INSIGHTS OF TEACHERS AND STUDENTS ON MATHEMATICS TEACHING AND LEARNING IN EBONYI STATE SECONDARY SCHOOLS

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Abstract

The need to improve the performance of students in mathematics examinations gave rise to this study, 'Insights of Teachers and Students on Mathematics Teaching and Learning in Ebonyi State Secondary Schools' with the aim to better their performance. The study is a descriptive survey research design made up of 962 (52 teachers and 910 students) respondents drawn out of the 228 mathematics teachers and 161,969 secondary school students in 222 public or government owned secondary schools in Ebonyi State. The study made use of 17 items four point scale questionnaire called 'Insights of Teachers and Students on Mathematics Teaching and Learning Questionnaire (ITSMTLQ)'. Data generated was analyzed using weighed mean and standard deviation and z-test statistics for hypotheses. Mathematics Teachers should be using learner centered method and materials for teaching mathematics. The study also discovered that classroom interactions between mathematics teachers and students are always very cordial. And mathematics teachers are always friendly in the classroom during teaching and learning of mathematics and likewise the students. Students are allowed to ask question and teacher also attend to students' question. Both teachers have a common interest during teaching and learning of mathematics which is championed by the interest of passing mathematics examination. The three hypotheses were tested and result show that there is no significant difference on the opinions of Teachers and Students on the actions and reactions but on the third hypothesis their opinion differ. The researchers recommend that mathematics teachers should be making use of methods such as; demonstration method and laboratory method which are judged to be more effective in mathematics lesson delivery. The study saw that they need for adequate sensitization of students on the importance of mathematics to them as an individual and the society at large .

Key Words: *Insights, Mathematics, Teaching And Learning*

Introduction

The popular saying that, what worth doing, worth doing well comes to mind in this research work. It is not in contention that the importance of mathematics to any field of human endeavour

cannot be over emphasized. They have been public outcry of poor performance of students in mathematics as reported by Igboke (2010), Iji and Uka (2009) and Nweke and Ali (2020). They all agreed that the performance of secondary school students in mathematics over the years have been very poor. Some recent happenings in the aspect of teaching and learning of mathematics in the secondary schools in Ebonyi state indicates that the problems of poor performance students in both internal and external examination have made the students and teachers to adopt another dangerous strategy in order to overcome it. This dangerous strategy is no other thing but examination malpractice. The recent situation where almost all the secondary schools in the state was surcharged for examination malpractice by West African Examination Council (WAEC) shows that there is a serious problem with the teaching and learning in our secondary schools. Teachers and students only engage examination malpractice if the students are ill prepared for examination otherwise a well prepared students enters examination hall with confident not depending on any form of malpractices. This recent development did not only bring disappointment on the side of our secondary schools teachers and students but to all lovers of education in the state.

Judging from the above explained situation, one will say that something is wrong in the way we go about our teaching and learning that resulted to students and teachers engaging in examination malpractice in order to achieve success forgetting that there is no short cut to success. Every envisage short cut success always have a very bad end and in this case of examination malpractice it bad end will be a total collapse of the educational system which invariably is the collapse of the state. This situation calls for serious investigation of all arms of our education system in order to identify the place we got it wrong. Such areas to be investigated include but not limited to; activities involving teachers and students in the classroom, methods and topics taught, materials use in teaching and learning, teachers and students attitudes towards teaching and learning etc. It is believed that one or more of the aforementioned areas will be implicated on why students and teachers of our secondary schools have been experiencing poor performance in their examination which pushed them to decide to tour the ungodly path of examination malpractice to achieve success.

This study motivated by the above situation, wish to investigate the classroom situation as it consigns teachers and students activities during teaching and learning of mathematics

secondary schools in Ebonyi state. Mathematics being one of the important compulsory secondary school subject will be use to find out what is the course of this poor performance and examination malpractices and ways to come out of them. This will involve among other things investigating method and materials use in teaching, teachers and students' class interactions and students, teachers' attendance to mathematics classes. It is the above burning issues gave rise to this study titled 'insights of teachers and students on mathematics teaching and learning in Ebonyi State secondary schools'.

