JOSTMED 12(2), AUGUST, 2016 ISSN: 0748 – 4710

JOURNAL OF SCIENCE, TECHNOLOGY, MATHEMATICS AND EDUCATION (JOSTMED)

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PUBLISHED BY:
DEPARTMENT OF SCIENCE EDUCATION
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA,
NIGERIA, AFRICA

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VOLUME 12(2), AUGUST, 2016

JOURNAL OF SCIENCE, TECHNOLOGY, MATHEMATICS AND EDUCATION (JOSTMED)

ARTICLES AND RESEARCH REPORTS ON SCIENCE

TEACHERS' AND STUDENTS' PERCEPTION OF EFFECTIVE TEACHING AND LEARNING OF MATHEMATICS IN SENIOR SECONDARY SCHOOLS IN EDATI LOCAL GOVERNMENT AREA, NIGER STATE

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Abstract
This study focused on teachers' and students' perception of the problems of effective teaching and learning of Mathematics in senior secondary schools in Edati Education Council of Niger State. Descriptive survey was research design adopted. One hundred and fifty (150) and fifteen (15) Mathematics teachers were drawn from five senior secondary schools in Edati local Government Council. Two different questionnaires of four – point likert scale with reliability coefficient of 0.78 were administered to the sampled population. And to guide the study, two research questions were raised. Data collected was analysed using simple percentage and some of findings from the study revealed that: there is lack of qualified Mathematics teachers to teach the subject effectively, students have poor foundation in Mathematics; lack of conducive environments to warrant effective teaching and learning of the subject. these formed the major problems of effective teaching and learning of Mathematics. Some of the recommendations made were: that Government should as a matter of urgency encourage Mathematics teachers to attend training workshops and seminars for effective teaching and learning of Mathematics, provision of the necessa2ry infrastructures and facilities that will motivate teaching and learning of Mathematics at all levels of education should be a matter of priority to the government.

Keywords: Perceptions, Teachers, Students. Effective teaching

Introduction

Mathematics occupies a central position in the school curriculum. It is an important subject from primary through junior secondary to senior secondary school levels of our educational system. This important role plays by Mathematics in scientific and technological development of any nation cannot be over emphasized as stated in the National policy of Education, (FRN 2006). In spite, of all that is surrounded with some problems such as: inadequate and sub-standard learning materials; lack of qualified teachers; poor reading habit; class size; culture/beliefs; Mathematics anxiety; and poor attitudes of students and teachers towards Mathematics among others.

One of the major problems that Nigerian secondary education is facing is the students' poor performance in Mathematics. Kurumeh and Imoko (2008) revealed that there is low academic achievement of students in Mathematics at all levels of education in Nigeria primary school through to secondary school level. This implies that students have poor Mathematics foundation right from primary school level to Junior and senior secondary school levels this has contributed a lot to poor academic achievements of students in Senior School Certificate Examination (SSCE). In Nigeria, pass at credit level in Mathematics is compulsory. No student can gain admission into higher institution of learning without a credit in Mathematics as Nigeria is aiming at being one of the leading countries in the world in terms of technological advancement and economic emancipation.

According to Ahmed & Aziz (2009), the effectiveness of Mathematics teaching and learning

depends strongly on perceptions of the teachers towards teaching and their teaching strategies and that teachers' perceptions reinforces teacher's decision making on his teaching. Ernest (1989) also stated that Mathematics teaching cannot be transformed until Mathematics teachers have positive perceptions about the teaching and learning of Mathematics.

Literatures have been documented about Mathematics teachers' perceptions, for instance (Ahmed & Aziz, 2009) posited recommendable attentions have been given to the perceptions the teachers hold about their teaching. That, more over the data collected about Mathematics teachers' classroom practice and their teaching from the students provides reliable and meaningful result of their teachers' attitude towards teaching of the subject.

Adepoju and Amoo (2005) also stated that data collected about Mathematics teachers teaching method from students/learners provide a valuable result since their opinions are "highlighted by demanding and exciting skill that allow them to perceive teaching and learning manners more very well than their Mathematics teachers".

Adetoye and Aiyedun (2003) explained that the students' perceptions towards the Mathematics teachers teaching influence the effectiveness of teaching and learning of Mathematics positively and it provides a meaningful and fruitful suggestion for improvement of their Mathematics teachers practice.

Adewale and Amoo (2004) also further stated that the students will developed a clear insight of the idea that is being offered by their Mathematics teachers if they perceive the teacher's classroom instruction to be student – centred rather than teacher – centred approach. Rawnsley (1997) also supported the argument that if the students perceived their Mathematics teachers to be highly supportive and pave way for them to play an essential part in teaching and learning of Mathematics, they will establish more positive attitude towards the teaching and learning of the subject.

Therefore, this study intended to look at possible or likely factors that could be responsible for the perception of teachers and students on effective teaching and learning of Mathematics in senior secondary schools in Edati Education Council of Niger State.

