

**THE ROLE OF BIOLOGY PRACTICALS IN THE ACADEMIC  
PERFORMANCE OF STUDENTS IN IKPOBA OKHA LOCAL  
GOVERNMENT AREA OF EDO STATE**

**BY**

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## CERTIFICATION

We the undersigned, certify that this project was carried out by **Endurance Ebhodaghe ITIKU** in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Nigeria.

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## **DEDICATION**

This project is dedicated to God Almighty and to my late father Mr Matthew Igbelokotor Itiku.

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## **ABSTRACT**

This study assessed the Roles Biology Practical Play on the academic performance of students offering Biology. The study was carried out in Ikpoba-Okha local government area of Edo state. Three research questions guided the study.

The design of the study was survey research design. A sample of two hundred and ten (210) students drawn from three (3) public secondary schools located in Ikpoba-Okha Local Government Area of Edo State was used for the study. The instrument used was a questionnaire developed by the researcher. The questionnaire was validated by the researcher's supervisor and two other lecturers. The data generated was interpreted using simple percentage statistical analysis.

The study concludes amongst others that, all the sampled school respondents were in one accord in supporting the fact that, they do not have microscopes in the laboratory in their school. The study also concludes that there, is no electricity, Laboratory materials and up – to – date Laboratory apparatus. The study further concludes that; public secondary schools in Ikpoba Okha Local Government Area lacks adequate laboratory facility.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **Background of the Study**

The importance of Biology as a branch of science to the development of any society or nation is not in doubt. The place of Biology to any nation that is aspiring to be scientifically and technologically great cannot be ignored. The word ‘Biology’ is often misunderstood by many people but what people fail to realize is that Biology is all around us and many of our activities involve doing science. Ofuebe (2007) defined science as a dynamic human activity concerned with the understanding of the working of our world. Biology is one of the core science subjects offered at the Senior Secondary School levels in Nigeria (FME, 2004). Biology is defined as the study of living things which includes animals and plants. It ranges from microscopic cellular molecules to the biosphere, encompassing the Earth’s surface and its living organism (Sarogini, 2010). Its importance to humanity cannot be overemphasized. Traditionally, Biology is divided into two branches which are:

- Botany (The study of plants) and;
- Zoology (The study of animals)

Practical Biology is the scientific study of the life and structure of plants and their relative environments in real or experimental setup rather than dwelling in the theory and ideas.

In Nigeria, the present learning conditions do not seem to provide the resources, infrastructure, stimulating hands on and interactive environment that are needed by the new generation of learners. To address these observed challenges there is need to expose teachers and learners to the use of Biology practical as an innovative strategy as enunciated by the government for teaching Biology which will motivate, captivate and sustain learner's interest, attention and also make Biology have less difficulty thereby enhancing performance and retention (NPE, 2004). Biology practical can provide instructions to students, ask questions, grade the students' reading abilities and skills, and determine itself whether to take the subject forward to break new grounds or to repeat the portion of the lesson just read by the students. Biology practical is a learning process that promotes interaction of students with laboratory apparatus as they are guided through in order to meet up with some set

laboratory objectives (Akporume, Okurumeh, Oghore, Uyerinha & Moghenemuko, 2012). The laboratory is the proper place for conducting effective practical activities. Iloeje (2005) stated that, of all the five sense organs, the sense of sight is the highest of them. Hence, the need for practical activities to be carried out in Biology.

Many factors have been attributed to the not too good performance in Biology. West African Examination Council (WAEC) Chief Examiner's Report (2010-2016) states that the persistent decline in academic performance of students in Biology at Senior Secondary School certificate examinations tells much about the effectiveness of laboratory delivery approaches popularly used by science teachers for the teaching and learning of Biology. The Chief Examiner's Report (WAEC, 2016) specifically pointed some of the observed weaknesses of students in Biology as;

- Poor drawing skills and not drawing to scale.
- Inability to name the organs that constitute the alimentary canal in sequence.
- Shallow knowledge of the subject matter

The aforementioned gives us an indication of lack of conceptual understanding and low retention of what is taught leading to poor performance in both internal and external examinations. It also implies that meaningful learning has not taken place to achieve mastery of Biology concepts. To this end, the WAEC Chief Examiner's Report (2014-2016) suggested some remedies to solve this problem, among which are, that schools should provide teaching aids and models to help students understand Biological concepts and to adopt laboratory delivery strategies that are innovative and technological based that will help students understand Biological concepts.

The need to develop more effective, scientifically and technologically associated strategies to teach Secondary School Students some of the concepts that are often tagged difficult and abstract is very imperative. The inappropriate use of relevant teaching strategies, lack of appropriate teaching of science in general and Biology in particular generally result in students not having a clear understanding of scientific concepts that could result in poor academic performance and retention of concepts taught. Hence, the reason for Biology practical.

Chukwu (2009) observed that practical periods which are very necessary for successful study of Biology are not enough. He highlighted the need for students to

be exposed to series of practical activities. The theory and practical aspects of Biology are not to be separated but taught as component of the subject and not as a separate entity.

This research work is focused mainly on the role of Biology practical on academic performance of Senior Secondary School Students. It has been recognized that knowledge based upon experimental results and accurate observation is gained through a variety of practical experiences. This work sought to find out if practical activities are carried out in Biology and also if the laboratories are well equipped for practical activities.

### **Statement of the Problem**

The role of Biology practical activities in the academic performance of Senior Secondary School Students cannot be overemphasized, the purpose for this research work is to ensure that at the end of the research, the researcher should be able to prove that a sound theoretical and practical knowledge of Biology is needed so as to manage effectively the natural resources as well as provide enabling environment, and provide basic knowledge to help with solving health related issues in our environment.

However, not enough attention has been given to Biology practical. The persistent poor performance and low retention capabilities of students in Biology as revealed by literature and WAEC Chief Examiner's Reports calls for concern especially for teachers of Biology and other stakeholders. Several reasons have been adduced for the poor and fluctuating performance in Biology among which are lack of well-equipped laboratories, not enough skilled Biology teachers, limited time table hours, inadequate teaching aids, poor drawing and labeling, poor comparism of specimen, the abstract nature of some concepts in Biology.

It was reported that the percentage of students that passed Biology at credit level has consistently been around 50%-65% or less in recent years. In 2015, only 57.4% passed while 42.6% failed. A percentage pass of 61.6% and 51.7% was reported for 2017 and 2018 respectively (WAEC, 2015-2018). The difficulty in understanding some concepts in Biology occasioned by the abstract nature of this concept makes it difficult for students to retain what they have learnt over a period of time. This further point to teacher's roles as very crucial to the performance of students and as a strong indication that teachers do not use the necessary methods/strategy to impact the required knowledge in order to ensure that effective learning takes place. Biology practical activities have the ability and potentials for

teaching abstract and difficult concepts and enhancing performance and retention in sciences, since instructions can be practicalised.