Statement of the Problem

The issue of examination malpractice should be seen as serious problem that is capable of destroying our education system if not checkmate. A situation where our students will not take their studies serious simply because they know that they will pass their examination using available illegal means is not only bad for our education system but spell doom for our future and the up-coming generation. The course of teachers and students engaging in examination is not unconnected with the past poor performance of students in mathematics, science and technology subjects in various examinations as reported by many researchers including, Igboke (2010), Iji and Uka (2009) and Nweke and Ali (2020) that the performance of secondary school students in mathematics over the years have been poor both internal and external and from year toyear.

This current trend of examination malpractice is a very dangerous one in the sense that one will be thinking that all are going well with the teaching and learning not knowing that the good performance in their examinations are as result of malpractice. In fact this would have been a covered time bomb for our educational system. Now that the ugly monster has been exposed it is every much necessary that the course and solution to these problems of poor performance and examination malpractice are discovered and dealt with permanently. Nwachukwu and Nweke (2023) attributed course of poor in mathematics to poor mathematical background by secondary school students while Kanja and Baba (2011) submitted that the ugly of poor performance of secondary schools students in mathematics is routed right from the Primary School that the teaching of mathematics basic concepts, skills, ideas, guide-lines and competence is zero due to bad method of teaching from Primary School. They identified the following among others as the remote causes of this ugly trend; inadequate assignments to students, inadequate coverage of the

syllabus, inappropriate teaching technique, negative attitude of students towards mathematics, lack of incentives to mathematics teachers. Nweke and Ali (2020), believe that some teachers skip topics they see as difficult topics thereby compounding the problems of mathematics which suppose to be in chain form.

It is the above analysis that this study believing that all these problems of poor performance of students and examination malpractice is not unconnected with the way we teach and learn in our classrooms, methods use in teaching, interest to teaching and learning, materials available for teaching and learning etc. Having the above believe the study deemed it necessary to investigation the activities that take place during teaching and learning of mathematics as uncover what is wrong and way to it could be corrected. This will be done under the study titled "Insights of teachers and students on mathematics teaching and learning in Ebonyi State secondary schools" This is the rationale for this study.

Purpose of the Study

The main purpose of this study is to ascertain the problems and challenges encountered by mathematics teachers and students during teaching and learning of mathematics in secondary schools in Ebonyi State. However, the specific objectives are to find;

1. the effectiveness of methods and materials teachers and students will use in teaching and learning of mathematics in secondary school in Ebonyi state.

2. the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school in Ebonyi state.

3. interest students and teachers put during teaching and learning of mathematics in secondary school in Ebonyi state.

Research Questions.

This study seek to x-ray the insights of teachers and students on mathematics teaching and learning in Ebonyi State secondary schools with aim of salvaging the poor performances and

examination malpractice of students in secondary schools mathematics in Ebonyi State. The study in particular will answer the following research questions;

1. What are effective methods and materials teachers and students use in teaching and learning of mathematics in secondary school in Ebonyi state?

2. How are actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school in Ebonyi state?

3. What interest students and teachers in teaching and learning of mathematics in secondary school in Ebonyi state?

Research Hypotheses

The following null hypotheses will be tested using z-test statistics at 0.05 alpha level;

1. Ho_1 There is no significant difference on the opinions of Teachers and Students on the effective methods and materials teachers and students use in teaching and learning of mathematics in secondary school in Ebonyi state.

2. Ho_2 There is no significant difference on the opinions of Teachers and Students on the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school in Ebonyi state.

3. Ho_3 There is no significant difference on the opinions of Teachers and Students on what that interest students and teachers during teaching and learning of mathematics in secondary school in Ebonyi state.

Method

This study is descriptive survey research design that, made use of fifty-two (52) mathematics teachers and nine hundred and ten (910) students as its' respondents drawn out 228 mathematics teachers and 161,969 secondary school students in 222 public or government owned secondary schools in Ebonyi State (ESSEB, 2021). Instrument for data collection was a structured questionnaire "Insights of Teachers and Students on Mathematics Teaching and Learning Questionnaire (ITSMTLQ)". It is a four point scale questionnaire designed to elicit information on the situation of our secondary school class during teaching and learning mathematics in secondary schools. The questionnaire has three clusters used to answer the three research questions. The instrument scored as Strongly Agree (**SA**) scored 4 points, Agree (**A**) scored 3 points, Disagree (**D**) scored 2 points and Strongly Disagree (**SD**) scored 1 point. The mean response of the respondents to each item in the questionnaire will use to determine the answer to each item in the questionnaire while the mean value of each cluster will be use to answer each research question. The hypotheses was answered using z-test statistics at 0.05 percent significant level.

