STUDENTS' PERCEPTIONS ON THE EFFECTS OF CLASS SIZE TO THE LEVEL OF MASTERING MATHEMATICS IN SENIOR SECONDARY SCHOOLS IN BOSSO LOCAL GOVERNMENT, NIGER STATE.

BY

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2017/3/69340BE

DEPARTMENT OF SCIENCE EDUCATION SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
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AUGUST, 2021

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A PROJECT REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF TECHNOLOGY (B.Tech) IN SCIENCE EDUCATION IN MATHEMATICS EDUCATION

DEPARTMENT OF SCIENCE EDUCATION SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
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ABSTRACTS

This research work was carried out using survey design to collect data from sampled students. A total of 312 students were selected at random from the senior secondary schools (SS 1 – SS 3) to answer the questionnaire which the researcher used as the research instrument. Three (3) research questions and two (2) research hypothesis were stated and tested at 0.05 level of significance respectively. Hypothesis 1; states that there is no significance difference on the empirical evidence to prove that class size makes a difference in student academic performance as the p-value of 0.79 was above the significant value of 0.05, hence the null hypothesis was accepted. Hypothesis 2; states there is no significant difference on the general perception of mathematics students in senior secondary school regarding class size as the p-value (0.704) was above the significant value of 0.05, hence the null hypothesis was accepted.

The result from this study have shown. The result from this study have shown that a small class size enhances efficient and effective learning thus increases cognitive achievement. The researcher recommend that state and local government educational planners should supervise the admission offered to student and the recruitment of teachers bearing in mind the expected teachers-learner ratio and the eventual learning outcome.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Education remains the fulcrum for global development and freedom. Therefore, all hands must be on deck to enhance qualitative education right from elementary school to tertiary institution to maintain its importance and effective monitoring must be established to check all factors that might frustrate this global pursuit. In fact, many studies have reported that under ideal situation, class size appears to be an important factor in education because as school population increases, class size also increases and the performance of students become an issue. According to Dror (2015), class size has become a phenomenon often mentioned in the educational literature as the influence on student's feelings and achievement on administration, quality and school budgets. He noted that class size is almost an administrative decision over which teachers have little or no control. However, large class size is not conducive for serious academic work especially Mathematics.

Class size appears to be one of the crucial elements that is often considered by educational planners in order to achieve the set-out objectives in any educational system. This is so because the obvious negative implication of our crowded class room on the learner. Ozochie (2009) opined that to make the correct estimate of resources needed is the function of population. The point suggests that the essence of having a definite number of learners in a class room is to ensure that the resources that is the teacher, the instructional materials, class size, seating arrangement among others are adequately provided for smooth teaching and learning. Apart from the need for adequate provision of resources, effective teaching and learning seem to be the function of the teacher understanding the individual difference of each of the learner as this form the basis for appropriate teaching skills to be applied. Onah (2014), aptly noted in this regard that the essence of having a manageable class size is to ensure that the understanding

rate of each of the learner, their respective general background are; put into consideration by the teacher in the course of teaching. Mathematics like other branch of science requires absolute observation and learner centred activities. In order to achieve result, the learner must be adequately monitored and some set of activities within a coherent and structural frame work cannot be achieved unless it can be translated into meaningful action. This however requires more than simply presenting children with organized problem rather such becomes meaningful when the purpose of the activity become meaningful, explicit and shared. This can only happen between student and teacher and placed under a class that can be managed for the learner.

There is a consensus among researchers and educational scholars that student achievement decreases as class size increases. The effect of class- size on cognitive achievement has been debated and researched for many years. Generally, class size refers to the educational tools that can be used to describe the average number of students per class in a school. In emphasizing the importance of class size to learning teaching process, all Nigerian conference of principals of secondary schools (ANCOPSS) recommended a maximum of forty students per class for efficient and effective teaching and learning. Under an overcrowded class room environment, the learner- centred activity would pose great challenge to the teacher hence the desired behaviour change may not be easily achieved. It is therefore the thrust of this study to find out the effect of class size in effective teaching learning of Mathematics with particular reference to some senior secondary schools located in Bosso local Government area of Niger state.

1.2 Statement of the Problem

The national policy on education revised in 2010 stipulates that the maximum teacher-student ratio is one teacher is to thirty students. The obvious reason for this standard is to ensure that the learners' individual capabilities are understood by the teacher. Ozochi (2018) affirms that there is a limit to which a teacher can effectively control, anything more than that according to him will affect the school objective. However, in most of our secondary schools today the

teacher-student ration has gone far beyond be the stipulation of the national policy on education. Students stay more than fifty in each class, seating arrangement altered thereby making learning difficult. Educational planners in Nigeria have attributed the over bloated class size due to the explosion of the population of the student. In an attempt to put sound education on ground worldwide, many factors have been incriminated has been responsible for falling standard of education where it is perceived and established that among such factor is the issue of classroom size. Fabunmi, BraiAbu and Adeniyi (2017) pointed out that classroom congestion and low utilization rate of classrooms are common features of secondary schools in Nigeria. They have negative impact on both secondary school teacher productivity, student learning outcome and thus secondary school student academic performance.

It has been observed that secondary schools appear to be densely populated while lecture room is over-congested. Kolawole (2000), observed that the relationship between class size and student achievement is negative, such that the larger the class the lower the student achievement will be. In view of the divergent opinion, the main objective of this study is to determine the influence on the perception of the effect of class size to learning of Mathematics in senior secondary schools. As it is today, it seems to be impairing effective teaching and learning process in senior secondary schools and hence the reason for embarking on this project.

1.3 Objective of the Study

The broad objective of this research work is to examine the students' perceptions of the effect of class size to the level of learning of Mathematics in senior secondary schools;

1. To investigate students' perceptions on the effect of class-size on the academic performance of students in learning Mathematics in senior secondary schools.
2. To determine the extent to which class size is cited as the factor affecting the learning of mathematics in senior secondary schools.