In response to these problems, this study therefore looked into the role of Biology practical on the academic performance of Senior Secondary School Students.

### **Research Questions**

The following research questions guided this study

- Are Biology laboratories in schools situated in Ikpoba Okha Local government area of Edo State well equipped with necessary equipment and reagents for Biology practical activities?
- Do teachers use Biology practical in teaching Biology in schools in Ikpoba Okha Local government area of Edo state?
- Do students who offer Biology in schools around Ikpoba Okha Local government area of Edo state find Biology practical interesting?

### **Purpose of the Study**

The main purpose of this study is to find out the role of Biology practical activities on the academic performance of senior secondary school students in

Ikpoba Okha Local Government Area of Edo State. Specifically, the study intends to:

1. Determine if Biology laboratories around the Local Government area is equipped with necessary apparatus for Biology practical activities to take place effectively.
2. Determine if teachers use practical activities in teaching Biology in Ikpoba Okha L G A .
3. To find out if students offering Biology in schools in Ikpoba Okha L G A find Biology practical interesting.

### **Significance of the Study**

Biology practical activities are designed to help students acquire basic scientific skills and improve their performance. The findings of this study would benefit students, teachers, parents, government and the entire society. This study would help students develop an awareness of their place in the science and technology world. It would also arouse their interest in practical work and this would enhance their performance in Biology.

The findings of this study would assist classroom teachers in the organization of practical work that would help to develop skills and knowledge in the students. It would also enable trained teachers to see the importance and relevance of practical activities in Biology on students achievement in Biology. The findings of this study would motivate parents to provide basic requirements of practical lessons for their children when they see that their children are showing interest in Biology. The findings of this study would make the government realize the need for provision of Biology practical apparatus and reagents to schools and posting of qualified Biology teachers to secondary schools. This study will help the Nigerian society in their quest for improved technology and industrialization.

### **Scope and Delimitation of the Study**

This study was delimited to the role of Biology practical activities on the academic performance of Senior Secondary School students. The Senior Secondary School 3 (SS3) in Ikpoba okha Local Government Area of Edo State would be used. Public Secondary School Students would be used for this study.

## **Operational Definition of Terms**

**BIOLOGY:** It is a branch of science involved in the study of living things as well as their interaction with non-living things in the environment. It is one of the subjects in the senior secondary school curriculum.

**LABORATORY:** It is a facility that provides controlled conditions in which scientific or technological research, experiment and measurement are performed. It is the proper place for effective Biology practical.

**PERFORMANCE:** This is how well a person executes or achieves a particular work.

**PRACTICAL ACTIVITIES:** They enable students to apply and extend their knowledge and understanding of Biology in investigative situations which can aid learning, memory and stimulate interest.

**APPARATUS:** These are materials that are needed to carry out practical activities, they include reagents and other physical equipment used in carrying out practical activities to achieve end result.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

This chapter reviews related works relevant to the topic “The role of Biology practical in the academic performance of Students in Ikpoba Okha Local Government Area of Edo state. The literature would be reviewed under the following subheadings:

- The Concept of Biology.
- Concept of Laboratory facilities.
- Biology Practical and Curriculum.
- The Role of Biology Laboratory.
- Importance of Biology Practical on Students Academic Performance.
- Adequacy of Laboratory Facilities in Public School in Biology.
- Level of Students’ Academic Performance in Public Schools in Biology.
- Relationship between Adequacy of Laboratory Facilities and Students’ Academic Performance in Biology.
- Impact of Laboratory Materials and Aids in Facilitating Students’ Learning in Biology.
- Summary of Reviewed Literature.

## **The Concept of Biology**

Biology reveals hidden patterns that help us understand the world around us. Now much more than arithmetic and geometry, Biology today is a diverse discipline that deals with data, measurements, and observations from science; with inference, deductions, and proof; and with mathematical models of natural phenomena, of human behavior, and of social systems (Abdulkareem, 2017).

As a practical matter, Biology is a science of pattern and order. Its domain is not molecules or cells, but numbers, chance, form, algorithms, and change. As a science of abstract objects, Biology relies on logic rather than on observation as its standard of truth, yet employs observation, simulation, and even experimentation as means of discovering truth (Apata, 2007).

The special role of Biology in education is a consequence of its universal applicability. The results of Biology theories and theorems are both significant and useful; the best results are also elegant and deep. Through its theorems, Biology offers science both a foundation of truth and a standard of certainty (Bangisky, 2003).

In addition to theorems and theories, Biology offers distinctive modes of thought which are both versatile and powerful, including modeling, abstraction, optimization, logical analysis, inference from data, and use of symbols. Experience with mathematical modes of thought builds mathematical power, a capacity of mind of increasing value in this technology, critically to identify fallacies, to detect bias, to assess risk, and to suggest alternatives. Biology empowers us to understand better the information-laden world in which we live in (Bantick, 2003)

During the first half of the twentieth century, mathematical growth was stimulated primarily by the power of abstraction and deduction, climaxing more than two centuries of effort to extract full benefit from the mathematical principles of physical science formulated by Isaac Newton. Now, as the century closes, the historic alliances of Biology with science are expanding rapidly; the highly developed legacy of classical mathematical theory is being put to broad and often stunning use in a vast mathematical landscape. Several particular events triggered periods of explosive growth. The Second World War forced development of many new and powerful methods of applied Biology. Post war government investment in Biology, fueled by Sputnik, accelerated growth in both education

and research. Then the development of electronic computing moved Biology toward an algorithmic perspective even as it provided Biologist with a powerful tool for exploring patterns and testing conjectures (Benchmark 2015)

At the end of the nineteenth century, the expansion of Biology on a foundation of logic and sets made possible grand theories of algebra, analysis, and topology whose synthesis dominated Biology research and teaching for the first two thirds of the twentieth century. These traditional areas have now been supplemented by major developments in other mathematical sciences in number theory, logic, statistics, operations research, probability, computation, and geometry.

In 1960, at a time when theoretical Biology was the central jewel in the crown of applied Biology, Eugene Wigner wrote about the "unreasonable effectiveness" of Biology in the natural sciences: the miracle of the appropriateness of the language of Biology for the formulation of the laws of Biology is a wonderful gift which we neither understand nor deserve. "Theoretical Biology has continued to adopt (and occasionally invent) increasingly abstract mathematical models as the foundation for current theories.