Results

The results were presented in tables in accordance with the research questions and hypotheses that guided the study as follows. To answer these research questions, reference are made to the information on tables below. The data was obtained by administering Questionnaire titled "Insights of Teachers and Students on Mathematics Teaching and Learning Questionnaire (ITSMTLQ)" to 958 mathematics teachers and students.

Research Questions 1 What are effective methods and materials teachers and students are to use in teaching and learning of mathematics in secondary school in Ebonyi state?

Table 1: **Effective methods and materials teachers and students are to use in teaching and learning of mathematics in secondary school.**

	CLUSTER A	$\bar{x}$	δ^2	Decision
1	We always teach with methods that are learner centered in our	2.76	1.24	Agreed

	mathematics classes.			
2	Students are always allowed to ask questions and contribute ideas during mathematics classes	2.64	1.36	Agreed
3	Mathematics teachers always make use of adequate instructional materials/teaching aid in teaching mathematics	2.14	1.96	Disagree d
4	Mathematics teachers usually give class work after each mathematics lesson and take home assignment.	2.67	1.33	Agreed
5	Corrections to assignments and home works are done by the teacher and also make crosscheck/mark students correction.	2.30	1.70	Disagree d
6	Mathematics teachers always cover their syllabus every term and every year.	2.54	1.46	Agreed
	Mean Value	**2.50**	**1.51**	**Agreed**

Table 1 above was used to answer research question 1 which seeks to find out the effective methods and materials teachers and students are to use in teaching and learning of mathematics in secondary school. From the analysis, items 1, 2, 4 and 6 has a mean responses above 2.50 and were accepted while items 3 and 5 have mean responses below 2.50 and were rejected. The standard deviation shown that the opinion of students and teachers on the issue are divergent.

Research Questions 2 : How are the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school in Ebonyi state?

To answer this research questions, reference is made to the information on table 1 below.

Table 2: Actions and Reactions between Teachers and Students in the Classroom during Teaching and Learning of Mathematics in Secondary School

	CLUSTER B	$\bar{x}$	δ^2	**Decision**
1	Our mathematics teacher attends mathematics class regularly and on time	3.03	0.97	Agreed
2	Students and teachers always like to have mathematics lessons	2.21	1.79	Agreed

3	There is always a very cordial relationship among mathematics teachers and students in our school.	2.38	1.62	Disagreed
4	Mathematics teacher are always willing to solve any mathematical problem student bring to him/her.	2.74	1.26	Agreed
5	Our mathematics classes are always an interactive one.	2.32	1.68	Disagreed
	Mean Value	**2.54**	**1.46**	**Agreed**

Table 2 above answered research question 2 which seeks to find out the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school. Items 1, 2 and 4 have mean responses above 2.50 and were accepted while items 3 and 5 have mean responses below 2.50 and were rejected. The standard deviation still showed divergent opinion of teachers and students.

	CLUSTER C	$\bar{x}$	δ^2	**Decision**
1	I like our mathematics teacher/students	2.53	1.47	Agreed
2	I wish to be good in solving mathematics problems	2.91	1.09	Agreed
3	I wish mathematics teachers and students should be encourage by the government.	2.77	1.23	Agreed
4	I like studying mathematics and also playing mathematics games.	2.31	1.69	Disagreed
5	I am encouraging more study of mathematics in secondary schools	2.50	1.50	Agreed
6	I like those who study mathematics	2.62	1.38	Agreed

Mean Value	**2.61**	**1.39**	**Agreed**

Table 3 above was used to answer research question 3 which seeks to find out the interest students' and teachers' in teaching and learning of mathematics in secondary school in Ebonyi state. From the analysis, items all the items except item 4 has a mean responses above 2.50 and were accepted. The standard deviation shown that the opinion of students and teachers on the issue are divergent.