3. To solicit from students the various ways class size affects their learning of Mathematics in senior secondary schools.

1.4 Research Questions

The research seeks to answer the following questions that affect the effective learning of Mathematics among senior secondary school students in Bosso, Niger state.

1. In what ways do class size affect learning of Mathematics in senior secondary schools in Bosso?
2. What are the general perceptions of students in senior secondary schools regarding class size?
3. What empirical evidence is there to prove and convince local educational administration that class size makes a difference in student academic performance?

1.5 Research Hypothesis

The following hypothesis will be tested to guide this study;

1. There is no significance difference on the empirical evidence to prove that class size makes a difference in student academic performance in mathematics
2. There is no significant difference on the general perceptions of mathematics students in senior secondary schools regarding class size.

1.6 Delimitation of the Study

- The study is specifically dealing with student's perceptions of the effect of class size to the level of learning Mathematics in senior secondary schools.
- The study will concentrate on the Senior Secondary School (SS1 – SS3) students on the effect of class size on learning of Mathematics in some senior secondary schools Bosso Local Government Area, Niger State.

1.7 Significance of the Study

The Nigerian educational system is progressively becoming more and more complex. But the catalogue of sources shows that senior secondary school is over congested and thereby leading to a decline in the teaching and learning of Mathematics. Based on this, the research contains the researcher's contributions that would be of help and as follows:

1. The study when completed would enable the teachers know the disadvantage of overcrowded classrooms and thus improve the efficiency of learning.
2. It would assist the Local and State educational planners on supervision of the admission offered to students and the recruitment of teachers bearing in mind the expected teacher-learner ratio and the eventual learning outcome.
3. The research will provide valuable information on the influence of various interacting valuable factors as expressed on by students on class size.

1.8 Definition of operational terms

Perception: The act or faculty of perceiving, or apprehending by means of the senses or of the mind, cognition and understanding.

Effect: An impression, that is artificial or contrived.

Mastering: The act of becoming proficient in the use of something. Having mastery of something.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, efforts are made to review relevant literatures on the influence of class size on the perception of students to learning of Mathematics. This chapter focus on reviewing related literature to the study which throws more light on the problems under investigation. This study is categorized into these sections: conceptual frame work, theoretical framework, Empirical studies and summary of literature reviewed.

2.1 Conceptual frame work

2.1.1 Concept of class size

In the present day "Nigeria", industrial and technological development are giving special concern (Adedeji, 2007). As a result, students are equipped with innovation associated with new courses. Mathematics is one of the courses that transverse all the sciences. Today, Mathematical processes perform a crucial role in industrial and technological development in all fields of human endeavour. For our effort towards scientific and technological advancement to yield positive outcome, we need good achievement in Mathematics at every school level. Regrettably, student's mathematical achievement at the senior secondary school has not gotten better in several years. However, several strategies have been put together to remedy this long problem.

Class size refers to an educational tool which can be used to describe the average standing number of students per class in schools. Hoffinam (2000), described class size as the number of students per teacher in a class. Though some people confuse it, class size is not the same as pupil/teacher ratio. The pupil/teacher ratio is a global measure of human resources brought to bear directly and indirectly on children's learning.

Class size can be also the actual number of pupils taught by a teacher at a particular time thus the pupil/teacher ratio is always lower than the average class size and the discrepancy between the two can vary depending on the teacher. Class size has a major impact on the academic performance of students.

The measurement of class size is not straightforward as might seem, because it can vary considerably for a single child at different times during a school day and school year because of student mobility, student's absences, truancy or pull out. A class with 20 students will definitely vary in its class size from day to day and may even have far fewer than 20 students in a particular day.

Although researchers who intensively study a small number of class rooms may have found class room data available in the practice. Most researchers also found that the data on student/instructors proportion are frequently available than detailed data on class sizes. On examining the relationship between schooling result and students proportion data can be used but there seem to be weaker relationship than that of schooling results and class size as class size is more related to learning. Class size data that include a chronological dimension are rarely available, thus most researchers use data pertaining to the number of students enrolled in the class. To evaluate result outcome will thus be based on the connections between class size and school result is esteem genuine (Adams and Douglas, 2001).

2.1.2 Concept of Learning

Learning is an active process of acquiring knowledge, skills and ability (KSA) in order to enhance the personal or collective welfare of the society.

In common parlance, the word "learning" carries at least two meanings. There is a general one of some kind of change in behaviour often associated with knowledge. However, learning cannot be defined merely in terms of changes in behaviour but also a more intense sense of the verb 'to learn' meaning to memorize, to learn by heart (Roger,2003).

To say that 'learning is change' is too simple. Not all change is learning. What we usually mean by learning are those more or less permanent changes and reinforcements brought about voluntarily in one's pattern of acting, thinking and/or feelings.

According to Ambrose et al. (2010), they defined learning as follows:

1. Learning is a process, not a product;
2. Learning is a change in knowledge, beliefs, behaviours or attitude;
3. Learning is not something done to students but something students themselves do.

There have been several attempts to describe the different areas of learning change. The traditional distinction has been between learning knowledge and learning skills; but others have elaborated on this. Several point to the need to include attitude as the third area. In the field of learning objectives, knowledge, skills and attitude (KSA) is a well-worn path (Roger,2003).