During this same period, however, striking applications of Biology have emerged across the entire landscape of natural, behavioral, and social sciences. All advances in design, control, and efficiency of modern airliners depend on sophisticated mathematical models that simulate performance before prototypes are built. From medical technology (CAT scanners) to economic planning (input/output models of economic behavior), from genetics (decoding of DNA) to geology (locating oil reserves), Biology has made an indelible imprint on every part of modern science, even as science itself has stimulated the growth of many branches of Biology.

### **Concept of Laboratory Facilities**

Schools exist for the purpose of teaching and learning. Human and material resources are deployed for this purpose. Laboratory Facilities used for Biology practical are the material resources provided for teachers and students to optimize their productivity in the teaching and learning of Biology. The realization that the transfer of knowledge does not only take place in the four walls of the laboratory from the teacher to the students but rather that learning takes place through discovery, exploration, interaction with the internal and external environment has

necessitated the creative and innovative development of teaching and learning facilities that reflect these changes (Asiabaka, 2008).

Facilities can be generally defined as buildings, properties and major infrastructure which include physical and material assets (IES, 2006). Facilities in schools are materials resources that enhance teaching and learning thereby making the process meaningful and purposeful.

Asiyai (2012) stated that facilities in schools can be defined as the entire school plant which includes school administrators, teachers and students, allocate and utilize for the smooth and efficient management of any educational institution, for the main objective of bringing about effective and purposeful teaching and learning experiences. In the same vein, Emetarom (2004) noted that facilities in schools are the physical and spatial enablers of teaching and learning which will increase the production of results. Laboratory Facilities serve as pillars of support for effective teaching and learning of Biology. Teaching facilities include all of the infrastructure and material resources that are used to support the delivery of quality education. Infrastructure refers to basic physical and organizational structures needed for the successful running of the institution (Bakare, 2009).

Other relevant facilities in the school environment include text apparatus, laboratory equipment, microscope machines, seating facilities, supply of electricity and other technical and vocational facilities which are all paramount to the provision of qualitative education (Omotayo, Ihebereme & Maduewesi, 2008). Good quality and standard institution of learning depend largely on the provision, adequacy, utilization and management of educational facilities. Akinsolu (2004) asserted that educational curriculum cannot be sound and well operated with poor and badly managed Laboratory Facilities. From all indication, facilities in schools are physical resources that facilitate effective teaching and learning. They include blocks of Laboratories, laboratories, workshops, Laboratories equipment, consumables, electricity, water, visual and audio-visual aids, tables, desks, chairs, playground, storage space and toilets.

Audu, Umar and Idris (2013) said that many scholars, researchers, administrators and educational planners have confirmed that facilities in schools in Nigerian are inadequate and few of the available ones are being over utilized due to the astronomical increase in school enrolment. Ikoya and Onoyase (2008) reported that only 26% of schools across the country have school infrastructures in adequate quality and quantity. Ajayi (1999) reported that most of the Nigerian

schools are dilapidated due to inadequate funding. Such situation hinders effective teaching and learning, making the process rigorous and uninteresting to students and teachers. Similarly, Owuamanam (2005) observed that the inadequacy of infrastructural facilities and lack of maintenance of available facilities were major problems facing Nigerian educational system. The facilities in schools are grossly inadequate to match the student's population and the few available facilities are poorly maintained. He further observed that the availability and maintenance of Laboratory Facilities will go a long way in enhancing teaching and learning and improve academic performance of students.

### **Biology Practical and Curriculum**

Biology as one of the science subjects offered in senior secondary school is a natural science concerned with the study of life and living organisms including their structure, function, growth, evolution, distribution, identification, and taxonomy, their relationship with one another and with the natural environment which they live in.

The Biology curriculum for secondary schools as outlined in 2008 curriculum is designed to prepare students to acquire:

- Meaningful and relevant knowledge in biology.
- Adequate laboratory and field skills in biology.
- Ability to apply scientific knowledge of everyday life in matters of personal and community health and agriculture.
- Reasonable and functional scientific attitude, Federal Ministry of Education (FME), 2009.

To achieve the above listed objectives, the content and context of the curriculum places emphasis in field studies, guided discovery, laboratory techniques and skills along with conceptual thinking. The main purpose of utilization of practical(s) in teaching Biology is to improve the quality of teaching and learning, thereby helping to actualize the objective(s) of the Biology curriculum. The curriculum is intended to provide a modern Biology course as well as meet the needs of the learner and society through relevant functionalities its contents, methods, processes and application. The use of practical in teaching Biology offers students the opportunity to develop scientific skills such as observation, creativity, objectivity etc. The National Policy on Education (2013) advocates the production of practical person who will be useful and relevant in a world of technology. However,

meaningful science learning will only be possible when appropriate practical experiences are provided for the learner.

### **The Role of Biology Laboratory**

Biology laboratories have been found to be the scientist's workshop where practical activities are conducted to enhance a meaningful learning of science concepts and theories (Seweje, 2000). They have also been found to be a primary vehicle for promoting formal reasoning skills and student's understanding thereby enhancing desired learning outcomes in student's test (Ogunleye, 2002). The most effective vehicle by which the process of inquiring can be learned appears to be a laboratory.

Biology has also been demonstrated to be an effective means for comprehension, understanding, and application of biological knowledge. Laboratory experiences provide opportunities for teachers to model best practices in the study of Biology including application of scientific methodologies. The school laboratory has a significant role in accomplishing the cognitional, emotional and psychomotor objectives. Good quality practical work can engage students, help them to develop important skills, help them to understand the process of

scientific investigation and develop their understanding of concepts. Laboratory work is an indispensable act of science teaching because the laboratory provides students with opportunities to engage in the process of investigation and inquiry. The laboratory also gives the student appreciation of the methods of science.

The main purpose of laboratory work in science education according to Ottander & Grelsson (2006) is to provide students with conceptual and theoretical knowledge to help them learn scientific concepts, and through scientific methods, to understand the nature of science. Laboratory work also gives the students the opportunity to experience science by using scientific research procedures. In order to achieve meaningful learning, scientific theories and their application methods should be experienced by students. Moreover, laboratory work should encourage the development of analytical and critical thinking skills and encourage interest in science.

Some of the roles of Biology laboratory are:

- Practicals conducted in the biology laboratory helps to arouse and maintain students' interest in Biology.
- To develop creative thinking and problem-solving ability.

- To promote the aspects of thinking and scientific method.
- To develop practical abilities.
- To develop conceptual understanding in science.

### **Importance of Biology Practical on Student's Academic Performance**

Practical work in Biology is considered as a learning experience which involves student participation in activities. Practical work in Biology is considered as part of the study of Biology and involves fieldwork, collection and laboratory study of specimens, drawing diagrams and conducting experiment. Practical work is important in the study of Biology.

