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ATTITUDE OF SECONDARY SCHOOL MATHEMATICS TEACHERS TOWARD THE TEACHING OF MATHEMATICS IN KATSINA LOCAL GOVERNMENT AREA OF KATSINA STATE

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Abstract
This study was conducted to find out the attitude of mathematics teachers toward the teaching of the subject in Katsina local government area of Katsina state. It also found out whether the teachers' attitude toward teaching the subject is related to their gender or level of academic qualifications. Thirty (30) mathematics teachers were randomly sampled for the study. Each of the teachers was given a 26 item questionnaire half of which were indicative of positive attitude while the other half showed negative attitude. The use of chi-square was employed to analyze the data at 0.05 significant level. From the result of the study it was discovered that teachers of mathematics in Katsina local government were positively disposed toward the teaching of the subject. The result also did not show any relationship in the attitude of male and female teachers toward teaching of the subject. As a result of the study it was recommended that the level of knowledge and teaching strategies of our teachers should be developed in order to raise their level of positive attitude toward teaching the subject.

Keywords: Attitude, Secondary Education, Mathematics, Teachers, Katsina State.

Introduction

Mathematics, being a core subject in our secondary schools is facing a lot of problems, one of which is the manner students learn it. Other problems come from the negative attitude toward the subject expressed by the teachers who teach the subject.

A statement credited to Roger Fuller (2004:1) aptly describes the importance of positive attitude toward the teaching of mathematics where he said "students may not remember all the math that you teach them, but your attitude towards it will never be forgotten''.

Mukherjee (1978), defines attitude as one's feelings, thoughts and predispositions to behave in some particular manner toward some aspects of one's environment. That means attitudes refer to our thinking, feeling about or action toward our fellow human beings and also how they in turn think or feel or even act toward us. Postman and Weingartner (1991), pointed out that the feelings, beliefs and assumptions of the teacher determines the effectiveness of the learning environment and therefore ensure efficient learning. The teachers' attitude is therefore the gateway to effective teaching and learning of science and mathematics in particular. As a result of this mathematics teachers need to improve upon their attitude toward the teaching of the subject so as to become efficient in the teaching of this important subject of mathematics.

This research in therefore carried out in order to find out the attitudes expressed by teachers of mathematics so that positive attitudes toward teaching the subject could be enhanced.

Statement of the problem

Stakeholders especially parents and educationists have been complaining about the perceived negative attitude displayed by mathematics teachers toward the subject and its teaching.

Researches were conducted and solutions were proffered but the problem persists. This research is aimed at finding out the attitude of mathematics teachers toward the subject and whether gender has any role to play in it.

Purpose of the study

The purpose of this study is to find out the attitude of mathematics teachers toward teaching the subject and also whether such attitude is related to their gender. The findings of this study will hopefully help toward the improvement and the training of teachers.

Research questions

The study answered as far as possible the following research questions.

1. What is the nature of mathematics teacher's attitude toward the teaching of mathematics?
2. To what extent is the teacher's attitude to mathematics influenced by their gender.

Hypothesis

The following null hypotheses were considered in the study.

1. There is no significant difference in the attitudes of teachers toward the teaching of mathematics.
2. There is no significant difference in the attitude toward mathematics teaching between male and female teachers.

Significance of the study

The findings from this study will hopefully provide a frame work for all stakeholders in organizing seminars and workshops on the ways to improve mathematics teaching and improve the attitude of mathematics teachers toward teaching the subject.

Delimitation of the study

The scope of this study will be based on Katsina local government area of Katsina State, even through the problem could be found throughout the state or the federation at large.
Within the local government area a total of seven (7) secondary schools and 30 teachers were considered.

Definition of operational terms

1. Attitude: this is a set of affective reactions toward an object or stimuli derived from concept or belief that the individual has concerning the object or stimuli.
2. Teaching: under this study, teaching is defined as the art of imparting knowledge and or skill with the view of making somebody to know or be able to do something through instruction and training.

3. Mathematics: it is the study of relationships among quantities, magnitudes and properties and of logical operation by which unknown quantities, magnitudes and properties may be deduced.
4. Gender: the sex of a person or organism or of a whole category of people or organisms.

