

**IMPORTANCE OF IMPROVISTION IN TEACHING BIOLOGY
TO SENIOR SECONDARY SCHOOL STUDENTS IN SOKOTO
METROPOLIS**

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OCTOBER, 2015.

CERTIFICATION

This research work has been read and approved as meeting the requirements of the department of education of the Usmanu Danfodiyo University sokoto for the award of B.sc ed (Hons)

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DEDICATION

This research work is dedicated to Almighty Allah for His abiding grace, mercy, protection and perfect health throughout my academic feat and also to my parents for their endless and tireless efforts both financially, and morally may Allah reward them abundantly (Amin)

ACKNOWLEDGEMENTS

We wish to express our profound gratitude to almighty Allah for sparing our lives throughout the programme in Usmanu Danfodiyo University sokoto.

Our sincere thanks go to our valuable supervisor in person of Dr. (Mrs.) Rabi Muhammad for her numerous support and great toward the attainment of this feat. Also to all lecturers in the department of science and vocational education and in the faculty of education at large we say a big thanks to you all.

We appreciate the effort of our parents, guidance, brothers, sisters, friends and well wishers for their financially, affection, care and words of encouragement may Allah in His infinite mercy reward you all abundantly (Amin)

We also appreciate the effort of the staff and principals of the schools selected for this study for their contribution in one way or the other, may Allah elevate you all.

TABLE OF CONTENTS

TITLE	ii
CERTIFICATION.....	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vi
ABSTRACT	x
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study	1
1.2 Statement to the Problem.....	5
1.3 Objectives of the Study	6
1.4 Research Questions	6
1.5 Significance of the Study.....	7
1.6 Scope and Delimitation of the Study	8
1.7 Operational Definition of terms.....	8

CHAPTER TWO	9
REVIEW OF RELATED LITERATURE	9
2.1 Introduction	9
2.2 Concept of Instructional Materials	9
2.3 Concept of Improvisation	9
2.4 Rationale for Improvisation.....	9
2.5 Importance of Improvisation	9
2.6 Some Tools for Improvising Material in teaching Biology.....	9
2.7 Advantages of Improvisation	9
2.8 Factors affecting Improvisation in Schools.....	9
2.9 Summary of the Review and Uniqueness of the Study	9
2.2 Concepts of Instructional Materials.....	9
2.3 Concept of Improvisation	12
2.4 Rationale for Improvisation.....	13
2.5 Importance of Improvisation	14
2.6 Some materials that could be improvised in teaching Biology and their functions	16
2.7 Advantages of improvisation.....	17

Advantages of using low cost Materials.....	17
2.8 Factors affecting Improvisation in Schools.....	17
2.9 Summary of the Review and uniqueness of the Study.....	18
CHAPTER THREE.....	19
RESEARCH METHODOLOGY	19
3.1 Introduction	19
3.2 Research Design	19
3.3 Population of the Study	19
3.2 <i>Sample and Sampling Techniques</i>	20
3.5 Instrument for data Collection.....	21
3.6 Validity of the Research Instrument.....	22
3.7 Reliability of the Research Instrument.....	22
3.8 Method of data Collection.....	22
3.9 Procedure for data Analysis.....	23
CHAPTER FOUR	24
DATA PRESENTATION AND ANALYSIS	24
4.1 INTRODUCTION.....	24
4.2 Data Presentation and Analysis	24

4.3 Summary of Major Findings	27
4.4 Discussion of Findings	28
CHAPTER FIVE	30
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	30
5.1 INTRODUCTION.....	30
5.2 Summary of the Study	30
5.3 Conclusions	31
5.4 Recommendations	32
<i>REFERENCES</i>	33
<i>APPENDIX</i>	33

ABSTRACT

The aim of this research was to find out the importance of improvisation in teaching Biology in senior secondary school students in Sokoto metropolis. Total numbers of 31 teachers were used in this study; the instrument used for data collection was questionnaires which were administered personally by the researchers to ten randomly selected secondary schools in Sokoto metropolis. The method used for data analysis was simple percentages to examine the findings. Among the major findings for this is that, there is an adequate instructional materials for teaching Biology in secondary schools in Sokoto State. Also there is a great difference between the performance of the students taught with improvised materials and without any instructional aid. With these findings, we recommend the teachers to be resourceful so as to improvise when the original materials are not available.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In Nigerian secondary schools, Biology is one of the basic sciences among the core subjects taught in the senior secondary schools (SSS). Biology is the science of life. Traditionally Biology is divided into Botany the study of plants and zoology the study of Animals. Biology has several divisions such as Morphology, Anatomy, physiology, Ecology, Genetics and evolution.

