EFFECT OF LARGE CLASS SIZE ON STUDENTS ATTITUDE AND ACADEMIC PERFORMANCE IN BIOLOGY IN SOME SECONDARY SCHOOLS IN GUSAU METROPOLIS

BY

Abubakar Umar 1510110035
Zaharaddeen Umar 1510110003
Hauwa u Abubakar 1510110011
Hauwa'u Amina 1510110022
Hamida Abbass 1620110003

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ABUBAKAR UMAR	1510110035
ZAHARADDEEN UMAR	1510110003
HAUWA'U ABUBAKAR	1510110011
HAUWA'U AMINU	1510110022
HAMIDA ABBASS	1620110003

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APPROVAL PAGE

This research report has been critically read through and approved as meeting the requirements for the award of Bachelor Degree in Science Education in Biology Education (Bsc. Ed Biology), Federal University Gusau.

Sign:_____ 27/11/2019
Mal. Akilu Isma'il
Project Supervisor
Date

Sign:_____ 2/12/19
Dr. Umar Sodangi
Head of Department
Date

Sign:_____ 27-11-19
Mal. Abdullahi Bello
Project Coordinator
Date

Sign:_____
External Supervisor
Date

DEDICATION

This research project is dedicated to the "Almighty Allah" for His enabling strength He bestowed on us in completing this work.

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ABSTRACT

This study investigate the effect of large class size on students' attitude and academic performance toward learning biology. In this research work a sample of Fourty-five (45) teachers, Three Hundred (300) students were selected by means of stratified sampling technique from the five (5) secondary schools in Gusau metropolis of Zamfara State. The research instrument used for the study were teacher and students questionnaire which were validated by the supervisor. The data collected from the respondents were analyzed with distribution method and means score. At the end of the analysis the study revealed the major findingswhich include: students did not shows interest or concern in learning biology in large class, teachers qualification make a lot in handling large class size this contribute immensely to the attitude and performance of students toward learning biology. The study further recommended that the teachers should try to motivate students in order to develop positive attitude towards learning biology and that, government should provide enough infrastructural facilities in schools.

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CHAPTER ONE

1.1 Background of the Study

The government recognizes the importance of science as the bedrock of educational agent of the society. Okebukola (2008) proposed early learning at science which according to him would be a solid background necessary for children to create interest at higher levels. Out (2002) noted that the pupils need a variety of space in the classroom for their diverse work activities. This become obvious for science class where the subject requires the children actively engaged in wide variety of activities at their interest without risk and hazards for their health.

Biology teaching in senior secondary schools cannot be over emphasized.It is one of the subjects required by students to study science and other allied courses at tertiary institution.Suchcourses include but not limited to Microbiology, Biochemistry, Biology/Integrated Science, Biology/Chemistry, all offer in our national tertiary institutions of learning in Nigeria, which in cooperates practical work involving learners active and productive participation in the learning.

The National Policy on Education (NPE) (2004) define class size as the population of a given class in terms of number of pupils and recommends a normal class size of 35 learners on students to one teacher. This is hardly achievable in Nigerian secondary schools. Dultilemi

(2006) stated that some teachers put it as ranging from 50 and above per class. It's the policy of education for all and the advent of Universal Basic Education (UBE) there will be tremendous increase in school size. This has consequent impact on class size with many children varying from few places available in our educational system in Nigeria. The situation leads to oversized schools with oversize class, problems of inadequate facilities, inadequate instructional materials and supporting personnel as a result of over crowd class. The factors will influence effective implementation of Biology curriculum and students' achievement in the subject matter because the larger the class size the better the routine operational practices of the teachers during teaching and learning situations and the difficulty of assessing class integration.

Large class size may therefore be a singular problem with contributing factors which result in psychological consequences on students' achievement. Abdullahi (2013) identified large class as one of the factors militating against full curriculum implementation in our schools. Classes could be too large for single teacher to handle especially in the area of practical activities, since Biology is a science practical oriented discipline.

Gusau local government been one of the local government in Zamfara state has been encountered with many poor performance in biology as a subject, due to the lack of financial support, lack of equipped laboratory, lack of libraries, lack of textbooks, and lack of qualified teachers. This shows that the students which are populated in size of about (70-120) in each

class has caused unconducive learning in that end to this factor, many students wolfly fail their final examination(W.A.E.C, NECO,NBTEC,NBAIS etc.) in biology.

1.2 Statement of the Study

The higher increase in students' enrolment in our senior secondary schools due to the advent of new National Policy on Education (UBE) has made senior secondary schools to increase in number in terms of students enrolment, This programme has serious implication andhave led to oversize schools in our educational system in Nigeria with many students varying from few classes spaces available for them in the schools setting and may result into inadequate facilities e.g. Instructional materials and supporting staff on personnel to be adequate for better teaching and learning to take place and that results into psychological consequences on students academic achievement in the subject matter and something has to be done to improve the student's academic performance in senior secondary schools in our societies.

Therefore there is need for the researchers to investigate the effect large class size on student's attitude and academic performance towards learning Biology.

1.3 Objectives of the Study

The objectives of the study are to:

i- Find out the availability of adequate laboratory facilities

how large class size in school affects performance of the students in ology

he required students' population that constitutes an ideal class.

how large class size in schools affects the attitudes of the students in ology.

me measures aimed at arresting the situations

Questions

to find answers to the following questions:

e enough laboratory facilities in senior secondary school in Gusau?

he performance of students taught in a normal classroom differ from those in a large classroom?

large classroom size affects students' performance towards learning Biology?

s the attitudes of students taught in a normal classroom, differs from those taught large classroom?

oes large class size affects teaching and learning of Biology?

Significance of the Study

dy will be important in the following ways;

ii- Determine how large class size in school affects performance of the students in learning Biology

iii- Determine the required students' population that constitutes an ideal class.

iv- Determine how large class size in schools affects the attitudes of the students in learning Biology.

v- suggest some measures aimed at arresting the situations

1.4 Research Questions

The study seeks to find answers to the following questions:

i. Are there enough laboratory facilities in senior secondary school in Gusau?

ii. Does the performance of students taught in a normal classroom differ from those taught in a large classroom?

iii. Does large classroom size affects students' performance towards learning Biology?

iv. Does the attitudes of students taught in a normal classroom, differs from those taught in a large classroom?

v. Does large class size affects teaching and learning of Biology?

1.5 Significance of the Study

The study will be important in the follow

a) To enlight Biology teachers with the appropriate techniques of handling large class size.

b) To inform government and nongovernmental organizations on the impact of large class size and needs to build more classrooms in schools.