Kurst Lewin (1935) suggested that learning occur in many ways such as;

1. In skills,
2. In cognitive patterns (knowledge and understanding),
3. In motivation and interest and
4. In ideology (fundamental beliefs)

Robert M. Gagne (1972) also identified the following five domains or types of learning outcomes:

1. Motor skill which require practice
2. Verbal information-facts, principles and generalizations which when organized into larger entities become knowledge,
3. Cognitive strategies-the way the individual learns, remembers and think, the self-managed skills needed to define and solve problems,
4. Intellectual skills – the discriminations, concept and rules that help in using knowledge and

5. Attitudes.

2.1.3 Views of scholars on the effect of class size

Evidently, research have shown that students reach their full potential with the enhancement of small class dimension and the optimum class size for any level is directly proportional to the composition of that class. Small classes provide better learning environment according to what instructors have permanently recognized from their own knowledge and several reliable research studies have affirmed the advantage of diminutive classes. The most coherent advantage is the perfection in measures of mathematics achievement results. This basic field of discipline seems to be studied by students at an improved rate in a small class.

Experimental and naturalistic study both agreed that a realistic influence on student academic performance and achievement are as a result of small classes, especially when the youngest children in school are exposed to it. Conversely, it has been noted by several studies that class size has an effect on class room communication and student attitude enhancement.

Finn et al (2003) have noted that, robust survey that enables unbiased investigation on links between class size, instruction practices and student attitude is comparative minimal. In Anderson's (2000) model of possible factors linking class size to student achievement he rendered a centrepiece area attached to teaching. A program of research in English (CSPAR) showed that in a diminutive class, the probability of instructor support for learning is ascertained (Blatchford, Moriaty, Edmonds & Martins, 2002). The probability of learner's communication with their instructors, more one-to-one teaching, and students being the focus of a teacher's attention is high with pupils of primary school age in diminutive classes. Every student in diminutive classes thus gained more communications with their instructors of a task-related nature.

In a state-wide class studies carried out by Prime Time and Star (2003), it was discovered that the upshot of a diminutive classes on components such as; schedule on assignment, one-to-one

instruction, classes that do the right thing and instructors' contentment yielded unquestionable results. Also uncovered was the fact that the results for academic performance are not always in one direction but rather mixed, sometimes, the outsized classes performed better. Instructive prospect outside the classroom can undergo some changes due to reduction in class size.

2.2 Theoretical Frame Work

The term constructive may not be familiar to many educators, but probably, they recognize that it has something to do with learning. The major doctrine of constructive learning is that people compose their personal perception or interpretation of the world and sequentially their own knowledge. The constructivist view in terms of learning, influence teaching, classroom practices and the student classroom behaviours, is that the teacher's position in using constructivist approach includes modelling, scaffolding, selection and appoints of leader, grouping of students, determine the group goals, organizer and evaluator in teaching and learning situation. Since constructivist as an Instructional model can involve the use of inquiry. Analog problem solving and the pre-social cooperative learning, it seems therefore to be very inclusive and integrative (Olosunde and Akinpelu, 2013).

In the study of Wengimsky (2000), about how classroom practice significantly affects student's achievement detects that constructivist model procedure should be focused by teacher before implementing them with academic tasks. Team goals should also be set by teachers and provide positive reinforcement for the teams and success of constructivist's model learning activity should be evaluated.

Recent research in mathematics education showed that emphasis on the constructive method to teaching and learning has been made (Kami, 2012; Lampert, 2009). According to constructivists, learning theory proposes that students should actively construct new ideas based on previous experience and not inertly receive knowledge. For an expressive learning to be achieved, it is suggested that students should be actively involved, instead of unloading

information, “the learners negotiate meaning within the context of their present understandings, make connections with past personal understandings, and modify prior knowledge in order to build new constructs” (Cobb et al., 2009) and from the perspective of a constructivist, “mathematics teaching consists primarily of the mathematics interactions between a teacher and children” (Steffe & Killion, 2000).

Students are guided by the teacher in an interactive sense through dissertation and communication. These students thereafter translate and attune this sense to their present mathematical comprehension or knowledge (Von Glasersfeld, 2018). It was noted by Cobb and Steffe (2010) that “in the view of the constructionist, a deliberate effort to see both theirs and the children actions from the children’s point of view should be continuously made by teachers” (p.85).

Capel et al. (2010) put forward a feasible link connecting class size and instructor’s incentive approach. These approaches indicate a substantial change. He also pointed out that dissimilarity exist between teaching an outsized group of non-stimulated and stimulated students. Since stimulating students may always be a hectic task especially for student, and newly employed/qualified teachers it is therefore another important point. Despite this fact, the more experienced teachers may find it easy to cope with the competitive and more inspired students but for newly qualified problems it may pose a problem. Ambrose *et. al.,* (2010), investigated problems perceived by beginning teachers and motivating students was seen as one of the highly demanding challenges observed by the newly employed teachers in that investigation.

Assessment method might be another factor related to class room teaching as regards to class size. Teachers believe that the evaluation process is different for small and large class rooms according the findings of study conducted by Shapson, and Fitzgerald (2015). Teachers were of the opinion that according to the study of Shapman et al, that teachers who

handle a class of 16-23 students were more contented than classes of more than 23, because little time was spent on marking and corrections.

In this study, teachers articulated the ease of keeping track of student's achievement and thus suggesting that student's evaluation is easier in small classes.

2.3 Empirical Studies

As reviewed by the Brown Centre on education policy, in their writing entitled; class size: what research says and what it is meant for state policies. This is a large body of research related to the relationship between class size and student learning. There was a natural kind of experiment that allows a sudden change in class policy and allows a before and after analysis of the effect using sophisticated mathematical models for estimating effects that advantage of longitudinal data on individual students and schools. There are surely hundreds today. The vast majority of these studies simply examine the association between variation in class size and student's achievement. The primary difficulty is variably different for all of them.

It is paramount for teachers and parents to put all effort to manage the class size as to enhance students' academic performance.