Research Questions

(i) What are the perceptions of teachers on the problem of effective teaching and learning of Mathematics?

(ii) What are the perceptions of students on the problem of effective teaching and learning of Mathematics?

Methodology

The study employed descriptive survey method and using questionnaires to elicit response from teachers' and students' of their perceptions on problems of effective teaching and learning of Mathematics in Senior Secondary Schools in Edati Government Area of Niger State.

The target population consisted of 15,428 students and 21 Mathematics teachers in all the ten (10) Senior Secondary Schools in Edati Local Government Area of Niger State this information was adopted from Niger State (2015) annual school census report.

Simple Random Sampling Technique was employed in selecting (150) Senior Secondary School 1 (SS1) students and (15) Mathematics teachers from five Senior Secondary Schools in Edati Local Government Area of Niger State.

The instruments used for the data collection were questionnaires designed for eliciting information from teachers and students' on their perception of the problems of effective teaching and learning of Mathematics which consists of fifteen questions using modified four-point-likert scale with (SA = Strongly Agree, (SA=4), Agree (A=3), Disagree (D =2) and Strongly Disagree(SD =1).

The questionnaire was face - validated by two experts from the department of science education Federal University of Technology, Minna, and all observations they made were noted and effected accordingly.

Test-retest method was used in testing the reliability of the instruments using five teachers and 150 students for pilot – study from some selected schools that are among the population but not part of the schools used for the study. The data collected were analysed using Pearsons' Product Moment correlation coefficient. And the reliability coefficient of 0.78 and 0.67 were obtained for teachers and students' instruments respectively.

Results

The data collected from the teachers and the students' responses were analysed using simple percentage in answering the research questions formulated for the study.

Research Question One

What are the perceptions of teachers on the problems of teaching and learning of Mathematics?

Table 1: Percentage of Teachers Responses on the Problem of Teaching and Learning of Mathematics

S/N	Items	SA	A	D	SD	% Agreed	% Disagreed
1	Students have poor Mathematics foundation.	8	4	2	1	80.0	20.0
2	Students have phobia for Mathematics.	7	7	0	1	93.3	6.7
3	Students have problem in solving mathematical questions even when related examples are given.	6	7	2	0	86.7	13.3
4	Students no longer show strong interest in studying Mathematics.	7	4	2	2	73.3	26.7
5	Mathematics teachers do not relate topics/ concept taught in Mathematics to real life situation.	3	3	4	5	40.0	60.0
6	Mathematics teachers do not entertain questions from students.	3	1	4	7	26.7	73.4
7	There are insufficient and unqualified Mathematics teachers in the schools.	5	5	3	2	66.7	33.3
8	Mathematics teachers have poor teaching methods.	3	1	6	5	26.7	73.4
9	Teachers do not plan adequately for the Mathematics classes as a result of much work load.	8	5	1	1	86.7	13.3
10	There are over-crowded situations in Mathematics class.	11	3	1	0	93.3	6.7

11	There are inadequate instructional materials for teaching Mathematics.	7	6	1	1	86.7	13.3
12	There are no mathematics books in the school library.	5	4	2	4	60.0	40.0
13	Parents cannot afford to buy Mathematics learning materials for their children / wards.	9	2	2	2	73.3	26.7
14	There is poor or lack of motivation of Mathematics teachers by the government.	11	1	1	2	80.0	20.0

Table 1 revealed the teachers' perception of factors affecting effective teaching and learning of Mathematics on Senior Secondary Schools students. Critically observing the percentages of responses of teachers who agreed to items 1-4, 7, and 9 - 14, which ranged between 60 – 90% and above, teachers perceived: poor Mathematics foundation by the students, phobia for Mathematics as a subject by students, poor attitude generally towards studying Mathematics etc, as problems of effective teaching and learning of Mathematics.

Also, revealed the teachers' perceptions disagreed that items 5, 6 and 8 which percentages ranges from 60 – 70% and above are not problems responsible for teaching and learning of Mathematics at Senior Secondary Schools.

Research Question Two

What are the perceptions of students on the problem of teaching and learning of Mathematics?

Table 2: Percentage of Students' Responses on the Problem of Teaching and Learning of Mathematics

S/N	Items	SA	A	D	SD	% Agreed	% Disagreed
1	Students have poor Mathematics foundation	68	43	25	14	74	26
2	Students have psychological fear of Mathematics	36	54	34	26	60	40
3	Students have problem in solving mathematical questions even when related examples are given	64	23	31	32	58	42
4	Students are no longer interested in hard working	22	32	62	34	36	64
5	Mathematics teachers do not relate topics in Mathematics to real life situation	74	23	32	21	66.7	33.3
6	Mathematics teachers do not entertain questions from students	46	38	43	23	56	44
7	Lack of sufficient and qualified Mathematics teachers in schools	65	33	32	20	65.3	34.7
8	Mathematics teachers have poor teaching method	34	42	46	28	50.6	49.4
9	Teachers do not plan moderately for the Mathematics class as a result of much work load	45	48	32	25	62	38
10	Overcrowded classroom	89	26	12	23	76.7	23.3
11	Lack of instructional materials	93	34	23	00	86.7	13.3
12	Absence of library	42	36	40	32	49.3	50.7
13	Parents cannot manage to buy Mathematics learning materials for their children	64	32	28	26	64	37
14	Lack of motivation of the students by the teachers and the government.	67	23	42	18	60	40