1.6 Scope and Delimitation

This research project is limited to secondary schools in Gusau metropolis, Zamfara state of Nigeria, in content terms the research corresponding the effect of class size on student performance and their attitude towards biology.

1.7 Definition of Operational Terms

a. Biology: is the discipline that deals with the study of living things and non-living organisms in relationship to physical environment where they found themselves.

b. Class size: The National Policy on Education (2004) defines class size in terms of the number of students/pupils in a given class.

c. Large class size: as one of the factor militating against hitch free curriculum or implementation in our schools.

d. Performance: This is the achievement or expected learning outcome of the students after a course of study and been assess by the facilitator/teacher.

e. Students: This is a group of individuals undergoing a course of study close or guided by a teacher or instructor.

f. Attitude: Is an enduring organization of motivation emotional, perceptual and cognitive process with respect to

CHAPTER TWO

Review of Some Related Literature

2.1 Introduction

Large class size in schools has been shown to have an adverse effect on students learning in a number of ways. Typically large class size in schools can be found both in urban and rural area.A class in school is defined as large class size when it operates with an enrolment rate exceeding capacity.

2.2 Attitude of Students towards Learning Biology

Students attitude can be described as a learner disposition to respond in a consistently favorable or unfavorable manner with respects to give object Olaitan (2003). Also, Thurstone (2008) Argued that, attitude is an enduring organization of motivation, emotional, perceptual and cognitive process with respects to some aspect of the individual world.

Leonerd (2010) asserted that, attitude makes the learning and the teaching of a topic more relevant to studentslives; help them to develop a better interest towards science in general and biology in particular.

We have however, say that; attitude could either be positive or negative reaction towards desirable objective as the case may be.

Student's attitudes towards science have also received attention (Osborne, 2003). Information about student's interest may help teachers to devise strategies to enhance student's interest in biology (Vitto, 2006). The types of films they watch, interests in hobbiesand their ideas about learners were also examined. Attitudes towards biology were investigated in three dimensions: interest, difficulty and importance of biology lesson.

Early evidence suggests that hybrid courses may indeed lead to better student's performance in exams, better students conception of and attitudes towards the cause and higher attendance rates (Riffell and Marrill 2005). Hybrid courses may be especially appealing for college introductory science courses because they typically contain, in addition to lecture, a laboratory component, problem – focused threaded discussion and group work while the lecture portion of these introductory science classes might be large (usually between 100 – 400 and above students).

According to Korau (2006), Socialization nowadays being about different trait of attitude hitherto to the environment, too many students were admitted in our secondary schools and in other agents of socialization with different languages, ethnicity, religion, norms and values which make them to adapt to each other as a result of their interactions. As a result, predisposition of individual manner will yield a positive or negative trait.

Finally, a positive attitude towards science may contribute to students performing better academically in all subjects and encourage them to think critically about scientific and non-scientific issues throughout their lives.

2.3 Performance of Students in Biology

According to Onwieleinen (2005), Performance is the outcome of education, the extent to which a students, teacher or institution has achieved their educational goals.

Academic performance is commonly measured by examination or continue assessment but there is no general agreement on how it is best tested or which aspects are most important procedural knowledge such as skills or declarative knowledge such as facts.

There are Individual differences in intelligence and personality among students. Students with higher mental ability as demonstrated by IQ tests and those who are higher in conscientiousness (linked to effort and achievement motivation) tend to achieved highly in academic setting. A resentment – analysis suggested that mental Curiosity (As measured by typical intellectual engagement) has an important influence on academic achievement in addition to intelligence and conscientiousness (Chamorron Premuzie&Tomas, 2011).

2.4 Teaching of Biology in Schools

Teaching is said to be an attempt to change the behavior of an individual and aid in the acquisition of skills, ability, habits and physical competence all necessary for functional beingin a dynamic environment (Bower,2006).

According to Robert (2002) teaching is imparting knowledge to someone or group of people or perhaps a systematic, rational, organized process of transmitting knowledge attitudes and skills in accordance with professional principles.

Athinoglu and Tandogan (2007) posit that the role of teaching is to initiate and guide the learning process. Implicit in this argument is the important role of the teacher in a constructivist learning environment, again the role of the teacher is not to dominate the teaching environment.

Teaching have been shown to have an important influence on students academic achievement and they also play a crucial role in educational attainment because the teacher is ultimately respondents for presenting policy into action and principle based onpractice during interaction with the students (Afe, 2001).

Adu and Olatundun (2007), Loethhead and Komenan (2009) and Madutha (2000), indicated that effective teacher produced high performance students.

Teachers are catalysts of the expects changes and society. These demands that they should be well trained, have recourse to retraining and updating of their biology knowledge through in – service training workshops, seminar and conferences, (Tahir,2006). Efficient and effective teachers who are professionally and academically qualified must be produced to promote biology learning in schools. Teachers must be highly motivated with adequate incentives and the issues of teacher's salaries and other fringe benefits should be addressed by the government. The low morale and status of Nigerian teachers have affected the quality of the intake and those already on the job. This has been attributed for poor incentives to improve performance, poor equipped working environments and non – availability working materials inadequate social recognition powerlessness and lack of control other working conditions that would make for effective teaching such as resources available to teaching, general condition of infrastructure as well instructional materials in public secondary schools.

According to Adeyemo (2011), the perception of teachers teaching to a large extent determine the level of understanding reached by his/her students of the same time; the teachers perception is the most important educational input predicting students achievement.

Donping (2009) holds that teachers tend to teach the way they were taught, therefore to implement teaching innovation there is a need for conceptual change of the teaching philosophy. According to Stofflett (2011), a majority of teachers at all level have been

educated in traditional fact – based of science classroom. In such classrooms, the knowledge structures and transmissions in form and didactic pedagogies remain the norm.

Physical factors of the learning environment. UNESCO (2012), this group of factors stated that teachers play a pivotal role in creating conducive learning environment that can enhance students cognitive and attitude outcomes. Korau (2006), observed that the schools population are in thousands today against the hundred of the previous years. Schools today over crowded in classroom which makes it impossible to talk of an ideals size of a classroom for effective teaching of biology. No effective teaching can take place under a chaotic situation where teacher cannot handle the large number of students effectively.

2.5 Problem of the Teaching and Learning Biology

According to Abdullahi (2013), the following are some of the problems associated with teaching and learning of biology in secondary schools:

a. Non – conductive nature of the learning environment. The environment in which teaching and learning take place should be conductive hence, the shape or lay out of the general classroom facilities, the position of the teachers and students, the position of the teachers aids, sitting arrangement, ventilation and a lot more need all be considered to achieve satisfactory result as well as maintaining discipline and order.

b. Inadequate teaching facilities, this may lead to the inability of the teachers to stimulate the interest of the learners and making the lesson less meaningful.

c. High intake of students into secondary school which may lead to slow progress of students academically, developing ill manner in students poor result and truancy.