Biology of our age differentiates pure Biological science from the applied Biology sciences which are Nursing, Medicine, Pharmacy, and Agriculture among others. The scope and nature of Biology is that which is paramount to life. The role of Biology has virtually speeded through most aspects of human economic and public life.

In general some branches of Biology have contributed to the provision of health and disease control, development of industries, crime detection, provision of food and shelter, awareness of variety of life, provision of foundation for future profession and understanding the physical world.

The ultimate goal of any teaching activity is to facilitate effective learning among students. In an attempt to ensure that effective learning takes place, teachers effort

should be geared towards ideas, methods and skills. There is no gain saying that student in modern world of science, technology and information explosion are expose to myriad of information from different sources. It is expected that this information should be acquired, perceived, internalized, retained, intercepted and utilized by students in a similar or novel environment with view to succeed in examination in particular and life in general.

The teaching of science process apart from its physiological benefits as a motivational factor is known to take a more lasting effect on students learning. Some process skills on the other hand, appear to have a longer life span and are positively related to acquisition of appropriate scientific attitudes and habits because even those dropouts from school at some stage are those that might not later specialized in scientifically intelligent question and pursue the solutions to their problems in like manners. The importance of these cannot be over emphasized; given that the world is daily become more scientifically and technologically sophisticated. To realize this basic goal of how curricular were innovated which emphasized the teaching of science inquiring to inculcate scientific process skills, Nwosis and Nzewi (1997) observed that these approaches emphasize active learning by learners in a social environment from which resources and references should be respectively drawn and made to make learning more effective, meaningful and relevant.

For accuracy and provision, most science teachers tend to feel that these processes can only be use of expensive imported apparatus. However, in the wake of increasing enrolment, dwindling economy and stringent financial support for science, there is general call on teacher to use available local resources for improvisation to reduce cost and conserve hard foreign exchange.

Instruction on WASC/SSCE reveals that practical examination carries the highest mark of the total mark allocated to Biology examination. It is therefore, highly significant for every school to make sure that instructional materials for Biology practical's are adequately provided and should be functional. In stating what an ideal biology laboratory contains, VOSS and BROWN (1968) observed that, the laboratory is a place where students can learn more skills of biology than merely the use of microscope .A well equipped high school biology laboratory has the following pieces of equipment: a model of the mammalian ear, model of the mammalian skeleton, aquarium electron microscope, phase contrast microscope, automatic autoclave incubators, forecasts, slide analytical microtome and closed environmental chambered of independent attack on a problem.

Many reasons have been advanced for the need for improvisation, for example, ALONGE (1983) outlined the following reasons

- a. Improvisation is a way of minimizing cost of equipments/materials
- b. Inexpensive method of widening the scope of inquiry

- c. Enables the teachers method of making teaching/learning processes easier for students, hence promote creativity and self reality
- d. Provides a cognitive bridge to lead students from abstractions and its attendants or mental indigestion to a nodding acquaintance with reality.

Balogun (1983), also emphasized that no effective science education programmed can exist without equipments, they are indispensable to effective teaching and learning. We also need to bear in mind that at least some of the pupils may intend to become professional scientist, technologist and engineers, such pupils need the equipments to begin to develop the necessary science process skills. Specific educational reasons for using equipment for science teaching include the following.

- a. To enable the learners to develop problem solving skill and scientific attitudes
- b. To enable the students to develop interest in science
- c. To enable students to develop functional scientific knowledge and manipulative skills.