2.3.1 Effect of Class Size Within the Class Groups and on Teachers

As a result of oversized classes, bigger group are usually found within the class and it has an adverse effect on the degree and efficiency of teaching and the best of students work and attention in this groups (Blatchford, 2003).

Feasibly, the fact that class size affects individual student result. If the class is small, there is more likelihood that the teacher will utilize time with individual student. In the same vain, overall teaching in diminutive classes tend to be high and several contest or challenge like management of class, student control etc. Teachers undergo strain whenever they confront outsized classes. Suggestions from qualitative studies also indicated the identification of

problems and dashing out solutions, spot specific wants and guide teaching to meet up to the standard and also set objectives for individual students are easier for smaller classes.

2.3.2 Effect of class size on students

In a diminutive classes, students are occupied in learning actions than students in oversized class as concluded by Fin et al (2003). It was also found that 4-5 years old children as a case study, individualization makes more disconnection but in case of 10-12 year-old children it makes no effect. This could be as a result of assessment and curriculum pressure. It was also discovered that the interaction between students and teachers is more in a diminutive class while passive interaction is in an outsized class (Blatchford,2009).

2.3.3 Effect of class size on curriculum

Research revealed that the links that joins class size and classroom process is influenced by a mitigating responsibility of school subject (Blatchford,2009).

Outsized class led to short of time that should be utilized on small groups and individual student, involving instructional method and entire group interaction. According to the result of CSPAR study as sited by Blatchford (2009), one of the recommendations of further study is to detect in what can the influence of class dimension differ in terms of a specific course and age of student. The whole result of the CSPAR study suggest that despite the fact that diminutive classes cannot turn an incompetent teacher to a competent one, bad teacher better, they can allow teacher effectiveness to be fely on the other way round, outsized classes unavoidably pose teachers with hardship and demand for cooperation. Anderson (2000), proposed that diminutive classes may suggest chance for instructors to instruct better or, to use a distinct term (Wang and Finn, 2000) they can establish enabling conditions for instructors to teach and learners to learn.

2.3.4 Student active involvement with teacher

Student may have a passive role in the class due to larger classes. According to research in the UK, students in the diminutive classes are more likely to interact in a lively retained mood with instructors when compared with that of student in outsized classes where they are more likely to listen passively to the instructor (Blatchford, Basset and Brown, 2005).

2.4 Summary of Literature Review

Summarily, it became very clear that there are several opinions regarding the influence of class size on the teaching and learning procedures overall and mathematics precisely. The research conclusion on class size needs to be further investigated, and these alone makes this review a highly benefiting one. In addition, it is also established of the view of the fact that diverse research strategies were employed in this study, conclusions made about effect of class size on teaching and learning differs proportionately. In common terms, a variety of research techniques were employed in this research as observed also by Blatchford, Edmond and Martin (2003). The whole of this study proves that, some of these studies were conducted qualitatively while others are empirical. Despite the fact that there are indications from earlier research that there were no statistical correlations, class size truly has an influence from observation whereas other studies as opined, that class size influence the class room settings with reference to teacher's perception based on data from interview. To crown it all, it was noted that researches on class size is accompanied with some limitations because the surveys are in small size ratio and in brief period of time. Nye et al. (2001).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The researcher used questionnaire to carry out the research work. The study is to find out the perceptions of secondary school students on the effects of class size to the learning of mathematics. The researcher reviewed how effective learning of mathematics based on class size and on how it can promote students in their career choice. This chapter deals with the design of the study, population of the study, sample and sampling technique, research instrument, reliability of the instrument, method of data collection as well as method of data analysis.

3.1 Research Design

The study adopted the descriptive survey design. According to Nworgu (2006), descriptive survey research in which a group of people or item is studied by collecting and analysing data from only a few people to express their views based on their experiences. It therefore enabled the students who are the respondents to respond to the research instrument based on their experiences in the classroom. The survey questionnaire was designed in line with discovered problems shown in the study.

3.2 Population of the study

The population for their study comprises of four public senior secondary school two (SS II) Bosso Local Government Area of Niger State with a total population of one thousand four hundred and twenty-three (1,423). An aggregate number of three-hundred and twelve (312) students were chosen from the four Secondary school in the population. The names of the schools where the survey was carried out are listed below:

i. Bosso Secondary School, Minna, Niger State

ii. Ahmadu Bahago Secondary School

iii. Hill Top Model School

iv. Garatu Day Secondary School Minna, Niger State

3.3 Sample and Sampling Techniques

The sample size was statistically determined using "Yaro Yamane" formula as reported by Gambari A. I. (2017) for the population gotten. The formula was given as:

$$n = \frac{N}{1 + N(e)^2}$$

Where; n = the sample size

N= the finite number

e = level of significance (or limit of tolerable error); 0.05

l = unity (constant)

Therefore;

$$n = \frac{1423}{1 + 1423(0.05)^2}$$

$$n = \frac{1423}{1 + 1423(0.0025)} = \frac{1423}{1 + 3.5575} = \frac{1423}{4.5575}$$

$$n = 312$$

3.4 Research Instrument

The major research instrument used was a questionnaire which was carefully designed to collect the necessary data from the sampled respondents.

The instrument was divided and limited into two sections; Section A and B. Section A deals with the personal data of the respondents while Section B contained research Instrument in accordance with the research questions and research hypothesis in which the respondents were required to give specific answer to by ticking the appropriate answer. The questionnaire contains a total of twenty (20) questions using simple language.

The questionnaire is a selection type of which the students have levels of commitment to each question and they are to pick just one out of it. The level of commitment of the questionnaire

is according to the LIKERT-SCALE which are: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The statements are formulated in a way to get personal view of students regarding the perception of secondary school students on the role of mathematics in their future career.