Test of Hypotheses

Hypothesis 1: There is no significant difference on the opinions of Teachers and Students on the effective methods and materials teachers and students use in teaching and learning of mathematics in secondary school in Ebonyi state.

Table 4

Variable	**N**	$\bar{x}$	σ^2	**Df**	**LS**	**z-cal**	**z-crit**	**Decision**
Teachers	52	2.26	1.03					
Student	910	2.51	1.54	960	0.05	1.583	1.960	Not Significant

Key: $N = no\ of\ resp., \bar{x} = mean,\ \sigma^2 = SD, Df = degree\ of\ freedom, LS = Level\ of\ sign.$

Table 4 above shows that the hypothesis 1 which states that there is no significant difference on the opinions of Teachers and Students on the effective methods and materials teachers and students use in teaching and learning of mathematics in secondary school in Ebonyi state was accepted as not actually significant.

Hypothesis 2: There is no significant difference on the opinions of Teachers and Students on the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school in Ebonyi state.

Table 5

Variable	N	$\bar{x}$	σ^2	Df	LS	z-cal	z-crit	Decision
Teachers	52	2.47	1.46					
Student	910	2.54	1.48	960	0.05	1.573	1.960	Not Significant

Key: $N = no\ of\ resp., \bar{x} = mean,\ \sigma^2 = SD, Df = degree\ of\ freedom, LS = Level\ of\ sign.$

Table 5 above shows that the hypothesis 2 which state that, there is no significant difference on the opinions of Teachers and Students on the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school in Ebonyi state was accepted as not actually significant.

Hypothesis 3: There is no significant difference on the opinions of Teachers and Students on what that interest students and teachers during teaching and learning of mathematics in secondary school in Ebonyi state.

Variable	N	$\bar{x}$	σ^2	Df	LS	z-cal	z-crit	Decision
Teachers	52	3.47	1.01					
Student	910	2.56	1.41	960	0.05	3.883	1.960	Significant

Key: $N = no\ of\ resp., \bar{x} = mean,\ \sigma^2 = SD, Df = degree\ of\ freedom, LS = Level\ of\ sign.$

Table 6 above shows that the hypothesis 3 which states that there is no significant difference on the opinions of Teachers and Students on what that interest students and teachers during teaching and learning of mathematics in secondary school in Ebonyi state was rejected and was seen to be significant.

Discussion of Results

The discussions of results of this study was based on the results of the research questions. It is summarized as below;

The results of research questions analysis shows that; Mathematics Teachers should be using learner centered method and materials for teaching mathematics such method like; demonstration, laboratory and other practical oriented methods. The study also discovered that

classroom interactions between mathematics teachers and students are always very cordial. Mathematics teachers are always friendly in the classroom during teaching and learning of mathematics and likewise the students. Students are allowed to ask question and teacher also attend to students' question. Both teachers have a common interest during teaching and learning of mathematics which is championed by the interest of passing mathematics examination. The three hypotheses were tested and result show that there is no significant difference on the opinions of Teachers and Students on the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics. On the second hypothesis it was also observed there is no significant difference on the opinions of Teachers and Students on the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics in secondary school but on the third hypothesis the case is different as as there was significant difference on the opinions of Teachers and Students on what that interest students and teachers during teaching and learning of mathematics in secondary school.

Educational Implications

The following are the educational implication to this study;

1. Mathematics teachers should be making use of methods such as; demonstration method and laboratory method which are judged to be more effective in mathematics lesson delivery.

2. The study noticed that there is total lack of teaching and learning materials all the secondary schools in the state.

3. The study saw that they need for adequate sensitization of students on the importance of mathematics to them as an individual and the society at large .

5. The study encourages government and education administrators to be putting educational research work to use especially the ones that promote better teaching and learning.

Conclusion

The titled, 'Insights of Teachers and Students on Mathematics Teaching and Learning in Ebonyi State Secondary Schools' was amid at investigating the classroom situation as it consigns teachers and students activities during teaching and learning of mathematics secondary schools. The study revealed that method of teaching applied by mathematics teacher is a very serious

determining factor to successful teaching to the understanding of the topic taught. The study saw that both teachers and students has a common opinion on both the effective methods and materials teachers and students use in teaching and learning of mathematics and on the actions and reactions between teachers and students in the classroom during teaching and learning of mathematics but differ in their opinion of what that interest students and teachers during teaching and learning of mathematics in secondary school.