The acquisition of these skills by the students is the contribution of science education to the general preparation of youth for life especially those that intend to take up carrier in science and technology.

A major reason for improvisation of equipment as already hinted is that, it contributes to the achievements of our educational objective .another reason is that

,the economics of education is generally economic of scarcity. In other hands, no matter how generous and rich educational authorities can be, they are generally not always in a position to provide their schools with all they need. Therefore schools and teachers might be obliged to make the most of what they can get or construct from available material.

1.2 Statement to the Problem

Incompetence of teachers to improvised instructional resources has been said to be one of the factors responsible for poor performance of learners, especially in our primary schools. A lot of studies have been carried out to improve effective teaching learning process by different researchers.

Adeniran (2005) examined strategies for production and level of improvised biology instructional materials and discovered that instructional media are inadequate in the schools. Adelokun (2005) studied the acquisition production and utilization of teaching resources and its effects on academic achievement of secondary students in biology, he opined that the use of real life situation as teaching materials facilitates easy communication which leads to better retention of what is learned that is using what have not experienced or seen before.

This study is set out to assess the importance of improvisation in teaching biology to secondary school students in sokoto state, In order to stimulate effective learning of biology science in our various schools.

1.3 Objectives of the Study

The objectives of this study are:

1. To find out the level of availability of instructional materials in secondary schools in Sokoto state
2. To find out the adequacy of instructional materials in Sokoto state
3. To find out whether teachers in Sokoto state are improvising instructional materials for teaching biology in Sokoto state
4. To find out the difference in the performance of student taught Biology using improvised materials and those taught with no instructional aid
5. To find out the difference in the performance of male and female students taught biology using improvised material.

1.4 Research Questions

The following research questions guided the conduct of this study

1. Are instructional materials for teaching Biology available in secondary schools in Sokoto state?
2. Are the available instructional materials adequate for teaching of biology in secondary schools in Sokoto state?
3. Are teachers in Sokoto state improvising instructional materials for teaching biology in secondary schools in Sokoto state?

4. Is there any difference in the performance of students taught biology using improvised material and those taught with no instructional aids?

1.5 Significance of the Study

The essence of this study is to make assimilation easier during the course of teaching. When we consider the importance of Biology in human life , and in the presence of technological advancement, any construction of instructional aid that can bring about proper teaching and learning of the subject is very important; therefore the significance of this study are as follows

1. This study helps teachers to develop necessary science, process skills, individual and practical skills needed to function effectively in the society as professional scientist
2. More significantly, the study enables the biology teachers to improve or make local materials that will be clear and easily visible to the whole class
3. It is also aimed at reducing the cost and problems encountered in teaching abstract concept of biology. For example, inner structure of the mammalian Ear
4. The result of this study may also provide possible suggestion to how some of the instructional materials which are not available are created, improvised, or organized as the case may be.

1.6 Scope and Delimitation of the Study

The research work aims to analyze the importance of improvisation in teaching biology to secondary school students in Sokoto metropolis only. Three (3) categories of schools were chosen (Boys schools, girl's schools, and mixed schools). Furthermore, focus was made on SS 3 students who believed to cover some topics in biology.

1.7 Operational Definition of terms

Laboratory: A place where scientific method and experiments are carried out

Equipment: these are durable things which are not consumed or used up in the business of teaching, usually refers to in the laboratory as audio visual instruments which have an expected life of many years

Apparatus: Any pieces of equipment or any instrument commercially produced for teaching

Improvisation: this is the production of an appropriate substitute for real or original equipment or materials in terms of need from local or readily available materials

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The purpose of this chapter was to review literature related to this research. The reviewer was conducted in the following area;

2.2 Concept of Instructional Materials

2.3 Concept of Improvisation

2.4 Rationale for Improvisation

2.5 Importance of Improvisation

2.6 Some Tools for Improvising Material in teaching Biology

2.7 Advantages of Improvisation

2.8 Factors affecting Improvisation in Schools

2.9 Summary of the Review and Uniqueness of the Study

2.2 Concepts of Instructional Materials

The success of any learning process depends largely on the instructional procedures. For a given procedure to achieve desired objective it must be properly harnessed through adequate and properly use of instructional facility, the national

teacher institution is principally a teacher educational body that offers instruction to its learners through the use of distance education mode of learning. The concept of teacher education is very encompassing because it is banded by past and present practices and each variation tends to provide a distinct dimension to the concept. Educational resources however used to improve student knowledge, abilities and skills to monitor their assimilation of information and to contribute to their overall development and upbringing.

