

## **AN ASSESSMENT OF CAUSES AND EFFECTS OF MATHEMATICS ANXIETY AMONG STUDENTS OF PUBLIC SECONDARY SCHOOLS IN UYO LOCAL GOVERNMENT AREA**

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### **ABSTRACT:**

The study made an assessment of causes and effects of mathematics anxiety among students of public secondary schools in uyo local government area. In order to carry out this study, specified research objectives were drawn from which research questions were formulated and used for the study. The research design for this study is a survey design. The population of the study consisted of 9473 JSS students from Uyo local government area. Simple random sampling technique was used to select 313 respondents out of the population. The instrument used for data collection was questionnaire. The instrument was validated by two experts. Data from completed questionnaires was subjected to descriptive analysis. The findings showed that causes and effects of mathematics anxiety among students of public secondary schools in uyo local government area is statistically positive. The study recommended that The ministry of education should employ quality and skillful mathematics teachers to help bring down the level of mathematic anxiety among students of public secondary schools. The government should ensure that mathematics anxiety is assessed and addressed for students as well as teachers. The school authority should be encouraged to test students' anxiety level and those who are found to have mathematics anxiety should be made to attend workshops or conferences specially designed to help reduce if not completely eliminate

mathematics anxiety. Principals of schools should organize seminars, workshops and encourage them to attend conferences in mathematics regularly. This would build up their capacity as well as expose them to new methods of teaching mathematics in order to improve students' performance in the subject.

### **INTRODUCTION:**

One of the most essential topics in secondary school is mathematics. This is because, as a nation, Nigeria relies entirely on mathematics as one of the most important disciplines that may assist the country achieves its scientific and technical goals (Jegede, E.E 2002). It is undeniable that pupils are uninterested in maths. The majorities of pupils despises or despise mathematics. Attendees to the mathematics class do not practice mathematics on their own, nor do they answer problems on their own. Many pupils would rather not have anything to do with mathematics if the choice is given. This mindset has resulted in their doing badly in mathematics in both internal and external examinations, among other things.

Students in the twenty-first century often score badly on senior high school mathematics examinations. The term "mathematics" is an Ancient Greek word that means "what is taught," "what one learns," as well as "learning" and "science." Mathematics is widely acknowledged as the basis of science and technology, without which a country can never be wealthy or economically self-sufficient. This emphasizes the significance of

mathematical ability for all students at all stages of education, and is one of the reasons why mathematics is required and one of the most important core courses in secondary school. This significance is attributed in acknowledgment of the critical function it plays in modern society. Despite the efforts of the government and other educational stakeholders, mathematics is still regarded as one of the most challenging subjects in schools.

The common perception is that mathematics is difficult by its very nature, and as a result of this perception, secondary school pupils, who are the subject of this research, perform poorly. Ola attributes this low arithmetic performance to two main causes that may be subdivided into students, family, instructors, and school aspects (2013). Students, on the other hand, argue that mathematics is highly organized and abstract, necessitating a unique mental approach. As a result, pupils see the topic as esoteric. Because of the location of some schools, particularly those in the Abi Local Government Area of Cross River State, teachers of junior and senior mathematics are hard to come by. In-service training has not provided chances for the few available instructors to refresh their skills and expertise.

#### **OBJECTIVES OF THE STUDY:**

To examine level of mathematics anxiety towards mathematics among students of public secondary schools in Uyo Local Government Area

To examine the attitude of students towards mathematics classes among students of public secondary schools in Uyo Local Government Area

#### **RESEARCH QUESTIONS:**

What is the level of mathematics anxiety towards mathematics among students of public

secondary schools in Uyo Local Government Area?

What is the attitude of students towards mathematics classes among students of public secondary schools in Uyo Local Government Area?

#### **NATURE OF MATHEMATICS ANXIETY:**

Anxiety about mathematics may show itself in a variety of ways. A learner may feel that he or she is mathematically challenged. Anxiety comes in even before the student attempts the task or the instructor explains it. Students with mathematics anxiety, according to Buxton (2009), may feel humiliated, angry, disappointed, and frightened. He went on to say that some areas of mathematics, such as long division, long multiplication, algebra, BODMAS, simultaneous equation, quadratic equation trigonometry, and geometry, may create difficulties. Math done quickly reveals a bad previous school experience and leads to a high degree of maths anxiety.

