



**INFLUENCE OF THE AVAILABILITY OF  
LABORATORY FACILITIES ON ACADEMIC  
PERFORMANCE OF STUDENTS IN BIOLOGY IN  
SENIOR SECONDARY SCHOOL OF JALINGO  
LOCAL GOVERNMENT AREA OF TARABA STATE,  
NIGERIA**

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**ABSTRACT**

*The survey determined the influence of the availability of Laboratory Facilities on Academic Performance of students in Biology in Senior Secondary School of Jalingo Local Government Area of Taraba State, It adopted a descriptive survey research design and was guided by two specific objectives and two (2) research questions. It sought to find out to examine the Availability of Biology Laboratory Facilities and to determine the influence of the availability of laboratory facilities on the student academic performance in biology in Senior Secondary School of Jalingo Local Government Area of Taraba State. Descriptive survey research design was employed for the study, a population of seventy six (76) teachers, due to the population was not large the researcher used all population a total of (76) respondents were used for the study, the total number of biology teachers of secondary schools in jalingo LGA is seventy six (76) for this reason, there was no need for sampling. The instrument used for data collection was a researcher developed questionnaire tagged Availability of Laboratory Facilities and Academic Performance of Biology (ALFAPQ). The questionnaire has sixty (10) items. Descriptive statistics and mean were used to answer research questions. It was revealed from the study that most of the facilities are not available in study area. From the opinion of the respondents wall chart, petri dish, beakers, chemicals and hand lens are available in some of the secondary schools. Also the respondents also opinioned that facilities*

*Biology laboratory such as Bunsen burner, microscope, first aid box, fire extinguisher, dissecting kits and laboratory assistant are not available. Also, the result reveals that students' academic performance can be influence positively by the use of chart and beakers, laboratory equipment in explaining the abstract topics, microscope, and laboratory assistant. Based on the above problems, it was recommended that The school management should endeavor to make provision for laboratory facilities that will enhance teaching and learning biology in their schools., Government should increase the budgetary allocation to schools so as to enhance their running cost and to enable them to get the laboratory equip this will help in the practical application of biology knowledge and Supervisors and inspectors from the Ministry of Education should strictly monitor the frequency of use of laboratory equipment by both teachers and students. This will ensure a hitch free utilization of the available science laboratory equipment in teaching and learning of Biology and such process will encourage students to do science of biology instead of learning about it.*

**Keywords:** *Influence, availability, laboratory facilities, academics and performance.*

## **INTRODUCTION**

Science is doing and involves regular hands on practical work for learners to develop scientific literacy to face global challenges. Aleyideino (2000) opined that sound science education is accepted worldwide as bedrock of human development and progress, and also maintained that no educational system can rise above the quality of its teachers, and no nation can rise above the level of its teaching staff. For science teachers to play their roles in teaching science, laboratory facilities must be available and must be used appropriately to improve the performance of students. The National Policy on Education (FME, 2004) states that science education shall emphasize the teaching of science process and principle. This will lead to fundamental and applied research in science at all levels of education. When laboratory facilities are appropriately utilized, they bring about more effectiveness in teaching and learning process, but this depends on teachers' ability to use such facilities effectively (Ughamadu; 1992). In the study of Biology as an integral branch of science, the

facilities and equipment's which students were exposed to remain crucial to the achievement made by them? The facilities and equipment here referred to infrastructures, manpower and laboratory equipment, all of which make learning fruitful and rewarding. For the past three decades, there has been tremendous increase in the number of students' enrolment in biology when compared to other science subjects (Milgwa,2000). This is because Biology is seen to be directly relevant to students' everyday life. On the other hand, it could be observed that students performance in both Senior Secondary School Certificate Examination (SSCE) and the General Certificate in Education (GCE) have constantly been poor. This poor performance has been attributed to students' inability to tackle biology practical questions (Nworgu, 1999). According to Ogunkola and Olatoye (2004) practical work is the back-bone of effective science teaching and learning. It has been repeatedly emphasized that scientific enterprise is an activity packed one, involving continuous exploration and verification of facts. Science is learnt by doing, so the different school curricula should adequately provide facilities for practical work at every stage of learning experiences. Alebiosu cited in Ogunkola and Olatoye (2004) opined that science is experimentation and its teaching specially focuses on making students learn through the working of hands, brain and the heart. Various studies on the methodology of science teaching such as inquiry, discovery and process approach have shown that students learn more from science lesson by doing rather than by observation. According to Ogunkola and Olatoye (2004) enhancing better understanding of products and process of science cannot be overemphasized and also added that the practical nature of biology is commonly regarded as an important source of pupils' motivation. Nworgu (1999) said that teaching of biology involves three major domains of educational objectives namely cognitive, affective and psychomotor. He said teachers of biology mostly emphasize on cognitive domain at the expense of the other two domains. The development of psychomotor domain involves practical activities which require laboratory facilities and equipments. Mustapha (2002) stated that practical work in school science provides learners with opportunities to use scientific equipments to develop basic manipulative or inquiry activities and develop problem-solving attitudes needed for future work in science. Etukudo (2004) opined that laboratory method of teaching is presumed to be capable of fully involving the individual learner in the learning and teaching activities as