3.5 Validity of Instrument

To ensure the validity pf the instrument, the researcher present it to two experts in the Department of Science Education, Federal University of Technology, Minna. They were requested to examine the instrument to ensure that the items relate to the purpose of the study, the research questions and the formulated hypotheses. They were also requested to make comments based on the clarity, appropriateness and language of all the items and make other comments regarding the overall adequacy of the items and ways of improving it. It was based on such comments, inputs and corrections that the instrument was restricted to its present state.

3.6 Reliability of Instrument

To determine the reliability of the instrument used in gathering the data for this research was reliable having Cronbach's alpha coefficient of 0.9. The instrument(questionnaire) was subjected to a trial test outside the study sample within the study population. Cronbach Alpha method of reliability was used to determine the internal consistency of the instrument.

3.7 Method of Data Collection

An Introductory letter seeking for permission to carry out research in the schools sampled was taken to each of the schools by the researcher and the permission was granted on the first day of the visit in all the schools visited on different days.

Research instrument consist of two research hypotheses which were used to give the questions, hypotheses 1 carries 14 questions while hypotheses 2 carries 6 questions. The questionnaires were distributed to the students in the selected schools. The students answered the questions accordingly of which the response should both be Strongly Agree (SA), Agree (A), Disagree

(D) and Strongly Disagree (SD). The questionnaires were collected after the questions has been answered.

3.8 Method of Data Analysis

The data collected were organized and analyzed using the statistical package for the social sciences (SPSS) version 25. The hypotheses were answered and the responses were analysed in a table using mean and standard deviation to test for difference.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF RESULTS

4.0 Introduction

This chapter seeks to analyse results of the data from the completed survey administered to some selected secondary school in Bosso Local Government Area. The researcher made Three Hundred and twelve copies of the questionnaire which were given to the students by the researcher were returned. The results obtained from the study were analysed using SPSS 21.0 (Statistical Package for Social Science). Percentage, Mean and Standard deviation was used to determine any significant difference. The result obtained is presented in the tables below.

4.1 Presentation of Results

4.1.1 Gender of Respondents

Figure 4.1 shows the frequency of the respondents' gender. As observed from the result, majority of the respondents were 173 males which represents 55% of the total population. On the other hand, 139 female students constituted the minority, representing 45% of the study. This shows that there is a slight difference between the gender of the respondents and the study population had more male than female.

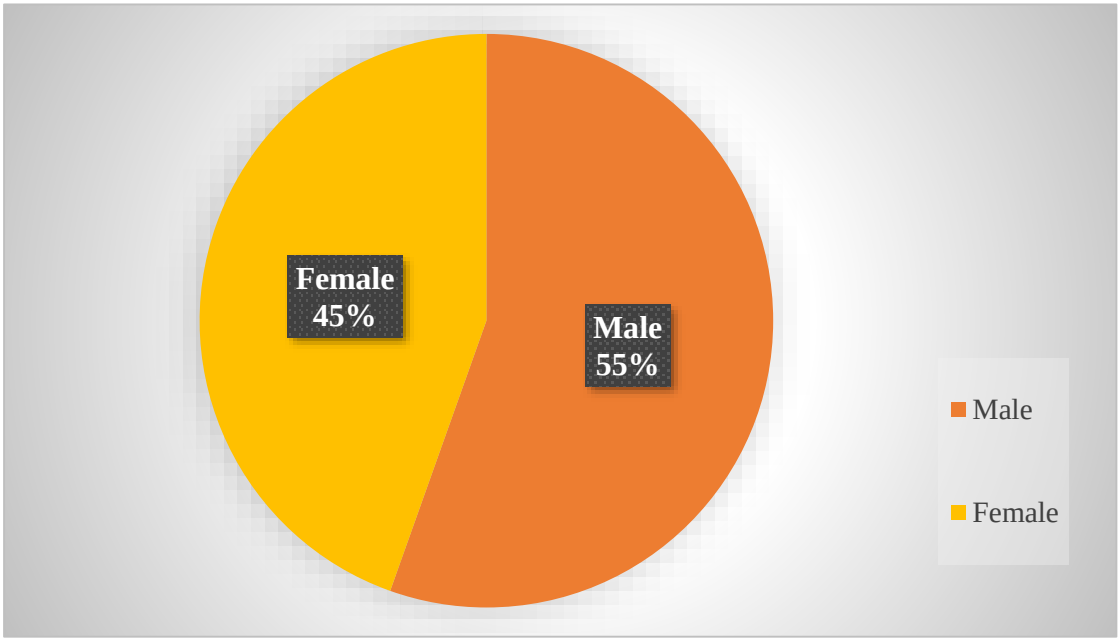

Figure 4.1 Frequency on the Gender of Respondents

4.1.2 Age Group of Respondents

The age group of the respondents is presented in Figure 4.2. The result indicates that majority of the respondents (33%) belong to the age group 15-18 years. 30% of the respondent are within the age group of 13-15 years and 24% of the respondent are within the age group 11-13 years. More also, only 13% belong to the age group 18years and above, which are the minority of the respondents.