2.6 Effect of Large Class Size on Performance of Students in Biology

The poor performance of biology in schools are due to lack of qualified teachers, lack of incentive for teacher which prevent them from teaching effectively, incompetent teacher, lack of interest in biology on the part of students, large class size, poor background in biology, biology difficulty, the abstract nature of biology, lack of out dated instructional materials, expensive biology text books, lack of encouragement from parents, other engagements at home and uneducated parents who do not help students when they have difficulty to solve problems in biology are some of the factors that are responsible for the poor performance in school biology (Adeyemo, 2011).

These are some of the effects of large class on students performance:

i. There will be too many students for the available classes which result to overcrowding of classroom and pressure on teacher.

ii. The available conducive environment had more pressure on it, which will lead to fall in educational standard.

iii. There will be increase in production of students with low performance in biology.

iv. There will be high level of poor performance, as available classroom will not be enough to accommodate all the students learning biology.

v. Large classroom will hinder classroom management.

2.7 Effect of Large Class Size on Students Attitude towards Learning Biology

Regardless of one's major of profession, science plays an enormous role in everyone's life. From discovery cures for diseases, to creating innovative technologies, to teaching us how to think critically science has became an in dispensable in future and modern society. Controversial issue such as global warming, evolution, vaccination, HIV/AISDS, and the right to one's own DNA information are only a few of the issues being debate (Dinah, 2013). Biology in particular generated its share of controversies including evolution, cloning and genetic engineering, global warming, species extinction, animal rights and animal suffering human, over – population, and the right to determine the timing and the means of one's own death, to name a few (Leonard, 2010).

According to Robert (2002), there is need for teacher to be a good psychology so that he can understand better the human behaviors, its control, prediction and the shaping of human behaviors. He has to understand and that each child has his/her own kind of personality which could either be influenced hereditically or environmentally. The teacher can only achieve

effectively with a considerable number of students in a class. To execute a meaningful implementation of instruction, the teacher could also have to relate freely with his students so as to be able to identify their capabilities and individual differences, this will enhance a better teachers – students relationship.

The desire to show the causes of poor performance in biology has been the focus of researchers for some time now. It has been observed that poor performance in science in general and biology in particular is caused by poor quality of science teacher, overcrowded classroom, lack of suitable and adequate science equipments large class size (Salau,2002).

Kareem, (2003), Onwirhiren (2005) and Armed, (2008) assert that these factors encourage biology teachers to resort to only lecture method most of the time. It is a well known fact that the quality education depends on the teachers and so the method they use in teaching matters a lot. Consequent upon the observed declaration ration in the academic achievement, attitude and values of secondary school biology students in public secondary schools, one wonders if the higher failure rate and the poor quality of the students is not a reflection of the instructional quality in the schools, in other words the ineffectiveness of the teacher as regards to the method of teaching employed in the classroom interaction with the students could be responsible for the observed poor performance of biology students and widely acclaimed fallen standard of education in Nigeria, For example Usman (2009), Duze (2011) and Yahaya

(2012), strongly believe that standard of education in Nigeria is falling. Large class size destroys this all the school society has a powerful influence on a Childs character formation.

According to UNESCO (2012), in an assessment for improving learning environment in U.S.A, Canada, Australia and India documented that, the characteristics of learning environment that most frequently correlated positively with learning gains were cohesiveness, satisfaction, task difficulty, direction, democracy, materials and environment. The classroom is a psychosocial environment which has been researched with result showing it is a determinant and predictor of students learning cognitive outcomes motivation and attitude. (Green, 2004; Peked Demir & Yildiz, 2006; Aris oy Cakirolu& Sungur, 2007; Mucherah, 2008; Igwebuike & Omaifo, 2012, Ozkal, Tekkaya &Cakiroglu, 2009).

In the domain of learning environment researchers have produced many promising findings learning to enhancement of teaching and learning process in many countries. Research on learning environments has dominated Western and Asian Countries (Ozkal, Tekkaya & Cakiroglu, 2009) with most of the students focusing on the student's perception of the learning environment.

In today climate of school accountability, it is important to investigate the level of academic performance of students. This is because of the massive overcrowding of students in biology subject.

Frightened of the declining in the performance of students in biological science, individual science association such as Science Teacher Association of Nigeria (S.T.A.N) have worked timelessly for almost two decades to deal decisively on student's academic under achievement in science by developing innovative teaching strategies that would improve learning of science.

Learning environments place much premium on students prior knowledge which is also referred to as alternative framework or alternative conception. According to Neo and Neo (2009), a constructivist learning environment play an important part in achieving meaningful and retentive learning since it allows students to improve their problem solving, creating thinking and critical thinking skills.

According to Olorundane (2000), the teacher responsibility in a constructivist learning environment involves taking in to account students prior knowledge and understanding the nature of the concepts to be learned and the learning outcomes expected conceptual demands made on the child and the strategies available to the teachers.

Student's achievement in biology subject has been unsatisfactory over many years. Various reasons have been attached to the problem by scholars such as large classrooms, lack of biology text books, inadequate laboratory facilities, and mastery of subject matter by the teachers among others.

Manalanga and Awelani (2014), concluded in their result that the possible factors responsible for the poor performance in biology include lack of financial support, lack of equipped libraries, lack of laboratories and biology text books, method of teaching and accessing biology.

Soage (2009), identified specific variables such as poor primary schools background in science, lack of incentive for test, lack of interest on the part of students, students not interested in hand work, incompetent teachers in the primary schools, large classes, fear of the subject psychologically e.t.c

Dinah (2013) concluded that availability of text books, laboratory apparatus and other learning resources contribute significantly to the performance of students in biology. Consciously or unconsciously quantity and quality cannot work together and this can affect the students learning of biology and this performs poorly.

CHAPTER THREE

Research Methodology

3.1 Introduction

This chapter will describe the methods and procedures to be used in conducting this research. It is more concern with the large class size which affectsstudent's attitudes and performance towards learning Biology. This chapter will be discussed under the following subheadings:

a. Research design
b. Population of the study
c. Sample and sampling technique
d. Instrumentation
e. Validity of the instruments
f. Reliability of instrument
g. Administration of the instrument
h. Method of data analysis

3.2 Research Design

This study will use descriptive design and survey method which enables the description of the population in terms of size, feelings and opinion toward the problems of large class size that affect the attitudes and performance of students toward leaning Biology. Sample survey

research design is the method in which a group of people or items are studied by collecting and analyzing data from a few people which are considered as representative of the entire group. The study will find the opinion of the students and teachers on the impact of large class size on students' attitudes and performance in learning Biology.