According to a research by Hafner, K (2008), academic self efficacy begins to decrease in middle school. According to Hafner, K (2008), students with poor self-efficacy may struggle to self-motivate, have lower expectations, and give up more easily. The levels of mathematics anxiety were measured using an adolescent rating scale for mathematics anxiety and a mathematics self-efficacy scale in Hafner, K (2008) research. Participants in the study selected a modified 5-point likert scale ranging from 1-not at all to -5-extremely to best characterize their tension or anxiety. Hafner, K (2008) used the mathematics self-efficacy scale to assess the participants' confidence in their abilities to complete the tasks properly. Students attempted to solve 20 grade-appropriate math problems while keeping track of their confidence in their solutions.

Bonnstetter, B. (2007) used the mathematics anxiety survey to poll 341 pupils in 1999. The 16 boys and girls with the greatest and lowest levels of anxiety were then questioned. In Bonnstetter's seven-year follow-up research, 11 of the initial 16 middle-school pupils completed the mathematics anxiety survey once again. The interview portion of the research was again directed by the critical incident method. The survey showed a modest connection in the follow-up research.

Six research participants who were first categorized as having "low mathematics anxiety" were retested with the mathematics anxiety survey. Three people scored higher (greater mathematics anxiety), whereas three people did not alter their results (similarly low mathematics anxiety). These six pupils claimed that they did not learn mathematics via memory (Bonnstetter, B. 2007). The kids demonstrated a good understanding of numbers, patterns, and connections. Students were able to work through arithmetic issues with the aid of their knowledge and reasoning. One-on-one instructor assistance and comprehensive explanations, as well as group work and pleasant learning settings, contributed to positive mathematics self-concept, as stated by the mathematics "anxious" students.

#### **ASSESSMENT OF STUDENTS PERFORMANCE IN MATHEMATICS:**

Students have regularly performed poorly in an essential topic, particularly in the Senior Secondary Certificate Examination (SSCE) administered by the West African Examination Council (WAEC) and the National Examination Council (NEC) (NECO). The SSCE is a national examination given to Nigerian students at the conclusion of their secondary school. It is intended to assess the students' knowledge and abilities at that level of education. The exam's results are also utilized

as a requirement for admission to institutes of higher learning, where students may pursue courses in their fields of interest. To read any subject at most Nigerian universities, a credit pass in mathematics and English language is needed.

As a result, the number of students in the nation who satisfy university requirements on an annual basis is very low. As can be seen from the chart above, the vast majority of students fail the course each year, preventing them from pursuing numerous professions that might have benefited them and the nation. Despite the government's and other stakeholders' attempts to improve students' performance in the subject, the tendency continues. As a result, it's obvious that there are still issues to be addressed. Many students who suffer from mathematics anxiety have little faith in their abilities to perform arithmetic and thus only take the bare minimum of mathematics courses. Low self-esteem and a fear of failure are the causes of mathematics anxiety. According to Durrani and Tariq (2009), pupils who have high levels of mathematics anxiety have a negative attitude toward the development of arithmetic abilities. They go on to explain that these kids lack confidence and are unmotivated to improve their arithmetic abilities.

Teachers, according to Education Queensland, S.D (2007) must be well-equipped to ensure that their pupils have the confidence to use mathematics in their daily lives. Students may suffer from maths anxiety if they have never been successful in their math courses. This may be owing to a bad start. Average pupils are unlikely to perform well in a teacher's class if he does not teach effectively. Additionally, the pupils may have completed inadequate mathematic courses, leaving them unfit for the class he is in.

Mathematics anxiety is greater in kids who do poorly in mathematics than in those

who perform well. This scenario may be taken to indicate that students with poor mathematics performance are concerned about succeeding in mathematics courses, and they believe they will fail based on their low score. Due of their worry, students with a high level of mathematics anxiety would fail. As one's mathematical ability improves, so does one's attitude toward mathematics. When compared to kids with greater levels of academic achievement, students with poor academic performance have more mathematics anxiety.