There are three basic types of instructional materials; concrete objects include objects from the world nature, representation of concrete objects and phenomena and description of such objects and phenomena by means of the signs word and sentence of natural and artificial languages.

The first type of instructional material includes such objects and phenomena as minerals, rocks, raw materials, semi finish and finish manufactured articles and plant and animal specimens included among these materials are reagent and apparatus for producing chemical and other reactions for demonstration and studying such reaction during laboratory session also included in the first group are materials and equipment for production training and for courses in drafting and the representation arts.

Among such supplies, instruments and equipments are wood, metals. Plastics and glass object, measuring and monitoring instruments and equipment, equipment for the assembling finishing various products and machines and machine tools.

The second type of educational materials that of representations of actual objects and phenomena, includes three- dimensional materials (castings, globes and experimental models), two dimensional materials (charts, pictures, photographs, maps diagram and drawing), and audio visual materials (motion pictures, film clips, film strips, slide sequences, dispositive, transparencies, records and tape recording and radio and television broadcasts) audio visual materials including the resources of film, radio and television, help acquaint students with the achievement of modern science, technology, industry and culture with phenomenon that are inaccessible to direct observation.

Audio visual materials also acquaint students with early period of history and with distant places in the world and in space such material elucidate natural and social phenomena and enable students to study the inner world of matter and the internal motion of waves, elementary particles, atoms, molecules and living cells.

The third type of instructional materials, that of written descriptions includes scientific, scholarly, reference and methodological teaching aids as well as textbook for recording scientific observations, laboratory manuals, manuals for production training , and programmed textbook.

Another type of instructional materials technological instructional media; Among these are equipment for the transmission and assimilation of information recorded on film or on photograph recordings, film projector tape, recorders photographs and television sets. Monitoring devices include punched cards and various types of automatic apparatus. Teaching –machine include language-laboratory machines, closed-circle television systems and computers.

Instructional materials are made to comply with functional biotechnological, aesthetic, economic, safety and hygienic requirements. The most effective used of educational equipments achieved by means of centralized study facilities the scientific research institute for school materials and technological instructional media of the academy of pedagogical science of the USSR was founded in 1965 in Moscow to deal with the theory and development of instructional materials and to help provide the most efficient and advanced instructional materials for secondary schools.

2.3 Concept of Improvisation

Improvisation is the process of devising a solution to a requirement by making-do, despite absence of resources that might be expected to produce a solution. In a technical context, this can means adapting a device for some use other than that which it was designed for, or building a devise from unusual components in an ad-hoc-fashion.

Improvisation means the act of creating something or using something in the absence of the ideal tools. According to Webster's dictionary 2004; improvisation is to provide, select or make substitute for something not available to use as the basis of free invention. Kamoru and Umeano (2006) further define it as the act of using material available from the local environment or designed by the teacher or with the help of local personnel to enhance instruction. According to Ihiegbulem (2007), it is the act of substituting for standard equipment or instructional s not available with locally made equipment or instructional material from readily available natural resources. National teacher institute in OMECHI (2000), defines improvisation as the act of using alternative materials and resources due to lack of insufficient hand teaching aids to facilitate instruction from these opinion, improvisation entails the production of equipment using available local and cheaper resources and the use of such equipment for effective teaching.

2.4 Rationale for Improvisation

The fact that there is lack of or shortage of science equipment in schools couple with the activity- oriented and child- oriented nature of the curriculum of the science has imposed many heavy demands on laboratory facilities. The science teaching most be directed towards the use of local materials and the material must be from the learners environment.