3.3 Population of the Study

This study will be carried out in Gusau metropolis, all the students and teachers in the senior secondary schools offering Biology will form the population of this study. See the population of students and teachers in the senior secondary schools offering Biology in Gusau metropolis in table 3.1.

Table 3.1: Population of students and teachers

S/N	SCHOOL	SEX	STUDENT	TEACHERS
1.	Govt. Girls Day Sec. Sch Samaru	F	231	3
2.	Govt. Girls Day Sec. Sch. Damba	F	120	1
3.	Govt. Day Sec.Sch. Damba	M	160	1
4.	Govt. Day Sec. Sch Unguwargwaza	M	95	1
5.	Govt. Day Sec.Sch. Tsinami	M	105	2
6.	Govt. Girls Arabic Sec.Sch. Tuduwada Gusau	F	225	3
7.	Sch. For continue Education	F	83	1
8.	Govt. Girls Day Sec. Sch. Bye Pass T/wada	F	210	3
9.	Govt. Day Sec. Sch. Millinium Quarters	M	104	2
10.	Govt. Girls Day Sec. Sch Focal UngwarZabarma	F	214	3
11.	Govt.Science Sec. Sch. Gusau	M	270	5
12.	Govt. Day Sec.Sch. Janyau	M	89	2
13.	Govt. Girls Day Sec. Sch Gadabiyu	F	59	1
14.	Govt. Day Sec. Sch Sabongari	M	62	2
15.	Govt. Girls Day Sec. Sch. Sarkin Kudu	F	109	3
16.	Govt. Girls Day Sec. Sch BirniRuwa	M	103	2
17.	Govt. Girls Day Sec. Sch Dan turai	M	172	3
18.	Govt. Girls Day Sec. Sch Ibrahim Gusau	M	143	2
19.	Govt. Girls Day Sec. Sch Gidan Roba	F	97	2
20.	Govt. Girls Day Sec. Sch Sambo	M	211	4
	TOTAL		**2,862**	**46**

3.4 Sample and Sampling Techniques

Stratified sampling will be used to sample the school's students and teachers. Simply because they are all single sex schools. Table for determining the sample size from a given population by Sambo (2008) will be used.

Table 3.2: Sample of Biology teachers, Students and Sex

S/NO	SCHOOL	SEX	STUDENT	TEACHERS
1.	Govt. Girls Day Sec. Sch. Samaru	F	86	10
2.	Ibrahim Gusau Govt. Day Sec. Sch. Samaru	M	59	10
3.	Sarkin Kudu Govt. Day Sec. Sch.	F	57	10
4.	Sambo Gov. Day Sec. Sch.	M	74	10
5.	BirninRuwa Govt. Day Sec. Sch.	M	65	6
		Total	341	46

3.5 Instrumentation

Instrumentations involves careful selection of adequate and appropriate tool (s) which is to administered in order to collect relevant data concerning the study. For this study therefore, designed questionnaires on performance test and direct observation techniques will be used. This is because it could be used for both small and large sample.

- Questionnaire

The questionnaires are divided into Two Forms:

- Questionnaire for teachers
- Questionnaire for students

Questionnaire for teachers are divided into two secretions "A" and section "B". section "A" ,will consist of personal data of teachers which has four (4) items, where the section "B" will consist of fifteen (15) questions, which deal with the "Effect of large class size on students attitude and performance towards learning Biology" (A case study of some senior secondary schools in Gusau Metropolis).

Questions are for Students: This will be divided into two (2) sections, section "A" and section "B". the section "A" will comprise the bio-data of the respondents where section "B" will contain questions on the effect of large class size on students attitudes and academic performance toward learning Biology" the section will be made up of twenty (20) questions.

Performance Test:

Among the sources of data to be collected, this research is the performance test on achievement test which is the test at development skills. This research requires it since it concern with the assessment of the impacts Biology practical on the academic performance.

The test is conducted after the students have undergone lesson in the classroom to discipline how best students understood principles taught by the teachers.

Direct Observation Technique:

The researcher apart from the administration of questionnaire to those concerned, also will undertake some personal direct observation at the atmosphere of the schools and laboratories, for example seeing the Biology teachers and the students in action and also to see the condition of science laboratories, likewise the researcher observe how the students behave while receiving lesson both in the classroom and in the laboratory.

3.4.1 Validity of the Instrument

Validation of the instrument refers to the procedures adapted to ensure that the instruments measure exactly what they intend to measure. The instruments were validated by the project supervisor

3.4.2 Reliability of Instrument

Reliability of instruments is concern with the consistency of the measurement in respect of this study; split-half method was be used to determine the reliability index.

3.5 Administration of the Instruments:

The questionnaires will be administered by the researchersthemselves to teachers and students. Forty six (46) copies of the questionnaire was distributed to the teachers and also three hundred and forty one (341) copies to the students.

3.6 Method of Data Analysis

The use of simple frequencies, percentage will be used from the analysis of data and considered as adequate and appropriate for the purpose of this study.

CHAPTER FOUR

Data Presentation and Analysis

4.1 Introduction

This chapter is aimed at presenting the effect of large class size on students' attitudes and performance toward teaching biology is some senior secondary schools in Gusau metropolis by using descriptive statistical analysis and percentage by using SPSS to find out the significant difference of students attitude and performance in biology.

This chapter also presents the response to the questionnaire made by various biology teachers of the respective selected schools as well as that of students.

Out of 46 questionnaires for the teachers 40 were completed and returned while 341 questionnaires for students 300 questionnaires were completed and returned. Out of the 387 questionnaires for teachers and students, 340 were completed and returned given a returned rate of 87.9%.

4.2 Data Presentation and Analysis

This section present analysis of the data collected. The analysis is done by taking research questions one after another.

4.2.1 Analysis of Students Questionnaires

Research Question One 1: Are there enough laboratory facilities in senior secondary school in Gusau?

To answer this question, data collection from the students' questionnaire was analyzed using descriptive statistical (i.e frequency and percentage). The result is presented in table 4.1.

Table 4.1: Responses of the Students on Adequate Biology Equipment

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	160	53.3
Disagree	140	46.7
Total	**300**	**100**

Table 4.1 Is the summary of the analysis of the students' questionnaires responses on whether there are enough laboratory facilities in schools. The result shows that 160 (53.3%) of the respondents agreed that there are adequate laboratory equipment in their schools while the

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140 (46.7%) disagree that there are adequate laboratory facilities in the schools. Hence the researchers can conclude that there are adequate provisions of laboratory equipments in the school.

Research Question Two 2: Does the performance of the students taught in a normal classroom differs from those taught in a large classroom.