well as helps to remove individual differences and absent mindedness. He added that laboratory offers singular privilege of manipulating apparatus or teaching aids to every student to obtain a desirable result. Also he said that the use of instructional materials which laboratory techniques offer, enhance better understanding of the curriculum content. Etukudo (2004) said that experimentation and laboratory teaching are good pedagogy for discovery learning and mastering of abstract skills as well as building up of low ability learners. The teacher must also know to get the equipment/facilities and the situations where they can effectively be put to use. However, Ivowi (1999), observed that lack of science teaching equipments in our laboratories is one of the major problems facing science teaching in Nigeria. Based on the nature of biology and the teaching of the subject. Abdulrahman (2009) believes that practicing biology teachers who are not trained within the scientifically rich environments or moderately rich biology environment do not have the capacity to utilize any available resources or improvise in the absence of such resources.

#### **Statement of the Problem.**

Many secondary schools claim to offer science subjects, but a visit to these schools reveals that some of them only offer science subjects but they have no laboratories not to talk of laboratory facilities. In addition to this, the available laboratories in some of these secondary schools are ill-equipped to teach science subjects. According to Abdulrahman (2009) secondary school laboratories are sparsely furnished and unused by science teachers to the extent that spiders and other insects have taken over the laboratories and their facilities. This may be due to negligence, lack of manpower or unqualified teachers to handle the facilities. The problem of non-availability of laboratory facilities for effective teaching of Biology in our secondary schools persists thereby giving rise to poor academic performances, as discussion and lecture methods of teaching have been dominating the teaching and learning activities where students need to do practical work (Abdulrahman, 2009). Based on this, he opined that students always perform very poor in the practical part of their examination thereby leading to poor academic performance in science courses. Thus the focus of this study is to investigate the relationship between utilization of laboratory facilities and students' academic performance in Biology in senior secondary schools in

jalingo local government taraba State and make suggestions on how the findings will help to improve the students' performance in Biology.

### **Purposes of the Study**

The major objective of the study is to investigate the influence of the availability of Laboratory Facilities on Academic Performance of students in Biology in Senior Secondary School of Jalingo Local Government Area of Taraba State, Nigeria. Specific objectives are as follows;

- i. To examine the Availability of Biology Laboratory Facilities in Senior Secondary School of Jalingo Local Government Area of Taraba State, Nigeria.
- ii. To determine the influence of the availability of laboratory facilities on the student academic performance in biology in Senior Secondary School of Jalingo Local Government Area of Taraba State, Nigeria.

### **Research Questions**

The following research questions would be answered-

- i. Are there availability of Biology Laboratory Facilities in Senior Secondary Schools of Jalingo local government Taraba State?
- ii. What is the Determine the influence of the availability of laboratory facilities on the student academic performance in biology in Senior Secondary School of Jalingo Local Government Area of Taraba State, Nigeria.

### **Research Method and Materials**

the researcher described the procedures for carrying out the study base on : Design of the study, Area of the study, Source of data, Population of the study, Sample Sampling Technique, and data analysis. Descriptive survey research design was used for the study. According to Ali (2006), descriptive survey design is concerned with the documentation and description of what exists or the present status of existence or absence of what is being investigated without any manipulation of what caused the event. It develops a profile on what is and not why it is so. It is considered appropriate for the study because it is based on the views, opinions of respondents as well as resources available in the area of study.