### **IMPACT OF STUDENTS ATTITUDE TOWARDS MATHEMATICS CLASSES:**

"It is our attitude at the start of a tough job that, more than anything else, will influence its successful outcome," James (2014) once remarked (Van Wanger, 2013). This concept applies to many different areas of daily life. The effort students put in to learn and practice mathematical ideas and abilities is influenced by their attitude toward mathematics. Students' beliefs about their competence and expectations for school success have been directly linked to their levels of engagement, as well as the emotional states that promote or interfere with their ability to be academically successful, according to the National Research Council (2000), as cited in Akey (2006). As a result, a student's attitude determines how much effort he or she will put into studying the topic (mathematics). As a result, mathematics instructors must try to maintain favorable attitudes toward mathematics in order to ensure excellent performance in the upper grades (Benson, 1999).

According to Hannula, M. (2002), views may shift over time, and sometimes drastically. He went on to say that many students, particularly those who are younger and less experienced, alter their attitudes about a topic in direct proportion to their previous academic achievement. A good day may influence one's

attitude to the positive, while a poor day can sway one's attitude to the negative. Hannula, M. (2002) discovered that once a mindset is formed, it is generally stable, with only small shifts depending on achievements and failures. This is where instructors may have a significant effect on the development of this mindset; "teachers can promote the notion that mathematics is an attractive topic that is utilized in other disciplines and is a college and career entrance ticket."

### **RESEARCH METHODS:**

#### **Research Design**

For this research, a survey design was utilized. This method was chosen because it aided the researcher in describing, examining, recording, analyzing, and interpreting the variables discovered in the study. It's also helpful since the information was gathered from a reasonably big population.

#### **AREA OF THE STUDY:**

The city of Uyo was selected as the study's focus. It serves as the administrative center of Akwa Ibom State and the Uyo Local Government Area. The latitude and longitude of Uyo LGA are 0532o North and 07 560East, respectively. It is bordered on the south by Nsit Atai and Nsit Ibom Local Government Areas, on the east by Uruan Local Government Areas, and on the north by Itu and Etinan Local Government Areas. Uyo is situated in Nigeria's low-lying coastal area.

#### **POPULATION OF THE STUDY:**

Nine thousand four hundred and seventy-three (9473) Junior Secondary II students (JSSII) from the fourteen (14) secondary schools in the Uyo Local Government Area that offered mathematics in the 2020/2021 school year were included in this research (Akwa Ibom State Secondary Education Board, 2021). However, respondents

for the research were drawn from five schools in the study region.

**SAMPLE AND SAMPLING TECHNIQUE:**

The research utilized a sample of 313 Junior Secondary School II students who offered mathematics. First and foremost, five out of fourteen schools were chosen as representative schools using a hat and draw procedure. The respondents were chosen using proportional sampling methods from the five public secondary schools in the Uyo Local Government Area. The sample fraction was used to calculate the sample size statistically.

**INSTRUMENTATION:**

The research utilized a sample of 313 pupils from Junior Secondary School II who were interested in math. First and foremost, representative schools were chosen from a pool of fourteen schools using a hat and draw technique. The respondents were drawn from the five public secondary schools in the Uyo Local Government Area using proportional sampling methods. Using the sample fraction, the sample size was calculated statistically.

**VALIDATION OF THE RESEARCH INSTRUMENT:**

Experts in the field of research validated the research instrument. The goal was to make sure that the questions on the questionnaire were appropriately written to suit the respondents' comprehension levels and that they addressed all of the study goals.

**RELIABILITY OF THE INSTRUMENT:**

To evaluate the instrument's dependability, the researcher used Pearson Product Moment Correlation (PPMC) analysis. A total of 20 students who were not part of the main research were chosen at random from secondary schools in the study region for the

trial testing, and the instruments delivered questionnaires.

**ADMINISTRATION OF THE INSTRUMENT:**

After receiving approval from the school administrators and presenting a letter of introduction, the questionnaire was given to the sampled mathematics students.

**METHOD OF DATA ANALYSIS:**

The collected data were analyzed using appropriate statistical technique such as descriptive statistics.