To answer this question data on 99 students who responded were collected and analyzed by using SPSS to get the mean (X) and standard deviation (SD).

Table 4.2: Analysis of Performance Test

VARIABLE	N	MEAN (X)	STANDARD DEVIATION (SD)
Normal class	35	12.94	4.666
Large class size	64	10.27	5.406
Total	**99**	**23.21**	**10.072**

The analysis of data generate from students of normal class size and 64 students of large class size, who participated in this study given the following result. A mean score of 12.94 and standard deviation of 4.666 from normal class size and mean of 10.27 and standard deviation 5.406 from large class size were calculated from the data. This indicate that the performance of normal class school is slightly higher than large class size school judging from the mean

score, while the standard deviation (SD) of large class school is slightly higher than the normal class.

Table 4.3: Analysis of Performance Test in an Ideal Class

VARIABLE	NO OF RESPONDENTS	PERCENTAGE (%)
Pass	23	65.71
Fail	12	34.28
Total	**35**	**100**

Table 4.3is the summary of the analysis of the students academic performance in performance test in normal class size, the result shows that 23 (65.71%) of the students passed performance test while 12 (34.28%) failed ideals numbers of the students tend to perform better academically.

Research Question 3: Does large classroom size affect students' performance towards learning biology?

Table 4.4: Analysis of Performance of Test for Large Class Size Schools

VARIABLE	NO OF RESPONDENTS	PERCENTAGE (%)
Pass	22	34.38
Fail	42	65.63
Total	**64**	**100**

Table 4.4 is the summary of the analysis ofstudent's academic performance ina test of large class size school. The result shows that 22 (34.38%) of the students passed performance test, while 42 (65.63%) failed the performance test

Research Question four 4: Does the attitude of students' taught in a normal classroom, differs from those taught in a large classroom?

To answer the question, data collected from the students' questionnaires wereanalyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.5.

Table 4.5 is the Response of the differences between students' attitudes in a normal and large classroom

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	160	53.3
Disagree	140	46.7
Total	**300**	**100**

Table 4.5 is the summary of the analysis of the students' questionnaire on how large class size affects students' attitudes toward learning biology. The result shows that 160 (53.3%) of the respondents agreed that large class size affects their attitudes toward learning biology. While 140 (46.7%) disagreed that, large class size did not affects their attitudes toward learning biology.

Research Question Five 5: Does large class size affects teaching and learning of biology.

To answer this question data collected from the student's questionnaire were analyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.6.

Table 4.6: Analysis of the Effect of Large Class Size on Teaching and Learning of Biology

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agee	160	53.3
Disagree	140	46.7
Total	**300**	**100**

Table 4.6 is the summary of the analysis of the students' questionnaire on effect of large class size on teaching and learning of biology. The result shows that 160 (53.3%) of the

respondents agreed that large class size affects teaching and learning of biology while 140 (46.7%) disagreed that large class size do not affects teaching and learning of biology.

4.2.2: Analysis of Teachers Questionnaire

Question One 1: It is difficult to identify students with learning difficulty in large class size.

To answer this question, data collected from the teachers' questionnaire were analyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.7.

Table 4.7: Response of teachers on Identifying Students with learning difficulties in large classes.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	28	70
Disagree	12	30
Total	**40**	**100**

Table 4.7 is the summary of the analysis of teachers' questionnaire on whether it is difficult to identify students with learning difficulties in a large class size. The result shows that 28 (70%) of the respondents agreed that it is difficult to identify students with learning difficulties in a large class size while 12 (30%) disagreed that it is not difficult to identify students with learning difficulties in a large class size.

Question Two 2: Are there adequate laboratory facilities for teaching biology?

To answer this question, data collected from the teachers' questionnaire were analyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.7

Table 4.8: Responses of teachers on adequate laboratory facilities for teaching biology practical

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	28	70
Disagree	12	30
Total	**40**	**100**

Table 4.8 is the summary of the analysis of teachers' questionnaire on adequate laboratory facilities for teaching biology practical. The result shows that 28 (70%) of the respondents agreed there are adequate laboratory facilities for teaching biology practical, while 12 (30%) disagreed that there is no adequate laboratory facilities for teaching biology practical.

Question Three 3: Are laboratory enough in term of space to accommodate all students?

To answer this question, data collected from the teachers' questionnaire were analyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.9.

Table 4.9: Responses of teachers on whether laboratories will be enough in terms of space to accommodate all students.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	12	30
Disagree	28	70
Total	**40**	**100**

Table 4.9 is the summary of the analysis of teachers' questionnaire on whether laboratories are enough in terms of space to accommodate all students. The result show that 12 (30%) of the respondents agreed that laboratories are enough in term of space to accommodate all students while 28 (70%) disagreed that there is no adequate laboratory facilities for teaching biology practical.

Question Four 4: It is easier to control students during practical in large class size?

To answer this question, data collected from the teacher questionnaire were analyzed using descriptive statistics (i.e frequency and percentage).The result is presented in table 4.10.

Table 4.9: Responses of teachers on whether laboratories will be enough in terms of space to accommodate all students.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	12	30
Disagree	28	70
Total	**40**	**100**

Table 4.9 is the summary of the analysis of teachers' questionnaire on whether laboratories are enough in terms of space to accommodate all students. The result show that 12 (30%) of the respondents agreed that laboratories are enough in term of space to accommodate all students while 28 (70%) disagreed that there is no adequate laboratory facilities for teaching biology practical.

Question Four 4: It is easier to control students during practical in large class size?

To answer this question, data collected from the teacher questionnaire were analyzed using descriptive statistics (i.e frequency and percentage).The result is presented in table 4.10.

Table 4.10: Responses of teachers on whetherit is easy to control students duringpractical in a large classroom.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	10	25
Disagree	30	75
Total	**40**	**100**

Table 4.10 is the summary of the analysis of the teachers' questionnaire on whether it is easier for control students during practical in large classroom. The result shows that 10 (25%) of the respondents agreed that it is easy to control students during practical in large classroom while 30 (75%) disagreed that it is not easy to control students during practical in large classroom

Question Five 5: Does teachers' qualifications matter a lot in handling large classroom?

To answer this question, data collected from the teachers' questionnaire was analyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.11.

Table 4.11: Responses of teachers to identify that teacher's qualification matters a lot in handling large classroom.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	30	75
Disagree	10	25
Total	**40**	**100**

Table 4.11 is the summary of the analysis of teacher questionnaire on whether teacher's qualification matters a lot in handling large classroom. The result shows that 30 (75%) of the respondents agreed that teachers qualification matters a lot in handling large classroom size.

Question Six 6: Does students show interest during biology practical?

To answer this question, data collected from the teachers' questionnaire were analyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.12.