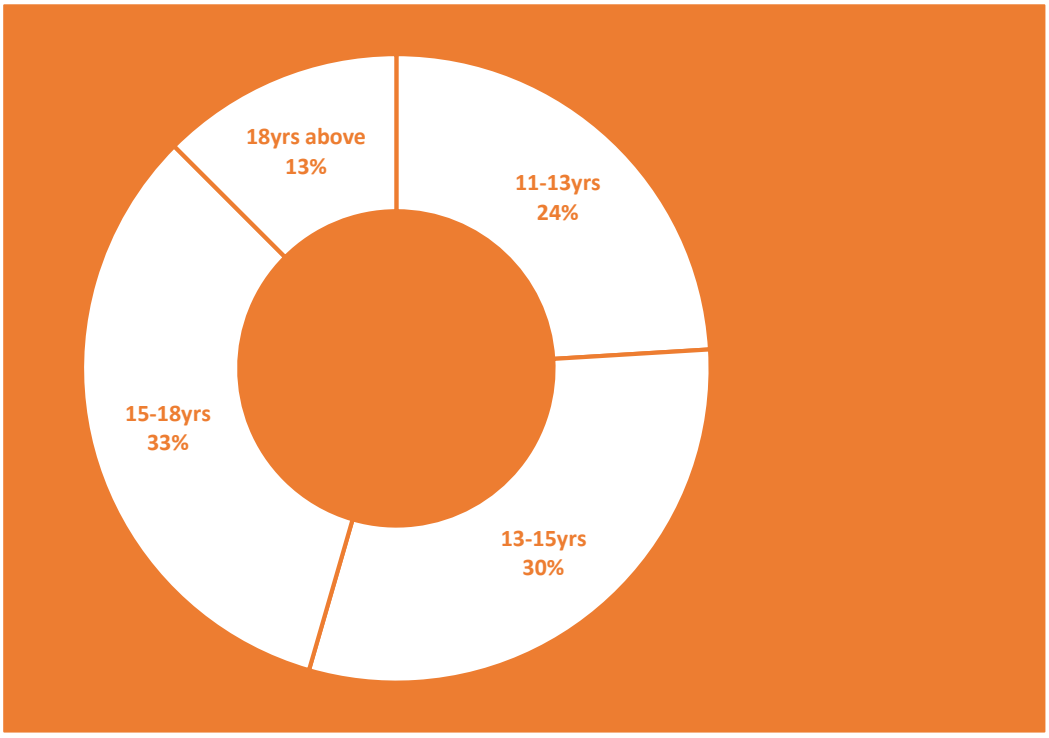

Figure 4.2: Age Group of Respondents

4.1.3 Class Level of Respondent

Figure 4.3 shows the class level of the respondents. The result revealed that majority of the respondents (44%) were in SS II; this is followed by 30% in SS I, and only 26% were in SS III. This shows that respondents were well distributed among the various class level in their respective schools.

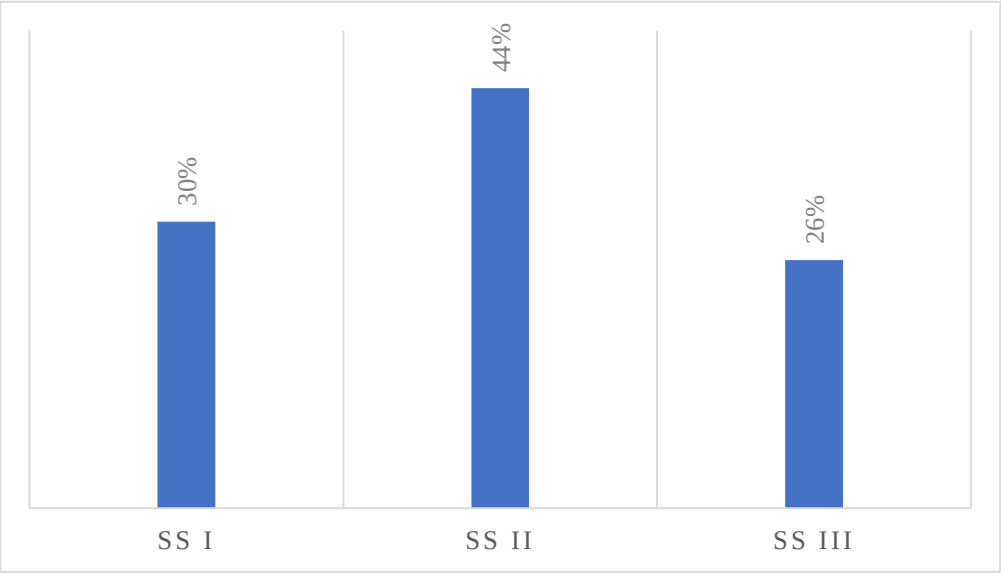

Figure 4.3: Respondent by Class Level

4.1.4 Ways that class size affect learning of Mathematics in Senior Secondary Schools

The result of the ways that class size affect learning of Mathematics in Senior Secondary Schools is presented in Table 4.1. by comparing the value of the means, the result show that majority of the respondent strongly agreed that they spent more quality time in a moderate class. They seemed to agree that in a larger class, students felt ignored by the teacher due to the population of the class size. Also, it was observed that mathematics teachers find it difficult to manage and control larger classroom.

The study also shows that large class size create distraction during mathematics lesson and most of the students strongly agreed that they are totally confused during the class. Most the respondent agrees that large class reduces the efficiency of mathematic teachers and not every teacher can function effectively in a large class size. Furthermore, it was observed that student learn mathematics better in a small class size than in a large class size and most of the respondents agreed that large class makes it more difficult for the use of teaching aid during mathematics lessons. Therefore, this results that large class size affect the learning of Mathematics in Senior Secondary School and student's performance are better in a moderate and preferably in a small class size.

S/N	Items Statement	N	Mean	Std.D
1	In a moderate class-size, more quality time is spent with the learners	**312**	**2.96**	**0.897**
2	In a large class size, I do feel ignored by the teacher	**312**	**2.94**	**0.923**
3	Mathematics teachers find it difficult to manage and control large classroom	**312**	**2.98**	**0.824**
4	Large class size create distraction during Mathematics lesson	**312**	**3.01**	**0.856**
5	Large class size reduces the efficiency of mathematics teachers	**312**	**2.96**	**0.892**
6	Students learn Mathematics better in a small class size	**312**	**3.03**	**0.859**
7	Large class makes it difficult for the use of teaching aid during mathematics lessons	**312**	**3.18**	**0.705**

Table 4.1: Ways that Class size affect learning of Mathematics in Senior Secondary Schools

4.1.5 General Perceptions of Mathematics of Students in Senior Secondary Schools regarding class size

Table 4.2 shows the general perceptions of Mathematics by students in Senior Secondary Schools regarding class size. The result shows that Mathematics gets more interesting in a moderate class size and most of the respondents enjoyed sharing mathematical solution strategies with friends & colleagues when not in large classes. From the study, it was observed that not every student has equal level of opportunity in understanding mathematics in large class size. Also, the respondents agreed that the topics in Mathematics are easy to learn in a moderate to small class size.