The justification for practical work in Biology at the Senior Secondary School level is supported by the aims of practical Biology in the West African Examination Council Syllabus as follows:

- To acquire the power of observation.
- To develop the ability to relate observation by illustration.
- To develop the ability to relate and function optimally in practical activities in Biology.

- To be able to interpret and illustrate knowledge of Biology principles and develop the ability to perform simple experiments and make inference from the results gotten.
- To develop the ability to recognize general characteristics of plants and animals.

Practical work is indispensable in the understanding of Biology (Ottader and Gerlson, 2006). The main purpose of laboratory work is to provide students with conceptual and theoretical knowledge to help them learn scientific concepts, and through scientific methods, to understand the nature of science and for effective teaching and learning of Biology.

Laboratory practical activities in Biology provide opportunities for students to actually do science as opposed to learning about science. Nzewi (2008), asserted that laboratory practical activities can be regarded as a strategy that could be adopted to make the task of a teacher more realistic as opposed to abstract or theoretical presentation of facts, principles and concepts of subject matters.

### **Adequacy of Laboratory Facilities in Public Schools in Biology**

School institutions remain a preparatory ground to empower and certify the requirement for human development. The teacher is faced with the challenges of educating, socializing, empowering and certifying students, but with the help of good teaching atmosphere (Wasagu, 2009). By implication, the task of a teacher, which includes sustaining educational system, do not rest on his or her professional competency alone, but on the entire features of the available school facility (Loukas, 2007). But, public schools which are owned by government and are predominantly occupied by children of middle and lower socioeconomic status in Nigerian society, are facing challenges of educational sub-standard, due to lack of adequate facilities and materials, which lead to poor teaching, and consequently students poor academic performance (Awwalu&Najeemah, 2012).

Asiyai (2012) noted that in view of the inadequate Laboratory Facilities plaguing the Nigerian education system, there is also poor maintenance culture of the few available ones, especially in primary and post-primary schools in Nigeria with numerous evidence of leaking roofs, peeling walls, inadequate seats and overpopulation and ill-equipped laboratories. It is generally accepted that good facilities are needed for quality education. Omotayo, Ihebereme and Maduwesi (2008) states that the provision of adequate facilities will ensure quality education.

All of these would have implications for the conduct of educational activities in various institutions of learning and the lack may therefore lead to the general decline in education. Ajayi and Ayodele (2001) noted that adequate supply of Laboratory resources has significant effects on student's performance and enhances the effectiveness of Laboratory delivery and supervision. However, they observed that there seems to be in Nigerian schools an alarming shortage and even complete absence of Laboratory materials.

Akomolafe and Adesua (2016), experience has shown that most of the physical facilities that are important to effective learning/academic performance of students appear not to be sufficient in our public secondary schools today. Those available seem not to be of standard quality, some seem to lack maintenance culture, while some are in dilapidated conditions. The status of physical facilities especially in our public secondary schools today appears to be of great concern to educators. It seems that the provision of these Laboratory Facilities has dwindled over the years, perhaps due to increase in school enrolment rate which had led to population explosion in public schools. It has been observed that school physical facilities are essential tools to facilitate and stimulate learning programmes. Teachers need them in an ideal working environment. Experience shows that if

physical facilities are available, students tend to have interest in learning; this will invariably lead to high performance.

A close observation of the poor performance of secondary school students perhaps could be traced to lack of physical facilities and a lack of motivating learning environment. Most schools seem to lack the necessary facilities that could enhance effective teaching and learning as a result little is expected from students in terms of academic performance. Experience shows that inadequate physical facilities have some adverse effect on students' interest to learn. Hence, this may invariably affect their academic performance. In a situation where students are not having access to normal facilities like Laboratory equipment and inadequate seats in the laboratory it is observed that these could contribute to low performance of students (Akomolafe & Adesua, 2016).

### **Level of Students Academic Performance in Public Schools**

In recent times stakeholders in the Nigerian education system have been agitated as a result of persistent and alarming slide being experienced in the Nigerian Education system. The situation has worsened in spite of effort by successive governments which have sought to revamp the glory of the Nigerian Educational system to no avail. Multifarious problems ranging from

mismanagement of allocated resources to declining standard of education are being experienced (Ajayi, 1999). The foregoing result in dwindling performance of students in external examinations such as the Senior School Certificate Examination (SSCE) organized by West African Examination Council (WAEC) as posited by lots of educational scholars.

Adebayo (2009) aptly captured the level of decline in Nigerian education system by stating that “a casual visit to any public school in Nigeria would reveal the extent to which these educational institutions have decayed”. Educational facilities at all levels are in a terrible shape; schools are littered with battered structures; worn out equipment (where they are available at all); overcrowded Laboratories; inadequate manpower in quantity and quality; instability in the academic calendar owing to strikes; very low teacher (staff) morale due to poor remuneration and working conditions. Therefore it is pertinent to redress the deplorable situation of the educational system in order to shore up academic standards. A veritable means of achieving this feat is to look into the situation of crumbling infrastructures.

## **Relationship between Adequacy of Laboratory Facilities and Students' Academic Performance in Biology**

Facilities are of everything used directly or indirectly for the benefit of education. Facilities could also be explained as the entire school plant such as blocks of Laboratories, staffrooms, laboratories, workshops, Laboratories, laboratory equipment, consumables, audio-visual aids, electricity, water, chairs, tables, stationeries, playground, storage spaces and others which school has. It has always been realized that facilities are very important in the development and improvement of education in Nigeria. A school without facilities, either private or public, may not be able to achieve the stated goals and objectives of the system. When facilities are available and skillfully utilized, they influence learning and making it more meaningful. Facilities in education are very vital because they aid teaching and learning.

Poor and inadequate facilities affect the overall performance of the schools and educational system. Sufficient facilities promote academic achievement and ensure to strengthen the overall educational system performance. While unattractive and old school buildings, cracked laboratory walls and floors, lack of toilets, lack of desks and benches, lack of transport facility, lack of drinking water,

lack of power supply, lack of teaching staff, lack of sufficient Laboratories, overcrowded Laboratories, lack of educational technology, lack of first aids facility and other essential facilities will negatively affect academic achievement (teaching/learning process and students' academic performance) of the educational institutions. Therefore, it is right to say that academic performance has a close link with the availability of educational facilities (Hussain, Ahmad, Ahmad, Suleman, Din & Khalid, 2012).