Table 4.12: Responses of teachers to identify students that shows interest during biology practical.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	40	100
Disagree	0	0
Total	40	100

Table 4.12 is the summary analysis of teachers' questionnaire on whether students show interest during biology practical. The result show that 40 (100%) of the respondents agreed that students show interest during biology practical while non of the respondentsdisagreed that students does not show interest during biology practical.

Question Seven 7: Does majority of the students in large class size pay attention during biology class?

To answer this question, data collected from the teacher's questionnaire were analyzed using descriptive statistics (i.e frequency and percentage).The result is presented in table 4.13.

Table 4.13: Responses of teachers to identify that majority of the students in large class size pay attention during biology practical.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	15	37.5
Disagree	25	62.5
Total	**40**	**100**

Table 4.14 is the summary of the analysis of teachers' questionnaire on how students show a lot of interest in learning biology in a large class. The result shows that 15 (37.5%) of the respondents agreed that students show a lot of interest in learning biology in a large class, while 25 (62.5%) disagreed that, students does not show a lot of interest in learning biology is a large class.

Question Nine 9: It is easy to maintain discipline in a large classroom size than in normal class?

To answer this question, data collected from the teachers' questionnaire were analyzed using descriptive statistics (i.e. frequency and percentage). The result is presented in table 4.15.

Table 4.15: Responses of teachers on whether it is easy to maintain discipline in a large classroom than in normal class.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	10	25
Disagree	30	75
Total	**40**	**100**

Table 4.15 is the summary of the analysis of teachers' questionnaire on whether it is easier to maintain discipline in a large classroom than in normal class. The result shows that10 (25%) of the respondents agreed that, it is easier to maintain discipline in a large classroom than in normal class.

Question Ten 10: Does teachers relates more to students in a large classroom than that in normal class?

To answer this question, data collected from the teachers' questionnaire were analyzed using descriptive statistics (i.e frequency and percentage). The result is presented in table 4.16.

Table 4.16: Responses of teachers on whether teachers relate more to students in a large classroom than in normal class.

REPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	10	25
Disagree	30	75
Total	**40**	**100**

Table 4.16 is the summary of the analysis of teachers' questionnaire on whether teachers relate more to students in a large classroom then in normal class. The result show that 10 (25%) of the respondents agreed that teacher relates more to students in large classroom than in normal class. While 30 (75%) disagreed that the teacher relates more to students in large classroom that in normal class.

Question Eleven 11: It is easier to give assignments /tests in a large classroom than that in normal class?

To answer this question, data collected from the teachers' questionnaire were analyzed by using descriptive statistics (i.e frequency and percentage).The result is presented in table 4.17.

Table 4.17: Responses on whether it is easier to give assignments/tests in large classroom than in normal class.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	10	25
Disagree	30	75
Total	**40**	**100**

Table 4.17 is the summary of the analysis of teachers'responses on whether it is easier to give assignments/tests in a classroom than in normal class. The result shows that 10 (25%) of the respondents agreed that it is easier to give assignments/test in a large classroom than that in normal class, while 30 (75%) disagreed that it is easier to give assignments/tests in a large classroom than normal class.

Question Twelve 12: Does students in a large classroom size have more positive attitudes toward learning biology?

To answer this question, data collected from the teachers' questionnaire were analyzed using descriptive statistics (i.e frequency and percentage) the result is presented in table 4.18.

Table 4.18: Responses on whether students in a large class size have more positive attitude and performance in biology.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	15	37.5
Disagree	25	62.5
Total	**40**	**100**

Table 4.18 is the summary of the analysis of teachers' questionnaire on whether students in a large class size have more positive attitude and performance in biology. The result shows that 15 (37.5%) of the respondents agreed that students in a large class size have more positive attitude and performance in biology while 25 (62.5%) disagreed that it is easier to give assignments/tests in a large classroom than that in normal class.

Question Thirteen 13: Does provision of the adequate facilities improve students' attitude and performance in biology?

To answer this question, data collected from the teachers' questionnaire were analyzed by using statistics (i.e frequency and percentage). The result is presented in table 4.19

Table 4.19: Responses on provision of the adequate facilities will improve students' attitude and performance in biology

RESPONSES	NO OF RESPONDENTS	PERCENTAGE (%)
Agree	40	100
Disagree	0	0
Total	**40**	**100**

Table 4.19 is the summary of the analysis of teachers' questionnaire on whether provision of the adequate facilities will improve students' attitude and performance in biology. The result shows that 40 (100%) of the respondents agreed that provision of the adequate facilities will improve students attitude and performance in biology while none of the respondents disagreed that provision of the adequate facilities will improve students attitude and performance in biology.

4.3 Summary of the Major Findings

The summary of the major findings from the data presented in table 4.1 to 4.19 are as follows:

i) The schools with well equipped biology laboratory enhances students positive attitude toward learning biology.

ii) Some students are not scientifically oriented due to the teacher in ability to organize practical classes or lesson.

iii) Large class sizes affect teaching and learning of biology.

iv) Teachers' qualification matters a lot in handling of biology in large classroom size.

v) Students do not show a lot of interest in learning of biology in large class.

4.4 Discussion

The finding in this research that, the schools with well equipped biology laboratory enhances students' positive attitude toward learning. This is supplanted by Dinah (2013) who concluded that availability that text books, laboratory apparatus and other learning resources contribute significantly to the performance of students in biology.

However Ofoegbu (2004) indicated that it has also been observed that condition that would make for effective teaching of biology such as resource available to teaching general conditions of infrastructure as well as instructional materials in public secondary schools in Nigeria are poor. Also Manalanga and Awelani (2014) pointed out that the possible factors responsible for the poor performance in biologyincludes lack of financial support, lack of equipped libraries, lack of laboratories, biology text books and method of teaching.

The findings in study show that, some students are not scientifically oriented due to the teachers' inability to explain theory to practice or organized practical classes or lesson.This is

not in conformity with the earlier study of Afe (2001) which indicated that teachers have been shown to have an important influence on students academic achievement and they also play a special role in educational attainment because the teachers are ultimately respondents for policy into action and principles based on practical during interaction with the students. Also this agrees with the earlier studies of Adu and Ola Tundun (2007), Bacth, Head and Komenan (2009) and Maduka (2000), which indicated that effective teachers produced performing students.

The findings that, teachers qualification matters a lot in handling large classroom size. This finding is in line with Afe (2001), Adu and Olatundun (2007), Hack head and Komenan (2009) and Baduka (2000), which indicated that the effective teachers produced high performing students. Also this is supported by Donfing (2009).Therefore to implement teaching innovation, there is a need for conceptual change of their teaching philosophy and also, it is in line with UNESCO (2012) who says that the teaching plays pivotal roles in creating conductive learning environment that can enhance students cognitive and affective out comes.