The study also shows that majority of the students strongly disagreed with the idea that students performances are better in large class sizes than in small class size. Furthermore, most of the respondents strongly agreed that Mathematics are complex subject and should be taught in small class size rather than large class size. Therefore, the general view is that students in Senior Secondary Schools prefer learning Mathematics in a small class size rather than a large class size.

S/N	Items Statement	N	Mean	Std.D
1	Mathematics gets more interesting in a moderate class size	**312**	**2.91**	**0.903**
2	I enjoy sharing mathematical solution strategies with my friends & colleagues when not in large classes	**312**	**3.21**	**0.760**
3	Every student has equal level of opportunity in understanding mathematics in large class size	**312**	**2.50**	**0.867**
4	The topics in Mathematics are easy to learn in a moderate class size	**312**	**2.64**	**0.810**
5	Students performances are better in large class size than in small class size	**312**	**2.92**	**0.863**
6	Mathematics are complex subject and should be taught in small class size rather than large class size	**312**	**2.97**	**0.928**

Table 4.2: General Perceptions of Mathematics of Students in Senior Secondary Schools regarding class size

4.1.6 Empirical Evidence to Prove and Convince Local Educational Administration that class size makes a difference in student academic performance

Table 4.3 represents the empirical evidence that can be used to prove and convince Local Educational Administration that class size makes a difference in students academic performance. This result shows that majority of the participants strongly agreed that Mathematics performance are poorer in large class sizes than in small class sizes since the strength and weakness in mathematics varies in different class size. In addition, it was observed that learning materials are limited and student finds it difficult to access adequate educational resources for further studies in large class sizes. Also, the respondents agreed that class-size affect students performance in Mathematics regardless of the students' family background.

The result also shows that self confidence in mathematics is hardly built in students of large class sizes and students level of understanding mathematics in large class size is better compared to small class size. Furthermore, the study shows that most of the respondent strongly disagreed that not every gender has equal understanding of mathematics in different class size.

Therefore, the result proves that large class size affect students academic performance and small class size will promote students performances.

S/N	Items Statement	N	Mean	Std. D
1	Mathematics performance are poorer in large class sizes than in small class sizes	**312**	**2.88**	**0.940**
2	Strength and weakness in mathematics varies in different class size	**312**	**3.09**	**0.830**
3	Learning materials are limited and student finds it difficult to access adequate educational resources for further studies in large class size	**312**	**2.54**	**0.921**

4	Class-size affect students performance in Mathematics regardless of family background	**312**	**2.84**	**0.798**
5	Self confidence in mathematics is hardly built in students of large class sizes	**312**	**2.66**	**0.952**
6	Students level of understanding mathematics in large class size is better compared to small class size	**312**	**2.71**	**0.846**
7	Every gender has equal understanding of mathematics in different class size	**312**	**3.07**	**0.791**

Table 4.3: Empirical Evidence to Prove and Convince Local Educational Administration that class size makes a difference in student academic performance

4.2 Research Hypotheses

Research Hypothesis 1: There is no significance difference on the empirical evidence to prove that class size makes a difference in student academic performance.

Gender	**N**	**Mean**	**S.D**	**df**	**t-value**	***P*-value**
Male	173	20.06	2.959	310	1.773	0.77
Female	139	19.45	3.098	289.624	1.764	0.79

Table 4.4 showing the empirical evidence to prove and convince local educational administration that class size makes a difference in student academic performance

From the table above, it is revealed that there is no significant difference on the empirical evidence to prove that class size makes a difference in student academic performance as the *P*-value of 0.79 was above the significant value of 0.05, hence the null hypothesis was accepted.

Research Hypothesis 2: There is no significant difference on the general perceptions of mathematics students in senior secondary schools regarding class size.

Gender	N	Mean	Std. D	df	t-value	p-value
Male	173	17.19	2.868	310	0.367	0.714
Female	139	17.08	2.399	309.484	0.374	0.704

Table 4.5 show the general perceptions of mathematics of students in senior secondary schools regarding class size

From table 4.5 above, it is revealed that there is no significant difference on the general perceptions of mathematics of students in senior secondary schools regarding class size as the *P*-value (0.704) was above the significant value of 0.05, hence the null hypothesis was accepted.

4.3 Discussion of Results

This result therefore shows the ways that class size affects the learning of mathematics in senior secondary schools. This implies that student learns better in a moderate or small class size than in a large class size and that quality time is spent with student. It also shows that most student felt ignored by the teacher due to the large class size and there are distractions in large class size than in small size. Also, teacher's efficiency is reduced when handling larger class size and some teachers find it difficult to control and manage large class size.

Findings revealed the empirical evidence to prove and convince local educational administration that class size makes a difference in student academic performance. The hypothesis was tested and it shows the views of both male and female students, showing that there were not significant differences based on gender. The result shows that mathematic student performance was less effective in large class size than in moderate or small class size. Family background, limited learning materials and socio-cultural norms are other factors that influence student academic performance to learning mathematics.