The research report of Ikoya and Onoyase (2008) found that a significant relationship existed between school environment and students' attitude to schooling in Biology. Their study also reported that the condition of facilities in schools have a strong effect on academic performance of students. Asiyai (2012) found that students who were taught in modernized buildings scored consistently higher across a range of standardized tests. And that schools with well-coordinated plant planning and maintenance practices recorded better students' performance in Biology. Adeboyeje (2000) reported that students in newer and adequate Laboratory Facilities schools outperformed students in older and inadequate Laboratory Facilities. Conducive school physical environment could enhance

student's school attendance, involvement in academic activities and academic performance positively

Bandebe (2003) noted that the importance of laboratory facilities cannot be relegated. Facilities like modern laboratories, Laboratories apparatus are to be put in place in all our schools. Adesola (2005) found out that the level of available resources is indeed a plus to the teachers and goes to show the level of ingenuity and commitment of the teachers toward effective delivery of lesson. There is the need for renovation of old buildings, chairs, desks, cabinets and acquisition of modern Laboratories as earlier recommended by Alimi (2007). Akinfolarin (2008) identified facilities as a major factor contributing to academic performance in the schools system especially in Biology. These include laboratory apparatus, recreational equipment among others. While study conducted by Vandiver (2011), showed that a positive relationship exists between availability of facilities and student academic performances in Biology.

Limon (2016) observed that Poor condition of Laboratory Facilities brings about critical concerns on teachers' and students' general welfare. Consequently, it becomes imperative that the functions Laboratory Facilities fulfill in in the student acquisition and learning of life-long knowledge and skill competencies should be

taken into account by policy makers and administrators when designing a curriculum that provides equitable and efficient education. Stakeholders should realize that there exists an obvious, direct relationship between student performance and achievement and the quality of Laboratory Facilities.

### **Impact of Laboratory Materials in Facilitating Students' Learning in Biology**

National Teachers Institutes (2002) defined Laboratory material as those materials which promote the effectiveness of instruction and help the teacher to communicate more effectively. Ifeagwu (2010) noted that Laboratory materials facilitate teaching of subject matter with increasing effectiveness at all levels of learning. In the same vein, Esene (2007) defined Laboratory materials as the resource that the teacher and students use to influence the effectiveness of teaching and learning process. However, Fadenje (2005) noted that it is the creative use of such resources that will increase the probability of making the students learn and improve their academic performance. Effective teaching of any subject and Biology in particular depends on the availability and utilization of suitable Laboratory materials. Nenje (2009) emphasized that Laboratory material are intrinsic part of the teaching and learning process and that achievement of the aims

and objective of education depends primarily on the proper utilization of Laboratory materials.

Esene (2007) noted that there is no gain saying to point out that Laboratory materials and equipment are considered to be the most visible element of every school subjects. Ibitayo (2010) noted that most of the secondary schools in our society today lack adequate Laboratory materials, this ugly situation affect teaching and learning of concept. It is very essential to use Laboratory materials; the teacher who utilizes these materials should be properly trained on how to handle the materials expertly. Most secondary schools do not have Laboratory materials. Apart from this state of affairs, many teachers are not competent in the use of such material, it is therefore, logical to believe that even in the teacher training colleges, the materials do not exist or that the ones they have are outdated and absolute.

Bozimo and Ikwumadu (2002) grouped Laboratory materials into reading materials, Audio-Visual materials and non-reading materials. In a study on effective utilization of visual aids, Dale (2001) pointed out that teachers need to increase their knowledge in the field of Audio- Visual materials and use them to make their lessons attractive and interesting to students. Okpala (2005) noted that

if audio-visual materials are properly utilized, they will enable the teachers to achieve the following:

- (a) Reduce verbalization.
- (b) Humanized and utilized the subject matter.
- (c) Stimulate self-activity, make new topic interesting.
- (d) Supply concrete basic conceptual thinking.
- (e) Increase ability of retention.
- (f) Develop keen observation.
- (g) Foster creative imagination.

Onwuka (2001) stated that audio-visual when effectively used can accomplish the following objectives:

- (a) Supply concrete basis for conceptual thinking and reduce meaningless word responses of pupils.
- (b) Making learning more permanent.
- (c) Offer reality of experience which stimulates self-activity on the part of the pupils.
- (d) Increase student's interest to learn.
- (e) Contribute to growth of meaning and vocabulary development.

Ogidefa (2010), materials and facilities needed to adequately transmit technologically knowledge are grossly inadequate for the students' population, most are outdated or stolen, and funds are not made available to procure the required Laboratory materials, equipment and provision of the necessary facilities. Obi (2006) also stated that most schools are not equipped to provide students with learning experiences necessary for the development of basic knowledge and skills needed for improved academic performance. While hoping that material resources could be provided someday, it is necessary to ensure that the teaching and learning in our public schools be improved on. In a bid to find alternative of making Laboratory materials available for use, Dike (2003) observed that a creative teacher can construct some of the needed Laboratory materials and as well teach students how to construct these materials by themselves.

### **Summary of Reviewed Literature**

Based on the evidence from the literature review in this chapter, it is obvious that a deeper understanding of science and technology process can be achieved via practical activities which encourage active participation and serve to develop critical thinking. Practical exposure in learning provides the learner opportunity to subject his belief, ideas, statement to experiment test to justify them. Laboratory

facilities are the physical and spatial enablers of teaching and learning which will increase the production of results. This study exhaustively explained the relationship between adequacy of Laboratory facilities and students' academic performance and it was observed that the relationship was significant as laboratory facilities accelerates the interest of students which invariably enhances their level of academic performance.

Biology practical helps to improve student's performance and arouse their interest, students should be taught Biology with hands on and different learning materials to enable them acquire competence and professionals of Biology they need. Students will achieve a deeper understanding of content if they are actively engaged with practical activities in the laboratory.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

The methodology of this research work sought to know the role of Biology practical activities in the academic performance of Senior Secondary School Students in Ikpoba Okha Local Government Area. This chapter describes the design and procedure that was be used in conducting this research. It is structured under the following sub-headings:

- Research design.
- Population of the study.
- Sample and sampling technique.
- Research instrument.
- Validity of the instrument.
- Reliability of the instrument.
- Method of data collection.
- Method of data analysis.

#### **Research Design**

The design adopted for this study is a survey research design. It is a design in which a group of people or items are studied by collecting and analyzing data from only a few considered to be representative of the entire group. It was used to

assess, investigate the thoughts, opinions, and feelings of respondents on the role of Biology practical activities on the academic performance of Senior Secondary School students in Ikpoba Okha Local Government Area, Edo State.

### **Population of the Study**

The population of the study consists of all the twenty (20) public senior secondary schools in Ikpoba Okha Local Government Area with a total number of one thousand and eighty three Biology students (Edo State Ministry of Education, Iyaro, 2020).

### **Sample and Sampling Technique**

The sample for the study comprises three (3) Public Senior Secondary Schools in Ikpoba Okha Local Government Area using the stratified random sampling technique. Thereafter, Purposive sampling was used to select two hundred and ten (210) Biology students from the sampled three (3) schools, seventy from each selected school as respondents.