Table 2 revealed the students' responses on their perception of problem of effective teaching and learning of Mathematics in Senior Secondary Schools: the respondents agreed to all the items except item 4 as problems of teaching and learning of Mathematics with percentages ranging from 50 – 80% and above. Most of the students disagreed with item 4 which stated that: students no longer show strong interest in studying Mathematics with 64%

Discussion

The factors accountable or responsible for the problems of effective teaching and learning of Mathematics as perceived by the teachers showed, that the teachers agreed with almost all the stated factors as the problems of effective teaching and learning of Mathematics in senior secondary in Edati Local Government Area of Niger State. This is in line with Adepoju et al, (2005) who found out that the problems of effective teaching and learning of Mathematics are from several sources, Also, lack of instructional facilities (Arikewuyo 2005) and overcrowded classroom (Adewale, 2004).

The factors accountable for problems of effective teaching and learning of Mathematics as perceived by the students showed that, the students also agreed with the stated factors as the problems of effective teaching and learning of Mathematics in senior secondary in Edati Local Government Area of Niger State.

This result is similar to Kurumeh and Imoko (2008) whose research work revealed that problems of effective teaching and learning of Mathematics are inadequate and substandard learning materials, poor reading habits, Mathematics anxiety, class size and general attitudes of students among others.

Findings

The study was designed to find out the problems associated with teaching and learning of Mathematics in junior secondary school in Edati local Government Area of Niger State. After the analysis of the collected data, the following findings were summarized.

(i) The students have poor foundation in Mathematics from their primary School, as such cannot solve problems even when related examples are given.
(ii) Students' attitude concerning learning is awfully feeble. The students lack the commitment and willingness to learn.
(iii) The teaching and learning settings are not encouraging. This is due to inadequate facilities and necessary equipment for the teaching and learning of Mathematics.
(iv) Several Mathematics teachers do not plan adequately for the Mathematics class as a result of much work load.
(v) Lack of motivation makes Mathematics teachers to lack teaching commitment.

Conclusion

The result from this study revealed that; the students have poor foundation in Mathematics right from their primary schools, students lack the commitment and willingness to learn, the teaching and learning environments are not conducive to warrant effective teaching and learning of Mathematics, that several Mathematics teachers do not plan adequately for the Mathematics class as a result of much work- load to mention a few teachers require innovative teaching strategies, class activities must be student – centred for the students to have zeal and willingness to study Mathematics.

Recommendations

From the findings of this research, the following recommendations are made:

(i) Mathematics teachers should be motivated and encouraged to attend more training workshops and seminars.

(ii) Mathematics teachers should strive to associate their Mathematics teaching to real life situation so as to limit the abstract nature of Mathematics.

(iii) The government should try to make available the needed equipment and facilities in order to encourage Mathematics teaching and learning.

(iv) More qualified teachers in Mathematics field should be injected into the teaching profession to create the conducive classroom environments that will make the learning of Mathematics interesting.

References

Adepoju, O. A., & Amoo, S. A. (2005). *Gender and environmental education in Nigerian secondary.* Presented at STAN National Workshop, Zamfara, Zamfara State, Nigeria.

Adetoye, F. A., & Aiyedun, J. O. (2003). The position of Mathematics in the teaching of Science and Technology. *Ibadan Journal of Educational Studies*, 3(1), 72-77.

Adewale, J. G. & Amoo, S. A. (2004). Ensuring effective mathematics instruction instruction for secondary students with learning difficulties let the states extend. *In Issues in Measurement and Evaluation in Nigeria Chapter 13*, 127-148.

Ahmad, F., & Aziz, J. (2009). Students' perception of their teachers' teaching of literature communicating and understanding through the eyes of the audience. *European Journal of Social Sciences*, 7(3), 17-26.

Arikewuyo, M. O. (2005). Effective funding and quality assurance in the Nigerian educational system. *In Journal of Educational Foundations*, 2, 38- 49.

Ernest, P. (1989). The impact of beliefs on the teaching of mathematics. *6th International Congress of Mathematical Education*, 249-254.

Federal Republic of Nigeria (2006). *National policy on education*. Abuja: NERDC.

Kurumeh, M.S & Imoke B. I (2008). Universal education: A way forward for the development of primary school pupils in mathematics education. *ABACUS*, 33(1), 49-56.

Rawnsley, D. G. (1997). *Associations between classroom learning environments, teacher interpersonal behaviours and students' outcomes in secondary mathematics classrooms.* Unpublished Doctoral Thesis, Curtin University of Technology, perth, Western Australia.