Recommendations

Relying on the outcome of the analysis of data of this study the following recommendations were made;

1. Learner centered made of teaching should be employed in teaching and learning of mathematics in secondary school.
2. Teachers should prepare very well before entering classroom for lesson delivering. This is in the area lesson note/plan, method to be use and classroom administration.
3. Research findings should adequately put to use especially the ones involving science and mathematics in particular.
4. Mathematics Teachers should try to apply individual differences so as to carry every student along. This will go a long way in bringing both slow and fast learners on the same level of understanding.
5. Regular workshops, seminars and conferences should be encouraged for mathematics teachers so as to update themselves to the recent trends in teaching of mathematics.

Reference

Aluko. K. O. (2008) Teaching Chemistry in Secondary Schools: A Case for Cooperative Instructional Strategy. Ethiop. J. Educ. & Sc. Vol. 3 No. 2 March, 2008

Attamah C.G. (2012). Learning Environment; A major factor in implementing UBE Curriculum in Basic Science. *A conference paper of 53rd science teachers association of Nigeria (STAN) annual national conference 2012.*

Azuka, B. (2001). Mathematics: The language of the new millennium: implications for production and retention of mathematics teachers. *Journal of the Mathematical Association of Nigeria. 26 (1) 26- 33. Mathematics Education Series September (2001).*

Chibueze, A. N., & Nweke, S.I., (2022). Environmental Factors and Remedies on Secondary School Students 'Mathemaphobia in Ebonyi state. International Journal of Advance Scholastic Research (Multi-Disciplinary) Vol. v, Issues 2. October 2022. www.optionaleduresources.com

Emmanuel I. and Irenee N. and Charles M. M. (2021), Influence of Teaching Approaches on Students' Performance in Mathematics: A meta-analysis of Quasi-Experimental Studies in Africa. African Journal of Educational Studies in Mathematics and Sciences Vol. 17, No. 2. 2021

Eze, D. N. (2005). What to write and how to write. a step-by-step guide to educational *Research Proposal and Report. A publication of the Institute of Education, University of Nigeria Nsukka.*

https://www.cultofpedagogy.com › learning-strategies

https://happynumbers.com › blog › types-of-learning-strategie...

https://thirdspacelearning.com › blog › teaching-strategies

Igbokwe, C. O (2010). The effect of multicultural learning environment on cognitive achievement of pupils in primary science. *Journal of Issues on Mathematics the annual publication of Mathematics Panel 2009.*

Iji, C. O and Uka, N. K. (2009). Improving students' understanding of number and numeration towards achieving the 9- year basic education programme. *Journal of the Science Teachers Association of Nigeria (JSTA, 2009).*

Nweke, S.I., & Nwachukwu, J. N.(2018). Effective Approah to Mathematics Education Delivery; A road map to National Development. Journal of Mathematis Panel Vol. 20. pg 59 - 67.

Nweke, S.I., & Olo, E. E.(2020). Survey of the Impact of Gender on the Innovative Strategies for Reducing Mathemaphobia Among Secondary School Students in Ebonyi State. A Journal of Issues on Mathematics Panel Science Teachers Association of Nigeria (STAN) Vol. 21. pg 66 - 80.

Nweke, S.I., & Ali, P. A.(2020). Strategies for Reducing Mathemaphobia Among Secondary School Students in Ebonyi State. American Journal of Education Research , (2020) Vol. 8. No. 4 pg 194 - 199. Published by Science and Education Publishing DOI: 10, 1269/education 8-4-1.

Nworgu B. G. (2015): Educational Research; Basic issues and methodology University of Nigeria . Ibadan Wisdom publishers.

Samer M. A., Mohammad A. and Bani Y. (2015), Low Academic Achievement: Causes and Results Theory and Practice in Language Studies, Vol. 5, No. 11, pp. 2262-2268, November 2015 DOI: http://dx.doi.org/10.17507/tpls.0511.09.

Wikipedia (2023)