### **Research Instrument**

The research instrument used for the study is the structured student's questionnaire and it was designed by the researcher to generate information about

the role of Biology practical in the academic performance of senior secondary school students in Ikpoba Okha Local Government Area of Edo State

The questionnaire is made up of three sections (A, B & C). Section A contains the demographic data of the respondent such as; Name of School, Sex, Class, Age etc. While Section B contains questions to solicit for information on the role of Biology practical activities in the academic performance of senior secondary school students in Ikpoba Okha Local Government Area of Edo State and Section C deals with the availability of laboratory equipment for Biology practical.

### **Validity of the Instrument**

The instrument was designed by the researcher and subjected to careful scrutiny by the researcher's supervisor and two other lecturers in the department of Curriculum and instructional technology, Faculty of Education to ensure that it measures what it is supposed to measure. Taking into consideration, judgments and corrections, the necessary amendments was made in order to meet the objectives of the study.

## **Reliability of the Instrument**

To determine the reliability of the questionnaire instrument, a pilot test was carried out. The students' questionnaire was administered to twenty (20) random students but their responses did not form part of the sample for the study. The reliability coefficient was determined using Cronbach Alpha and a coefficient of 0.74 was obtained.

## **Method of Data Collection**

Data was collected from the respondents personally by the researcher. The Researcher visited selected secondary schools within Ikpoba Okha Local Government Area of Edo State and with the permission of the appropriate school authorities, the questionnaire was administered to the students and collection of the instrument was done the same day of administration to avoid unnecessary changes in answers of the respondent.

## **Method of Data Analysis**

Data collected was carefully analyzed by the use of simple percentages and frequency counts.

## CHAPTER FOUR

### PRESENTATION OF RESULTS AND DISCUSSIONS OF FINDINGS

#### Introduction

This chapter presents, analyses, and discusses the data that were collected for the study. The presentation and the analysis of data have been done under the following sub-headings: Sex Distribution of Respondents, Data Analysis and Discussion, Research questions.

#### Data Analysis and Discussion

##### Table 1:

Data is analyzed using descriptive statistics frequency counts and simple percentage.

<b>Gender</b>	<b>Frequency</b>	<b>Percentage %</b>
Male	98	46.7%
Female	112	53.3%
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1 shows that (46.7%) of the respondents are male while (53.3%) are female. This represents the gender distribution of participants involved in the survey.

**Table 2: Age of Respondents**

<b>Years</b>	<b>Frequency</b>	<b>Percentage</b>
10-14 years	24	11.4%
15-18 years	142	67.6%
18 years and above	44	20.9%
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 2 above, shows that 24 of the respondents representing 11.4% of the population are between the ages of 10-14 years, 142 which makes up 67.6% of the population are between the age bracket of 15-18 years, while 44 of the respondents making up 20.9% are between the age bracket of 18 years and above.

**Table 3:**

S/N	Items	Yes	%	No	%	Total
1	Do you have a laboratory for Biology practical in your school	183	87.1	27	12.9	210
		31%	14.7%	179%	85.2%	210
2	Do you have a Biology practical classes	40	60	170	80.9%	210
		40%	60%	170	80.9%	210
3	Does your teacher assist you during practical	44	20.9	166	79.0%	210
		44%	20.9%	166%	79.0%	210
4	Biology practical helps me to understand what was taught during the lesson	155	73.8%	55	26.1%	210
		155%	73.8%	55%	26.1%	210
5	Do you find biology class interesting	65	30.9%	145	69.0%	210
		65%	30.9%	145%	69.0%	210
6	I prefer biology practical lessons to biology theory class	189	90	21	10	210
		189%	90%	21	10	210
7	I enjoy biology practical more when the required specimen or materials	134	63.8	76	36.1%	210
		134%	63.8%	76%	36.1%	210
8	Are the Biology practical materials enough for all students	45	21.4%	165	78.5	210
		45%	21.4%%	165%	78.5%	210

9	Biology students carry out laboratory practical for doing sake just to satisfy the teachers	158	75.2%	52	24.7%	210
		158%	75.2%	52%	24.7%	210
10	is your Biology laboratory very tight	168	80	42	20%	210
11	Is your Biology laboratory well aerated	22	10.4%	188	89.5%	210
12	Does biology practical help to motivate students to attend class	190	90.4%	20	9.5	210
13	Does your teacher conduct biology practical while explaining concepts and topics to you	11	5.2%	199	94.7%	210
14	Learning Biology practical will enhance my performance in examinations	113	53.8%	97	46.1%	210
15	Do you think biology practical should be conducted more frequently than it is done presently	200	95.2%	10	4.76%	210

In item 1, 183 (87.1%) respondents agreed while 27 (12.9%) disagreed that they do not have Biology practical in their school.

In item 2, 40 (60%) respondents agreed while 179 (85.2%) of the respondents agreed that they do not have practical class.

In item 3, 44 (20.9%) of the respondents agreed while 166 (79.0%) disagreed to the notion that they were been taught by their teachers during practical.

In item 4, 155 (73.8%) respondents agreed while 55 (26.1%) agreed that Biology practical helps me to understand what was taught during the lesson.

In item, 5, 65 (30.9 %) of the respondents agreed while 145 (69.0%) disagreed that they do not find Biology practical classes interesting.

In item 6, 189 (90%) respondents agreed while 21 (10%) disagreed Biology practical lessons.

In item 7, 134 (63.8%) of the respondents agreed while 76 (36.1%) disagreed to the notion that they prefer Biology practical lesson to Biology theory class.

In item 8, 45 (21.4%) of the respondents agreed while 165 (78.5%) disagreed to the notion that there was enough biology practical materials for students in the instructional process.

In item 9, 158 (75.2%) of the respondent agreed while 52 (24.7%) disagreed. This implies that majority of the respondents agreed to the notion that they carry out laboratory practical just for doing sake and to satisfy their teachers.

In item 10, 168 (80%) of the respondent agreed while 42 (20%) disagreed. This clearly shows that majority of the respondents agreed that Biology practical class is very tight.

In item 11, 22 (10.4%) of the respondents agreed while 188 (89.4%) of the respondents disagreed. This clearly shows that majority of the respondents disagreed to the notion that Biology laboratory are well aerated

In item 12, 190 (90.4%) of the respondents agreed while 20 (9.5%) disagreed. This clearly shows that majority of the respondents agreed to the notion that Biology practical help to motivate them to attend class.

In item 13, 11 (5.2%) agreed while 199 (94.75) of the respondent disagreed. This clearly shows that majority of the respondents disagreed that their teachers conduct Biology practical while explain concepts and topics to them.