### **Area of Study**

The study was conducted in all the (34) government secondary schools located in Jalingo Local Government Area which is found in Taraba state. Jalingo, town, capital of Taraba state, eastern Nigeria. It became a state capital in 1991 after Gongola state was divided into Adamawa and Taraba states. Jalingo lies in the savanna-covered foothills of the Shebshi Mountains about 25 miles (40 km) southeast of the Benue River. It is a market town, has a government dairy farm, and is connected by road with Yola and Wukari. Pop. (2016 est.) Local government area, 187,500.

### **Source of Data Collection**

The researcher used a self-constructed questionnaire to source data and the researcher used seventy six (76) respondents from all the secondary schools in Jalingo. And 15 item-self constructed questionnaire which adapted four point scale were used.

### **Population of the Study**

The population of the study comprised of the entire seventy six (76) Biology Teachers within the thirty four (34) Government Secondary Schools in Jalingo LGA. With 11,765 Students. And with a total number of teaching staff 822 (Taraba State Teaching Service Board 2020)

### **Sample and Sampling Technique**

For the purpose of the study, all the 34 public schools will be used in Jalingo local government. No sampling was carried out since the population was manageable. Since the population is not much here there is no need to sample. Sampling is done when the population is large. The entire sample for the school is 76 biology teachers of the 36 secondary school in Jalingo.

### **Data analysis**

The instrument were collected from the respondents personally by the researchers. The researchers administered the questionnaire personally to the respondents and on the spot collection was made. This method enabled the researcher to obtain at least 100% return of the filled questionnaires; it also helped the researcher to offer assistance to the respondents when needed. The



Research questions were answered using mean and standard deviation on four (4) points scale responses.

## RESULT AND DISCUSSION

Presented is the data analysis, presentation and interpretation of findings from biology teachers of government secondary schools in Jalingo local government Area. The data presented was first sorted out and classified for easy analysis. The findings were analyzed, processed and discussed as per the objective of the research questions for the study.

**Research question 1:** Are their availability of Biology laboratory facilities in senior secondary school Jalingo?

**Table: 1. 4** point scale showing the availability of Biology laboratory facilities in senior secondary school Jalingo

S/N	Items	Total Score	Mean	Remark
1	My school has well wall chart, petri dish, beakers, and hand lens available	233	3.1	Agreed
2	The school has too many Bunsen burners, conical flask, and tripods in use.	235	3.1	Agreed
3	There are microscopes, first aid box and Fire extinguisher available in the school laboratory.	150	2.0	Disagreed
4	The school biology laboratory are full of dissecting kits for teaching and learning of students	180	2.4	Disagreed
5	The school have biology laboratory assistant to utilize the equipment in the laboratory	160	2.1	Disagreed

**Source: field Survey 2020**

The result in table 1 shows the availability of biology laboratory facilities in senior secondary school in jalingo. The result of the 4 point scale reveals that the respondent agreed that there school has well wall chart, petri dish, beakers, and hand lens available (  $\bar{x}$ = 3.1) also, the result in table 1 reveals that the respondents agreed that their school has too many Bunsen burners, conical

flask, and tripods in use (  $x= 3.1$ ). The result further reveals that the respondent disagreed that there are microscopes, first aid box and Fire extinguisher available in the school laboratory ( $x= 2.0$ ). In the same view result in table 1 also revealed that the respondent disagreed that There schools biology laboratory are full of dissecting kits for teaching and learning of students ( $x= 2.4$ ). lastly the findings in table 1 reveals that the respondents disagreed that The school have biology laboratory assistant who utilize the equipment's and assist biology teachers in the laboratory ( $x= 2.4$ ). This implies that when the mean value is greater than 2.5 the facilities are available and when the values is less than 2.5, this indicate that biology laboratories such as Bunsen burners, conical flasks, tripod stands, microscopes, first aid boxes, fire extinguishers, dissecting kits, first aid boxes and laboratory assistants were not available for the teachers to utilize in teaching and learning biology in secondary schools in jalingo.