The finding in this study indicates that students do not show a lot of interest in learning of biology in large class. This is in conformity with Manalange and Awelani (2004) who concluded that, the possible factors responsible for students poor performance in biology included lack of financial support, large classes, lack of laboratories and biology text books,

method of teaching and accessing biology. Also, there is no conformity with Neo (2009) who says that a constructivist learning environment play an important part in achieving meaningful and retentive learning since it allows students to improve their problem solving and critical thinking skills.

CHAPTER FIVE

Summary, Conclusion and Recommendations

5.1 Introduction

In this chapter, summary, conclusion and recommendation are made from the findings on the effect of large class size on students attitude and performance toward learning biology.

5.2 Summary

Chapter One: Presented the background to the study, statement of the problem and five objectives that served as a guide to the study were set. Related to these are five research questions and five hypotheses, significance of the study was state, the scope and limitations of the study were also highlighted.

Chapter Two: Presented the review of the related literature regarding to effect of large class size on students attitudes and performance towards learning biology.

Chapter Three: Described the methods and procedures used to evaluate the effect of large class size on students attitude and performance toward learning biology; under the following headlines, research design, populations of the study, sample and sampling techniques, instrumentations, validity of the instrument, reliability of the instrument and administrations of and method of data analysis.

Chapter Four: Presented the effect of large class size on student's attitudes and performance towards teaching biology in some senior secondary schools in Gusau metropolis by using descriptive statistical analysis and percentage by using SPSS. It also presents the response to the questionnaire made by various biology teachers of the respective selected schools as well as that of students.

5.3 Conclusion

The study has revealed that biology is properly taught in most of our schools because majority of the students responded that their biology laboratories were sufficiently equipped with facilities and as well teachers are teaching using both theoretically and practically. That large class size has become a great factors that leads to the poor academic performance of the students, this is not only a local concern but formed to be the important factors nation-wide.

The school with well – equipped biology laboratory students enhances the positive attitude toward learning biology. And also, the students who leant biology in ideal classes have higher academic performance than those in large classes.

More over some students are not scientifically oriented due to the .teachers inability to explain theory into practical on organized practical classes or lesson.

There was no significant difference between students taught in large classes and those taught in ideal classes in secondary school in Gusau metropolis.

5.4 Recommendation

Based on the finding of this research, the following recommendations were made:

i) The Government should provide adequate and well equipped school laboratories and other instructional facilities for effective teaching of biology.

ii) Government should try to encourage biology teachers by creasing their salaries enumeration and other incentive.

iii) More periods should be allocated for the teaching of biology so as to have enough time for practical lesson which enhance effective learning of biology.

iv) Government should encourage biology teachers by organizing regular workshop and seminars.

v) Biology teachers should use varieties of methodology in teaching biology.

vi) Teachers should try to improvise practical equipment apparatus form local materials whenever there are inadequate or absence of the standard ready ones.

vii) Teacher should motivate students in order to develop positive attitude towards learning biology

viii) Teachers should provide teach back on students performance to the parents and the educational authorities in due time.

ix) Parents should support government effort by providing certain learning facilities for their children such s text books and other equipments.

5.5 Implication

The implication of this research topic is that it will help government, NGOs parents, individual to know the exact number of students that should be in a normal classroom, and to know the negative attitude develop by some students as result of large class size, as well as the poor academic performance shows by the students in large classroom in learning biology so that the government will take action.

5.6 Suggestions for Further Studies

This study was carried out on the effect of large class size on students attitudes and academic performance towards learning biology in which the researchers find out that there is no significant difference between students taught biology in large classes size and those taught in an ideal classes. We therefore, suggest that this study should also be carried out in other science subjects areas such as Physics, Chemistry and mathematics to see whether or not they could have similar result.

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Appendix I

Performance Test for Students

This Performance Test in Designed to findout the Effect of Large Class Size on Students Attitude andPerformance toward Learning Biology (A Case Study of some Selected Secondary Schools in Gusau Metropolis). In answered the question you are tick [√] the best answer of your choice.

1. The science of life referred to as
   a. Anatomy
   b. Biology
   c. Ecology
   d. Phylogeny
2. Which of the following organism is **not** protozoan?
   a. Amoeba
   b. Ascaris
   c. Plasmodium
   d. Paramecium
3. The following organism have structure for movement **except**
   a. Amoeba
   b. Sprirogyra

c. Volvox

d. Paramecium

4. Water and salts a **both** lost form the human body in

a. Breath and sweat

b. Breath and urine

c. Breath, urine and sweat

d. Sweat and urine

5. Ability of the human eye to focus images accurately on the retina is called?

a. Astigmatism

b. Myopia

c. Adjustment

d. Accommodation

6. Which of the following organs of the alimentary canal is **Not** correctly matched with its function?

a. Gall bladder – stores bile

b. Live – stores glycogen

c. Appendix – releases enzymes

d. Teeth – grind food

7. A community research a climax when

a. Only pioneer organisms are present

b. New habitats are constantly being formed

c. There is an introduction of new plants and species within the community

d. The composition and size of a community remains constants over a lot period.