**DATA PRESENTATION**

**Research Questions One**

What is the degree of mathematics concern among pupils attending public secondary schools in the Uyo Local Government Area?

Table 1: Mean rating analysis of the level of mathematics anxiety towards mathematics among students of public secondary schools in Uyo Local Government Area

ITEMS	$\bar{X}$	SD	Decision
I fell dizzy on the announcement of mathematics period.	2.97	1.01	Agree
I am restless when it is mathematics period.	2.67	1.10	Agree
I find it difficult to concentrate when I am studying mathematics.	2.88	1.14	Agree
I find myself thinking of the consequences of failing mathematics test or examination.	2.75	1.14	Agree

**Legend:** X = Mean; SD = Standard Deviation; N: 313

The result of data analysis of table 1 revealed that the items had a mean range of 2.67 to 2.97 showing the level of mathematics anxiety towards mathematics among students of public secondary schools in Uyo Local Government Area.

## RESEARCH II

What is the attitude of students towards mathematics classes among students of public secondary schools in Uyo Local Government Area?

Table 2: Mean rating analysis of the attitude of students towards mathematics classes among students of public secondary schools in Uyo Local Government Area

ITEMS	$\bar{X}$	SD	Decision
I get excited whenever it is time for mathematics	2.90	1.01	Agree
Mathematics is my favorite subject	2.69	1.10	Agree
Most of the time i am eager to learn mathematics	2.53	1.14	Agree
I dislike any conversation or discussion that involves mathematics	2.75	1.14	Agree

**Legend:** X = Mean; SD = Standard Deviation; N: 313

The result of data analysis of table 2 revealed that the items had a mean range of 2.53 to 2.90 showing that the attitude of students towards mathematics classes among students of public secondary schools in Uyo Local Government Area.

## DISCUSSION OF FINDINGS

The result of the data analysis in table 1 was significant due to the fact that the items had a mean range of 2.67 to 2.97 showing the attitude of students towards mathematics classes among students of public secondary schools in Uyo Local Government Area. The

significance of the result is in agreement with the opinion of Hafner, K (2008) who said students with lower self-efficacy might find it more difficult to self motivate, they have lower expectations, and could give up more quickly. Also the study of Hafner, K (2008) study utilized an adolescent rating scale for mathematics anxiety and a mathematics self-efficacy scale to measure the levels of mathematics anxiety. Study participants chose a modified 5-point likert scale that best described their stress or nervousness ranging from 1-not at all to 5-very much.

The result of the data analysis in table 2 was significant due to the fact that the items had a mean range of 2.53 to 2.90 showing that the attitude of students towards mathematics classes among students of public secondary schools in Uyo Local Government Area. The significance of the result is in agreement with the opinion of Akey (2006), students' beliefs about their competence and their expectations for success in school have been directly linked to their levels of engagement, as well as to the emotional states that promote or interfere with their ability to be academically successful. Thus attitudes determine the effort a student is likely to put into his learning of the subject (mathematics).

## RECOMMENDATIONS:

Based on the findings of the study, the following recommendations were made.

1. To reduce the amount of mathematic anxiety among pupils in public secondary schools, the ministry of education should hire qualified and skilled mathematics instructors. The government should guarantee that both children and instructors have their maths anxiety evaluated and treated. The school administration should be encouraged to assess pupils' levels of anxiety, and those who are found to have mathematics anxiety should be required to

- attend seminars or conferences specifically intended to assist decrease, if not entirely eradicate, mathematics fear.
2. School principals should arrange seminars and workshops for students and urge them to attend math conferences on a regular basis. This would increase their capability as well as expose them to new teaching techniques in order to enhance students' performance in mathematics.
  3. The ministry of education shall equip mathematics instructors in public secondary schools in Abi Local Government Area with teaching materials. Following that, principals should guarantee that every mathematics teacher uses instructional resources while teaching mathematics. This would make it easier for pupils to grasp mathematical ideas and formulae, since the usage of instructional materials improves effective teaching and learning.
  4. Teachers should look for methods to encourage children to study mathematics and to develop the habit of solving math problems on a regular basis. Teachers should encourage students to view mathematics as an easy topic in one-on-one interactions since it is helpful to everyone in our everyday lives.

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