In item 14, 113 (53.8%) of the respondents agreed while 97 (46.1%) disagreed. This clearly shows that majority of the respondents disagreed learning Biology practical will enhance their performance in examinations.

In item 15, 200 I(95.2%) agreed while 10 (4.7%) disagreed. This clearly shows that majority of the respondents agreed to the notion that Biology practical should be conducted frequently than it is currently done.

**Table 4: Frequency Distribution of Laboratory Equipment**

Laboratory equipment	Laboratory Equipment				Total	
	Available		Not Available			
	FREQ	%	FREQ	%	FREQ	%
1.Biology Laboratory	183	87.1	27	12.9	210	100

2.Specimen	173	82.3	37	17.7	210	100
3.Microscope	57	27.1	153	72.9	210	100
4.Thermometer	152	72.4	58	27.6	210	100
5.Pipette	194	92.4	16	7.6	210	100
6.Conical flask	181	86,2	29	13.8	210	100
7.Beakers	163	77.6	47	22.4	210	100
8.Dissecting set	22	10.5	188	89.5	210	100
9.Test tubes	147	70	63	30	210	100
10.Bunsen burner	125	59.5	85	40.5	210	100
11.Metric ruler	201	95.7	9	4.3	210	100
12.Slides	22	10.5	188	89.5	210	100
13.Funnel	189	90	21	10	210	100
14.Specimen jars	129	61.4	81	38.6	210	100
15.Stirring rod	155	73.8	55	26.2	210	100
16.Insect net	170	80.9	40	19.1	210	100
17.Hand lens	127	60.5	83	39.5	210	100

18.Tripod stand	176	83.8	34	16.2	210	100
19.Fire extinguisher	88	41.9	122	58.1	210	100
20.Filter papers	194	92.4	26	7.6	210	100

The above table 4 shows that there exists 87.1% adequate availability of Biology laboratory for student learning purposes in the three sampled schools, while 12.9% accounts for the non – availability of Biology laboratory for students learning purposes. Therefore, the average percentage from the field survey suggests that, there is availability of Biology laboratory for student learning process. It was also observed from the above table that there exists 82.3% availability of specimen in the study sampled schools while 17.7% covers for non – availability of specimen in the study sampled school. It therefore indicates that, in most of the sampled schools there exists sufficient specimen. In looking at the availability of microscope in the three sampled schools, it was discovered that, none of the schools agreed that they have a well-equipped microscope judging from the 27.1% availability gotten from the survey. Thus, by reason of this field survey, the issue of the availability of microscope was seen as a serious need for

concern in public secondary schools in Ikpoba Okha Local Government Area of Edo State.

Furthermore, the above table 4 shows that there exists 72.4% adequate availability of thermometer for student learning purposes. While 27.6% exist for non-availability of thermometer for student learning purposes. The above analysis therefore indicates that, there exist above average availability of thermometer in the sampled study schools. Also, in looking at the availability of pipette and conical flask in the study sampled schools, it was discovered that, none of the sampled school lacked pipette and flask at such owing to the 92.4% availability of pippette and 86.2% availability of conical flask.. The study also observed that there exist a 77.6% availability of beakers, while there was noticed to be a shortfall in the availability of dissecting sets owing to the 10.5% availability according to the survey, same goes for the availability of slides at the survey recorded a 10.5% availability. All other laboratory equipment such as test tubes, bunsen burner, metric rule, funnel, specimen jars, stirring rod, insect net, hand lens, tripod stand and filter papers recorded a sensible percentage of availability as follows respectively 70%,59.5%,95.7%,90%,61.4%,73.8%,80.9%,60.5%,83.8% and 92.4%, however, there was a not too encouraging percentage availability of fire

extinguishers recorded from the three schools visited as there was a 41.9% availability recorded.

### **Discussion of Findings**

The findings of the study revealed the level of students academic performance of students offering Biology in secondary schools in Ikpoba Okha Local Government is moderate. The findings of the study agreed with the findings of Adeyemi (2004) who opines that students tend to achieve better results when taught by teachers with more years of experience. The findings of the study is contrary to the findings of Ajao (2001) who reported that consequent in the deterioration in the academic achievement, attitudes and values of secondary school students in public secondary schools, one wonders if the high failure rate and poor quality of the students is not a reflection of the instructional quality in the school. Ajao (2001) further stated that the ineffectiveness in classroom interaction with the students' could be responsible for the poor performance of students and the widely acclaimed fallen standard of education in Nigeria.

The findings of the study is also contrary to the findings of Adeoti and Olufunke (2016) that in Nigeria, Ikpoba Okha Local Government Area of Edo

State inclusive, the poor academic performance of students has become a worrisome phenomenon among stakeholders in education. This study found that students' academic performance from 2016 till date is moderate. One factor that may be responsible for this is effort of Edo State Government in renovation of schools, prompt payment of teachers' salaries as at when due, elevation of teachers grade to level 17 in the state civil service among others. The findings agree with Fisher (2018) when he reported that the physical environment and work structure can affect students' comfort and also their ability to learn.

The findings showed that the laboratories adequacy is a factor in the instructional process which invariably affected the students' academic performance in public secondary schools in Ikpoba Okha Local Government. These findings are supported by Castells (2000) and Offorma (2004) in their subsection to Castells (2000) the lack of adequate laboratories in public secondary schools in Edo State to enroll in these programmes which serve as platforms for them to be adequately equipped and to update their knowledge on the subject matters needed for their productivity in the instructional process is a problem in the instructional process which invariably affects the academic performance of students. On his part Offorma (2004) noted that the inadequacy of laboratory equipment is a problem

hindering the effectiveness of the instructional process which accelerated a dwindle in the academic performance of students. He opined that the inadequacy of laboratory equipment prevalent in public secondary schools in Edo State resulted in lack of effective communication and participation of students in the instructional process.

The findings of the study revealed that all the students ratio in the public secondary schools in Ikpoba Okha Local Government Area were more than the ideal number of space in the laboratories provided for teaching. This means that the number of students sitting on available spaces is more than the class size provided. This no doubt is a problem of overcrowding in Nigerian public secondary schools with its attendant consequences. The occurrence of the problem of congestion is supported by the argument of Emenyonu (2001) and Pscharopolous (2003) that failure to match laboratories with enrolment leads to crisis in the learning environment with obvious learning consequences on learning and character building. The best thing to do to preclude avoidable problems in the teaching- learning process is to base enrolment on the quantity of laboratories available.