8. Which of the following components make up an ecosystem?

a. Decomposers, animal and non – living factors

b. Living and non – living factors

c. Plants and non – living factors

d. Plants, decomposers and non – living factors

9. The **Major** problem experienced by organism living in small water bodies is

a. Drying up

b. Oxygen deficiency

c. Scarcity of food

d. Wave action

10. An organism at the start of a food chain which provides the total input of energy into an ecosystem is the.

a. Sun

b. Producer

c. Consumer

d. Decomposer

11. Which of the following organism is an endo – parasite?

a. Tape worm

b. Flea

c. Tick

d. Aphid

12. Oil applied to the surface of water kills the larvae of mosquitoes through

a. Dehydration

b. Poisoning

c. Starvation

d. Suffocation

13. Which of the following natural recourses is **Most** readily available to all organisms?

a. Oil

b. Water

c. Air

d. Food

14. Which of the following resources is non – renewable?

a. Forest reserve

b. Mineral deposit

c. Water

d. Wild life

15. Soil erosion could be prevented by

a. Flooding a farmland

b. Cover – cropping

c. Deforestation

d. Leaving the soil bare

16. Which of the following traits is **Not**inheritable? Ability to

a. Taste PTC

b. Roll the tongue

c. Move the ear

d. Roll the eyeball

17. Excess carbohydrates can be stores in the muscles in the form of

a. Cellulose

b. Glycogen

c. Chitin

d. Lipid

18. The area around the earth where life activities go on is referred to as

a. Biosphere

b. Lithosphere

c. Habitat

d. Ecosystem

19. Which of the following disease is transmittable through genes?

a. HIV/AIDS

b. Sickle cell anemia

c. Diabetes

d. Presbyopia

20. What name is given to a sudden change in a gene or chromosome?

a. Allele

b. Genotype

c. Mutation

d. Phenotype

21. Bees are of great importance to the farmer because they.

a. Provide him with honey

b. Pollinate flowers

c. Sting crops pest to death

d. Destroy flowers by sucking nectar from them

22. Which of the following is **Not** cell organelle?

a. Endoplasmic reticulum

b. Fat droplets

c. Golgi body

d. Nucleus

23. Which of the following vertebrates exhibits double circulation of blood?

a. Fish

b. Lizard

c. Man

d. Snake

24. The organism that pumps blood in human is

a. Bladder

b. Heart

c. Kidney

d. Lungs

25. Which of the following is **Not** part of the circulatory system?

a. Artery

b. Vein

c. Capillary

d. Villus

26. The following are traditional method of preserving food, **Expect**

a. Drying

b. Frying

c. Refrigerating

d. Salting

27. Muscles are attached to bones by

a. Cartilages

b. Fibres

c. Tendons

d. Synovial fluid

28. A group of organism which **Cannot** reproduce would **Ultimately** become

a. Stagnant

b. Reduced in number

c. Increased in number

d. Extinct

29. The end product of protein digestion is

a. Fatty acids

b. Amino acids

c. Glucose

d. Glycerol

30. Which of the following structures of the mammalian skin is associated with excretion

a. Sweat glands

b. Erector muscle

c. Adipose tissue

d. Hair shaft

31. Association with algae and fungi is called

a. Commensalism

b. Lichen

c. Parasitism

d. Predation

32. Which of the following **Not** a part of human alimentary canal?

a. Diaphragm

b. Duodenum

c. Mouth

d. Stomach

33. During photosynthesis energy from the sun is converted to _____ energy

a. Chemical

b. Heart

c. Kinetic

d. Potential

34. The instrument used in measuring light intensity is called

a. Anemometer

b. Photometer

c. Thermometer

d. Barometer

35. Which of the following is a pollutants

a. Carbon monoxide

b. Water vapour

c. Nitrogen

d. Oxygen

36. Which of the following is **Not** an excretory organ in vertebrate

a. Nephridium

b. Skin

c. Liver

d. Kidney

37. An example of a brackish water habitat is / an

a. Estuary

b. Ocean

c. River

d. Spring

38. Which of the following is a type of response by plant to the stimulus of water

a. Chemotropism

b. Geotropism

c. Hydrotropism

d. Phototropism

39. The main raw materials required for photosynthetic are

a. Oxygen and carbon dioxide

b. Oxygen and water

c. Oxygen and chlorophyll

d. Carbon dioxide and water

40. A space containing a group interactive organisms is called

a. Community

b. Habitat

c. Ecosystem

d. Population

Appendix I

Faculty of H & E,

Department of Science Education,

Federal University, Gusau.

Dear Respondent

Sir

AN INTRODUCTORY LETTER

We are students of the above Department in Federal University Gusau, Conducting a research titled: 'The effect of larger class size on students' attitude and academic performance toward learning Biology'In some Selected Secondary School in Gusau Local Government Area Zamfara State. This questionnaire is design only for this research purpose. All information obtained is going to be treated confidentially.

Thank you.

QUESTIONNAIRE FOR STUDENTS

Section "A" Students Personal Date

1. Your age

[a] 14-16 [b] 17-19 [c] 20-22

2. How many are you in your class

[a] 30 - 39 [b] 40 - 49 [c] 50 – 59 [d] 60 – 69 [e] 70 – 79 [f] 80 – above

Section "B"

S/N Items

Yes SA=Strongly A=Agree D= Disagree SD=Strongly Disagree

S/N	ITEMS	SA	A	SD	D
1.	Conducting practical in a large classes is difficult				
2.	Our biology teacher comes to class regularly				
3.	We have biology practical regularly				
4.	Due to large number of students, participation is very low				
5.	There is maximum class control and supervision in large class				
6.	In large class size it's difficult to secure students total attention				
7.	Our classroom is well ventilated				
8.	We have enough laboratory equipment/apparatus in biology laboratories				
9.	Our biology teachers always attend our Class				
10.	Our biology teachers use teaching aids during biology lesson.				
11.	We always use material that are available in the laboratory				
12.	We always understand our teach method of teaching				
13.	We always attend biology practical regularly				
14.	We always understand biology in large classes.				
15.	Our school has separate biology laboratory.				
16.	Learning biology in an large class is better the normal class				
17.	Biology practical is suitable to be conducted in a large class laboratory in my school.				
18.	Biology teachers give test and assignment regularly.				
19.	Our biology teachers improvise local material in the absence of standard and ones.				
20.	Our biology laboratory is well equipped with appropriate apparatus.				

Appendix II

QUESTIONNAIRE FOR TEACHERS

Section "A" Teacher Personal Date

1) **Your Age**

[a] 20 – 30 [b] 30 – 40 [c] 40 – 50 [d] 50 – above

2) **Sex**

[a] Male [b] Female

3) **Educational Qualification**

[a] SSCE

[b] ND/NCE

[c] HND

[d] B.A, B.Ed, B.Sc

[e] Others {Specify}

4) **Teaching Experiences**

[a] 0 – 2 years [b] 3 – 5 year s [c] 6 – 8 years [d] 10 – above years

Section "B" Questionnaire

S/No Item

Yes: SA=Strongly A=Agree D=Disagree SD=Strongly Disagree

S/N	ITEMS	SA	A	SD	D
1.	it is difficult to identify students learning difficulties in large classroom size				
2.	There are adequate laboratory facilities for teaching biological practical.				
3.	The laboratories are enough in terms of space to accommodate all students.				
4.	It is easy to control students during practical in large classroom size.				
5.	Teachers' qualification matters a lot in handling large class room.				
6.	Students show interest during biology practical.				
7.	Majority of the students in large class size pay attention during biology class.				
8.	Students show a lot of interest in learning biology in a large class.				
9.	It is easier to maintain discipline in a large classroom than in normal class.				
10.	Teacher relates more with students in large class room than in normal class.				
11.	It is easier to give assignment/test in large class room than in normal class.				
12.	Students in large class have more positive attitudes toward learning biology.				
13.	Provision of the adequate facilities will improve student's attitude and performance in biology.				
14.	What method (s) of teaching use or adapted by you during biology lesson in a large class room.				
15.	Explain the effect of the methods chose on student's attitudes and performance in a large class room.				