with that of Onocha (2007) who reported that teachers' attitudes towards science is a significant predictor of pupils' science achievement as well as their attitude towards science. These results agree with that of Chako (2000) who reported in a study

of teacher and student characteristics as correlates of learning outcome in Mathematics, that teachers' attitude towards teaching significantly predicts students' attitude as well as achievement in Mathematics. The results also agree with Akinbode (2005) who found that the students' positive attitude towards science could be enhanced by teachers' enthusiasm, resourcefulness and helpful behaviour, clear definition of terms and thorough knowledge of the subject matter.

Conclusion and Recommendations

The way the learner actively interacts with the learning experiences presented to him and the environment within which the learning takes place depends on the way it is presented to the learner. With the current increase in scientific knowledge the world over, much demand is placed and emphasis is laid on the teachers.

Teachers' attitude towards mathematics is a clear picture of students' mathematical academic performance. Similarly, students' positive attitudes toward mathematics could be enhanced by teachers' enthusiasms, resourcefulness (competency) as well as helpful behaviour. Undoubtedly, teachers' thorough knowledge of the subject matter, clear definition of content as well as making the subject quite interesting arouses students' interest and curiosity for mathematics. It is on this ground we can correctly say that the attitude of the teachers precisely mathematics teachers, can mould, sharpen, modify the attitude of the students as to what to learn or not.

We therefore recommended that for improvement in students' performance in mathematics, teachers of mathematics should be motivated, well equipped and be psychologically prepared to teach the subject in secondary schools.

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