**Research question 2: does availability of Biology laboratory facilities influence students' academic performance?**

**Table 2:** 4 point scale showing the mean score and remark for the availability of Biology laboratory facilities influence students' academic performance in jalingo.

s/n	Item	Total Score	Mean	Remark
1	Students performance can be enhanced by the use of chart and beakers	230	2.9	Agreed
2	Learning can be well understood when Biology teachers uses laboratory equipment in explaining the abstract topics to them	231	2.9	Agreed
3	Microscope helps students to see things which are not visible to them.	232	3.0	Agreed
4	Students got motivated to learn when taken to the lab for practical work.	235	3.1	Agreed
5	Students learn on their own even without teachers around In the laboratory once they have been taught the topic in class.	233	3.0	Agreed

**Source: field Survey 2020**



The result in table 2 shows that does availability of Biology laboratory facilities influence students' academic performance in Jalingo. The result of the 4 point scale reveals that the respondent agreed that Students performance can be enhanced by the use of chart and beakers ( $x= 2.9$ ). Also, the result in table 2 reveals that the respondents agreed that Learning can be well understood when Biology teachers uses laboratory equipment in explaining the abstract topics to them ( $x= 2.9$ ). In the Same vein the result in table 2 reveals that the respondents agreed that Microscope helps students to see things which are not visible to them ( $x= 3.0$ ). Furthermore the result in table 2 reveals that the respondents agreed that Students got motivated to learn when taken to the lab for practical work ( $x= 3.1$ ). and lastly the result in table 2 reveals that the respondents agreed that Students learn on their own even without teachers around In the laboratory once they have been taught the topic in class ( $x= 3.0$ ).

### **Discussion of findings**

The study was specially design to examine the influence of the availability of laboratory facilities on academic performance of students in biology in senior secondary school of jalingo L.G.A OF Taraba state. To achieve this purpose two specific objectives and two research question were raised. Mean of of the total score was used to to analyses and answer the questions.

The first objectives was to examine the availability of biology laboratory facilities in senior secondary school in jalingo. Data collected were analyzed and rated. It was observed that most of the facilities are not available in study area. From the opinion of the respondents wall chart, pentri dish, beakers, chemicals and hand lens are available in some of the secondary schools. Also the respondents also opinioned that facilities I biology laboratory such as Bunsen burner, microscope, first aid box, fire extinguisher, dissecting kits and laboratory assistant are not available. This findings is in accordance with the findings of Okoli and Osuafor ( 2010) who opined that almost all the required biology laboratory resources are not available in schools especially tripod stand models, flsak, labrotay assistant , wallchart, dissecting kitts, test tube, litmus paper, and filter papers. The result is also in line with the findings of akano ( 2006) who states that human and material resources in secondary schools are grossly inadequate. And this can affect teaching and learning of biology students.

The second objectives was to determine whether availability of biology facilities influences students' academic performance in Jalingo and it was found out base on the analyses of the data collected from the respondents' that students' academic performance can be influence positively by the use of chart and beakers, laboratory equipment in explaining the abstract topics, microscope, and laboratory assistant. The findings of this study is in line with the findings of Crescentia and Amos (2011), Okeke (2010) and Adejoji and Olatunbonsun (2008) who reported that laboratory facility availability and utilization were found to enhance students achievements through manipulation and use of same in the biology laboratories. The results is also in line with Nwabo and uzoma (2014) who stated that practical activities enhances the acquisition of science process skill. This implies that teachers who utilizes laboratory equipment in biology will produce students that will be relevant in the society as skilled acquired and this will help the society combating problems

## **CONCLUSION**

From the finding of this research it has shown that the use of biology laboratory facilities is directly linked to students' academic performance. When students are exposed to the use of these facilities, they tend to perform better than they would have done without these facilities.

## **RECOMMENDATIONS**

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

1. The school management should endeavor to make provision for laboratory facilities that will enhance teaching and learning biology in their schools.
2. Government should increase the budgetary allocation to schools so as to enhance their running cost and to enable them to get the laboratory equip this will help in the practical application of biology knowledge.
3. Supervisors and inspectors from the Ministry of Education should strictly monitor the frequency of use of laboratory equipment by both teachers and students. This will ensure a hitch free utilization of the available science laboratory equipment in teaching and learning of Biology and such process will encourage students to do science of biology instead of learning about it.

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