Related literature

Attitude being a way of feeling, thinking or behavior towards a stimulus or object plays a significant role in the learning of mathematics. Student`s attitude towards mathematics can be a major factor in learning the subject. This is perhaps what prompted some researchers like Cox (1969); Adegboye (1991), and Rayes, (1980) to assert that student`s attitude toward mathematics influences their achievement in the subject. Without positive attitude toward the subject, student's
performance in the subject could be woeful as revealed by some researches. For example, Lassa (1986), talked about student's poor performance and relate it to their poor attitude and lack of interest in the subject. Also Lassa (1984) in his inaugural address entitled "The Sorry State of Mathematics Education" mentioned as follows;

> *"The performance of students in mathematics has been declining because students' attitude towards mathematics tend to be negative"*

The negative attitude of students toward mathematics as revealed by some researchers could be attributed to many factors as found out by Lassa (1976) where he mentioned sexual role, intellectual function, and social
function, parental influences and teaching methods as some of the factors responsible for students negative attitude towards mathematics.

Some studies conducted outside the country have shown the effect of calculating machines and computer on student's attitude towards mathematics. For example, Crawford (1970) reported more favorable attitude toward mathematics as a result of computer-assisted instructions, although Johnson (1971) found no increase in positive attitude as a result of using computer assisted instructions.

Some machines used to improve positive attitude among students have produced significant effects (Burgees, 1970), while other have not e.g. (Brown, 1972; Higgings, 1969; Simpson, 1974; Smith, 1973; Wilkinso, 1971).

Usually the way that mathematics is represented in the classroom and perceived by students, even when teachers believe they are presenting it in authentic and context dependent ways tends to alienate many students from mathematics (Barton 2000).

However, researchers are not agreed as to the general attitude of secondary school students towards mathematics. Kalejaye (1997) showed that there was a significant difference in the enjoyment of mathematics between forms two and four students and a significant difference in enjoyment of mathematics between low and high achievers in the female and the mixed schools and a difference between the low and high achievers on opinion about mathematics teaching.

Lassa (1978) found that on the average, the students in secondary schools in northern Nigeria indicated negative attitude towards mathematics. Ngwoke el al (1979) showed that the attitude of secondary school students towards mathematics was unfavorable. Such lukewarm or even negative attitude of secondary school students to mathematics should be condemned, Chief Akindele Elegbede (2004).

Obviously from the result of some researches enumerated above much research findings have shown that secondary school students have negative attitude towards mathematics. The main reason for this is that attitude influence behavior and hence acts as motives. They are learned and in turn make new learning easier or harder to acquire. In a conventional classroom setting, the teacher is a central figure, since it is through him that successful learning will occur. It is a known fact that teachers can induce positive attitude toward any subject they teach especially mathematics. Positive attitude itself is fundamental for student's proper learning of any subject. However, teachers' attitude is a critical factor in student's attitude toward mathematics. It is well known that even with good syllabus and material resources available a qualified teacher with negative attitude could hardly inspire the attitude of students to learn.

Essentially, students admire and learn easier from teachers who have not only knowledge the subject. Lassa (1984) also pointed out that a teacher's positive or negative attitude toward mathematics affects his students.

Newel (1978), and Marcel, P. A. (1999), in his research entitled "Desirable behavior of teachers'' says that pupils realize that the warm teacher like them and they in turn like him. And if they like a teacher they tend to identify with him and opt for his values more and even learn the subject matter from him more effectively. Also, Robitaile et al (1988), stated that "Teachers bring to the classroom their belief and attitude towards mathematics and these have a bearing on those formed by students''. All these go to show that teachers are influential upon the ways in which students learn mathematics.

Osuji (1976), indicated that male and female primary school teachers had negative attitude toward modern mathematics.

Population
The population of this study is all teachers' of mathematics in all secondary schools in Katsina local government area.

Sample and sampling technique
The study considered seven (7) senior secondary schools and a total of seventy respondents were used. Due to the unequal number of mathematics teachers in some of the schools a proportionate stratified random sampling technique was used.

Instrument of data analysis
A questionnaire designed to assess the respondent teacher's attitude to mathematics was developed by the researcher. The questionnaire was made up of two parts. Part A sought for the personal particulars of the respondents like educational qualification, teaching experience and sex. Part B consisted of twenty-six (26) questionnaires relating to the attitude of the

respondent toward mathematics. The 26 questionnaires provided both favorable and unfavorable statement which will make it possible for the respondent to take a stand ranging from strongly agree (SA), Agree (A), Disagree (D) and strongly disagree (S.D.). However for the purpose of this study, the questionnaire was administered to 20 mathematics teachers within Katsina metropolis before the actual study was carried out yielding a reliability estimates of 0.73 using a Test-Retest procedure.

Procedure of data collection

The questionnaires were delivered personally to the respondents by the researcher. Whenever the questionnaire were filled by the respondents, they were collected immediately by the researcher. This ensured that every questionnaire was received and answered by a particular respondent thereby ensuring high percentage of return of questionnaires from the respondents.