The result of this study also revealed the general perception of mathematics of students in senior secondary school regarding class size. The hypothesis was also tested and it shows the

male and female view on the perception of mathematics student were similar as the results from the testing showed that there were no significant differences in the view of the perception of mathematic student in senior secondary school regarding class size. The result shows that moderate class size stimulate the interest to learn mathematics and student enjoy sharing mathematical solutions and strategies with friends & colleagues when not in large classes.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This chapter is dedicated to the conclusion and possible recommendation based on the results. From the analysis of the data so far, we can conclude that the impact of a diminutive class size cannot be over emphasized. A moderate class size enables student-teacher effective communication, interaction and appropriate usage of instructional materials, hence, stimulating efficient learning of mathematics. Small class size promotes easy comprehension and understanding of mathematic and help students to build self-confidence on how to solve mathematics problems than in large class size.

This study also revealed that most student struggle in mathematics and find it difficult to handle mathematical problems when in large class size and perform better when in a small class size. More so, student level of interest towards learning of mathematics becomes positively inclined in a small class size than when in a larger class size. However, the result shows no significant difference on the general perception of mathematic student in senior secondary school based on gender.

The result of the analysis of the general perception of mathematic of student in senior secondary school with respect to gender indicated that the null hypothesis was accepted given the fact that the probability level (p-value = 0.708) was greater than 0.05 level of significance at 68 degree of freedom. This implies that there is no significant difference between

5.2 Summary of Major Findings

From the research, it was discovered that:

1. There is no significant difference on the general perceptions of mathematics students in senior secondary schools regarding class size.

2. Not every student has equal level of opportunity in understanding mathematics in large class size and the topics in mathematics are easy to learn in a small class size
3. Gender difference has no effect on students towards effective learning of mathematics in different class sizes.
4. There is no significance difference on the empirical evidence to prove that class size makes a difference in student academic performance.

5.3 Recommendation

- The ministry of education and local government education authority should provide adequate leaning materials for further studies, teaching aid and conducive learning environment for easy comprehension of mathematics.
- State and local educational planners should supervise the admission offered to student and the recruitment of teachers bearing in mind the expected teacher-learner ratio and the eventual learning outcome.
- Educational programs and scheme such as mathematic competition should be encouraged to build students interest and confidence on mathematics
- Employers of teachers should give sufficient technical skills and training to their employees on mathematics in order to help them to build standard learning process.

5.4 Suggestions for Further Research

Based on the findings of this study the following suggestions are for further studies.

- A study can be carried out to find out problems associated with peer group pressure on learning of mathematics
- A study can be carried out using Junior Secondary School Students on the perception of learning of mathematics
- Further study should be carried out using larger population and on different region on learning of mathematics

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APPENDICES

Students' Perceptions of the Effects of Class size to the Level of Mastering Mathematics in Senior Secondary School Questionnaire

Department of Science Education,
School of Science and Technology Education,
Federal University of Technology, Minna
Niger State.

Date …….

Dear Respondent:

I am a student in the above-named department conduction a research on "**Students Perceptions of the effects of class size to the level of mastering Mathematics in Senior Secondary Schools**". Your responses are basically for research purposes. You are requested to participate in this study and information you provide will be treated in strict confidence. You are therefore kindly requested to honestly provide the required information to the best of your ability.

Thank you.

Signed:

Silas Samuel

2017/3/69340BE

SECTION A: Bio-data

Please tick (√) in the appropriate column

1. Gender: (a) Male [ ] (b) Female [ ]
2. Age: (a) 11–13 years [ ] (b) 13–15 years [ ] (c) 15–18 years [ ] (d) 18 & above [ ]
3. Class Level: SS I [ ] SS II [ ] SS III [ ]
4. State of Origin: ……

SECTION B: Ways that Class size affect Learning of Mathematics in Senior Secondary Schools

Please tick (√) appropriately in the column that corresponds with your view

Strongly Agree (S.A), Agree (A), Disagree (D), Strongly Disagree (SD)

S/N	Items Statement	4	3	2	1
		S.A	A	D	S.D
1	In a moderate class-size, more quality time is spent with the learners				
2	In a large class size, I do feel ignored by the teacher				
3	Mathematics teachers find it difficult to manage and control large classroom				
4	Large class size create distraction during Mathematics lesson				
5	Large class size reduces the efficiency of mathematics teachers				
6	Students learn Mathematics better in a small class size				
7	Large class makes it difficult for the use of teaching aid during mathematics lessons				

SECTION C: General Perceptions of Mathematics of Students in Senior Secondary Schools regarding class size

Please tick (√) appropriately in the column that corresponds with your view

Strongly Agree (S.A), Agree (A), Disagree (D), Strongly Disagree (S.D)

S/N	Items Statement	4	3	2	1
		S.A	A	D	S.D
1	Mathematics gets more interesting in a moderate class size				
2	I enjoy sharing mathematical solution strategies with my friends & colleagues when not in large classes				

3	Every student has equal level of opportunity in understanding mathematics in large class size				
4	The topics in Mathematics are easy to learn in a moderate class size				
5	Students performances are better in large class size than in small class size				
6	Mathematics are complex subject and should be taught in small class size rather than large class size				

SECTION D: Empirical Evidence to Prove and Convince Local Educational Administration that class size makes a difference in student academic performance

Please tick (√) appropriately in the column that corresponds with your view

Strongly Agree (S.A), Agree (A), Disagree (D), Strongly Disagree (S.D)

S/N	**Items Statement**	**4**	**3**	**2**	**1**
		S.A	A	D	S.D
1	Mathematics performance are poorer in large class sizes than in small class sizes				
2	Strength and weakness in mathematics varies in different class size				
3	Learning materials are limited and student finds it difficult to access adequate educational resources for further studies in large class size				
4	Class-size affect students performance in Mathematics regardless of family background				
5	Self confidence in mathematics is hardly built in students of large class sizes				
6	Students level of understanding mathematics in large class size is better compared to small class size				
7	Every gender has equal understanding of mathematics in different class size				