The study found that there is no significant relationship between the adequacy of laboratory equipment and students' academic performance. This finding agreed with the findings of Lee (2000) that if laboratory equipment are adequate, students will be encouraged towards their studies and their academic performance may be increased. In another study carried out by Lee and Smith (1997) they reported a contrary view that it is difficult to see how the adequacy of laboratory equipment could actually influence students' academic performance. They said size of laboratory equipment influences teachers and students indirectly. In their study they asserted that schools where laboratory equipment are adequate, students are likely to worry more about their failures, provide more help directed toward improvement, take responsibility for disciplining everyone and invest more fully in improving the whole instructional process. They further reported that in smaller schools there are more intimate relationship between teachers and students. That the quantities of laboratory equipment are important determinants of students' academic performance.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### Summary

The study sought to ascertain the role of Biology practical activities in the academic performance in public secondary schools in Ikpoba Okha Local Government of Edo State. Specifically, the study also purposed to

- Find out whether teachers use Biology practical in teaching students offering Biology in Ikpoba Okha local government area of Edo state
- Determine if Biology laboratories in Public Secondary schools in Ikpoba Okha local government area of Edo State is equipped with the necessary apparatus for Biology
- To find out if students offering biology in Public Secondary Schools in ikpoba Okha local government Area of edo state find Biology practical interesting.

In order to attain the objectives of this study, three research questions were raised to guide the study:

- Do teachers use Biology practical in teaching?
- Are Biology laboratories well equipped with necessary apparatus for Biology practical activities?
- Do students find Biology practical interesting?

The descriptive survey research design was adopted by the study. The population for this study comprises of all the students offering Biology as a subject in the twenty (20) public secondary schools located in Ikpoba Okha Local Government area of Edo State. The stratified random sampling technique was adopted by the study.

Consequent upon the study the following findings were made:

- The study discovered amongst others that laboratory facilities is in very “sorry state” in public secondary schools in Ikpoba Okha Local Government Area of Edo State.
- The level of participation in the Laboratory process was abysmally low as they were not stimulated by the fact that the laboratory facilities were not available and adequate to facilitate their effective participation.

- The inadequacy of laboratory facilities in the Laboratory process was resulted in the poor comprehension and assimilation of key concepts by students in Biology which resulted in their poor academic performance.
- The teachers were not adequately equipped with the requisite skills for the effective utilization of laboratory facilities to accelerate the enhancement of the quality, content and delivery of Biology in the schools located in Ikpoba Okha local government area of Edo state.

## **Conclusion**

The study thus concludes amongst others that, all the sampled school respondents were in one accord in supporting the fact that, they do not have microscopes in the laboratory in their school. The study also concludes that there, is no electricity, Laboratory materials and up – to – date Laboratory apparatus. The study further concludes that; public secondary schools in Ikpoba Okha Local Government Area lack proper laboratory blocks to cater for the large numbers of students. The study also reveals in conclusion that all of the sampled respondents were with one voice proclaiming the fact that, they do not adequate laboratory

facility. Furthermore, the researcher concludes that, majority of the study sampled schools lacks adequate Laboratory facilities.

## **Recommendations**

Based on the findings of this study, the following recommendations were made:

- Government should increase her annual budgetary allocation to secondary schools in Nigeria particularly to Schools located in Ikpoba Okha local government area Of Edo State that would invariably facilitate the procurement of laboratory facilities in the teaching and learning of Biology thereby enhancing the quality of Laboratory delivery in the schools.
- Government should set up internal mechanism to monitor secondary schools in Ikpoba Okha Local government area of Edo state to facilitate the maintenance of the laboratory facilities to prevent wear out and depreciation of these facilities thereby facilitating the effective utilization of these facilities.
- Regular and periodic in-service training for teachers who teach Biology in public secondary schools in Ikpoba Okha local government area of Edo state to adequately equip them with the skills as well as update their level of

knowledge on the utilization of laboratory facilities in the Laboratory process.

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**APPENDIX**  
**UNIVERSITY OF BENIN**  
**FACULTY OF EDUCATION**  
**DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL**  
**TECHNOLOGY (CIT)**  
**QUESTIONNAIRE**

A questionnaire on the role of Biology practical activities on the academic performance of senior secondary school students in Ikpoba Okha Local Government Area Of Edo State.

Dear respondent,

The questionnaire is designed to gather information on the role of Biology practical activities in the academic performance of senior secondary school students in Ikpoba Okha Local Government Area of Edo state.

Kindly assist in responding to the following questions as sincerely as possible. All information will be treated with utmost confidentiality and will be purely for the research. Your cooperation towards the success of this exercise will be highly appreciated.

**SECTION A**

**Demographic data**

INSTRUCTION: Please indicate by ticking ( ) in the appropriate column.

NAME OF  
SCHOOL.....  
.....

SEX: Male ( ) Female ( )

AGE: 10-14( ) 15-18( ) 18 and above ( )

TYPE OF SCHOOL: Mixed ( ) All boys ( ) All girls ( )

## SECTION B

INSTRUCTION: Please read carefully the following questions and indicate by ticking ( ) the column that best suits your opinion.

S/N	QUESTIONS	YES	NO
1.	Do you have a laboratory for Biology practical in your school?		
2.	Do you have Biology practical classes?		
3.	Does your teacher assist you during practical?		
4.	Biology practical helps me to understand what was taught during the lesson.		
5.	Do you find Biology practical classes interesting?		
6.	I prefer Biology practical lessons to Biology theory class.		
7.	I enjoy Biology practical more when the required specimen or materials are provided for experiment.		
8.	Are the Biology practical materials enough for all students?		
9.	Biology students carry out laboratory practical for doing sake just to satisfy the teachers.		
10.	Is your Biology laboratory very tight?		
11.	Is your Biology laboratory well aerated?		
12.	Does Biology practical help to motivate students to attend class?		

13.	Does your teacher conduct Biology practical while explaining concepts and topics to you?		
14.	Learning Biology practical will enhance my performance in examinations.		
15.	Do you think Biology practical should be conducted more frequently than it is done presently?		

## SECTION C

### AVAILABILITY OF LABORATORY EQUIPMENT FOR BIOLOGY PRACTICALS

INSTRUCTION: Please tick against the equipment that you have in your school laboratory.

S/N	ITEMS	ADEQUATELY AVAILABLE	AVAILABLE	NOT AVAILABLE
1.	Biology laboratory			
2.	Specimen			
3.	Microscope			
4.	Thermometer			
5.	Pipette			
6.	Conical flask			
7.	Beakers			
8.	Dissecting set			
9..	Test tubes			
10.	Bunsen burner			
11.	Metric ruler			
12.	Slides			

13.	Funnel			
14.	Specimen jars			
15.	Stirring rod			
16.	Insect net			
17.	Hand lens			
18.	Tripod stand			
19.	Fire extinguisher			
20.	Filter papers			