Method of data analysis

The data involve an expression of a personal feeling of strongly Disagree (SD), Disagree (D), Agree (A), and Strongly Agree (SA), all analysis was done directly from the computed questionnaire. For the purpose of this study only respondents with a strong rating of (STRONGLY AGREE) were considered to be positively disposed toward the teaching of mathematics. Such respondents were used to answer as far as possible the research question No. 1 which sought to find out the nature of mathematics teacher's attitude toward the teaching of mathematics? However to analyze the second hypotheses respondents with "STRONGLY AGREE" and "AGREE" were considered to have positive attitude toward the particular questionnaire item while those with "DISAGREE" and "STRONGLY DISAGREE" were considered to have negative attitude toward the item raised. A total of thirty (30) questionnaires were administered personally by the researcher to the respondents from the randomly selected schools. The frequencies of the respondent were found and converted to percentage for the purpose of analyzing research question one. Where applicable, the frequencies were further subjected to Chi-square analysis to show if there is any significant difference in the response of the subjects between those who are male or female. The following formula was used in calculation of chi-square. $X^2_c = \sum \frac{(O_i - E_i)^2}{E_i}$ Where c=Degrees of freedom, O = Observed values, E= Expected values.

Twenty five 25 mathematics teachers responded to the questionnaires out of the thirty distributed.

Results and discussions

Based on the first objective of the study seeking to find out the attitude of mathematics teachers toward the teaching of the subject it was discovered that more 60% of the respondents indicated strong agreement in all the items marked positive attitude. On the other hand less than 30% of the respondents indicated strong agreement with all the items marked negative attitude. This implies that generally all the respondents were positively disposed toward the teaching of mathematics. Therefore mathematics teachers are deemed to have positive attitude toward teaching the subject.

TABLE 1
DISTRIBUTION OF MALE/FEMALE TEACHERS TO ITEMS MARKED POSITIVE AND THOSE MARKED NEGATIVE ATTITUDE

		POSITIVE	NEGATIVE	TOTAL
SEX OF RESPONDENT	MALE	10 (10.2)	5 (4.8)	15
	FEMALE	7 (6.8)	3 (3.2)	10
	TOTAL	17	8	25

HO: There is no significant difference between the attitude of male teachers and female teachers toward the teaching of mathematics.

It can be seen from the table above that 10 male teachers and 7 female teachers express agreement with the items that indicated positive attitude while a total of 8 teachers both and female showed negative attitude. Since the degree of freedom is 1 and using Yates continuity correction we calculate X^2 and test the hypothesis at 5% level of significance to find out if a relationship exist between the sex of a respondent and his attitude toward the teaching of mathematics. If $X^2_{cal} > X^2_{5\%}(1)$ i.e If $X^2_{cal} > 3.84$, we reject the null hypothesis.

O_i	E_i	$\lvert O_i - E_i \rvert$	$\lvert O_i - E_i \rvert - 0.5$	$[\lvert O_i - E_i \rvert - 0.5]^2$	$[\lvert O_i - E_i \rvert - 0.5]^2/E_i$
10	10.2	0.2	0.3	0.09	0.008823
5	4.8	0.2	0.3	0.09	0.01875
7	6.8	0.2	0.3	0.09	0.01323
3	3.2	0.2	0.3	0.09	0.028125
$\in 0_i = 25$	$\in K_i = 25$				0.068928

$X^2_{cal} = 0.06898$.

Since $X^2_{cal} < 3.84$, we do not reject HO and conclude that these results do not indicate a relationship between the sex of a respondent and his attitude toward the teaching of mathematics.

Conclusion

From the findings of this research there is positive attitude toward the teaching of mathematics by mathematics teachers in katsina local government since up to 60% of the respondents strongly agree to all the items marked positive attitude as against the less than 30% that indicated negative attitude. It was also found that there was no relationship in the attitude of male teachers and female teachers since $X^2_{cal} = 0.06898$ which is less than X^2_1 5%, i,e $0.06898 < 3.84$.

Recommendations

Based on the findings, the following recommendations are offered:

1. Stake holders should endeavor to develop the teaching strategies of our teachers in order to raise their level of attitude toward the teaching of mathematics.
2. Governments should provide incentives such as scholarship awards and better salaries for mathematics teachers who demonstrate exceptional interest in the teaching of mathematics.
3. The teaching/learning environment should be made conducive for mathematics teachers in order for them to develop positive attitude towards the teaching of the subject.

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