The following are the reason for improvisation

- I. Improvisation of teaching resources enable the supplementing of verbal description and explanation with observe and or touchable , manipulative objects
- II. Learners interest is stimulated when objects improvised by the teacher through his creative ability and imagination are used effectively
- III. It affords the student the opportunity of touching and manipulating for direct concrete experience
- IV. Improvisation enables the learner to recognize that scientific concepts are invented and created by acts of human intelligence and imagination and are not tangible objects accidentally discovered like a fossil or a particular mineral
- V. It helps in the development of scientific attitude in students. The concept “scientific attitude” implies behavior that demonstrates accuracy, objectivity and possession of critical questioning skill

2.5 Importance of Improvisation

- i. It change the vocabulary and behaviour of the learner: many classrooms particularly when it comes to managing behaviour are run by a system of “NO” By making improvisation an important piece of the class room culture, vocabulary of behaviour expectations change If someone is talking out of turn in class, they have “taken focus” which they should give back to

the student who has the floor. Our classroom is an ensemble which is must always work to keep on the same page

- ii. It free the mind of the learner ;creativity requires as a complete state of yes and following ideals without judging them can be a difficult skill and improvisation is the best tool to teach the learner to free their mind
- iii. It create something that's truely shared in schools: creating is a high level critical thinking skill, and when you have created something as a class or group for which no individual can take credit , you have create something very special indeed
- iv. It helps in discover new stars: you will find there are group of students who excel at this kind of work and receive a positive feedback from you and their peers. For many of these students, being a star in the academic setting will be a new feeling. That's is a one of kind motivator and can make a big difference in a child life
- v. It makes the teacher to practice what he teaches: improvisation will make the teacher and the school more positive. It also makes the students a better listener in the class room and more open to new directions the class might take.

2.6 Some materials that could be improvised in teaching Biology and their functions

Improvised alternatives for teaching Biology an aid to standard equipment

Table 1

S/NO	Standard equipment	Improvisable alternative	Functions
1	Tripod stand	Unused stove frame	For supporting heating
2	Bursen burner	Kerosene stove	Source of heat
3	Funnel	Plastic bottle open at base	For transferring liquid
4	Plant press	Wood/plywood	For drawing moisture or water away from plants, for construction purpose
5	DNA model	Stripped cardboard	For illustration in genetic
6	Measuring cylinder	Graduated feeding bottle	For measuring liquid volume
7	Diffusion chamber	Syringe, straw, rubber, transparent bottle	For diffusion experiments and rate of diffusion
8	Clinostats	Can of niddo, plank wood , flat wood support and handle	For demonstrating direction of plant growth in response to light
9	Photometer	Graduated wood, cardboard, tube or biro cases, wood stand	For measuring the arte or speed of plant transparent

2.7 Advantages of improvisation

Advantages of using low cost Materials

- I. Use of local materials makes teachers and learners aware of the resources to be found in their environment and stimulates creativity to use them
- II. The experiments and models can be constructed in a very short time, with a few tools with locally available materials even by unskilled persons as part of pre and in service teacher training
- III. The self-construction develops a sense of proud ownership and promote a more frequent used
- IV. Repair and replacement of broken part are possible locally technical or administrative problem
- V. For the shortage, no special storage facility is need, a lockable cupboard is enough. Security is not problem because of low material value.

2.8 Factors affecting Improvisation in Schools

Balogun (2002) identified two main constraints militating against the successful improvisation of science equipment .these are the technical and the human factors respectively. While the technical factors relate to the question of degree of accuracy and precision that is possible with the improvised equipment ; the human factors relates to the teacher's skill in developing the resources while providing the appropriate learning experience to the learners

Also Maduabunmi (2003) reported lack of adequate professional training as a major problem militating against the effective use of local resources for science teaching. Oyediran Isola (2010) then stressed the need for a definite well planned training programme of improvisation for teacher. He suggested regular meaningful workshop on improvisation technique for science teacher to improve and update their competence.

2.9 Summary of the Review and uniqueness of the Study

On the whole, the summary of the review and uniqueness of the study indicated that, improvisation plays a vital role in teaching and learning process from the various disciplines and studies, the concept of improvisation materials are very important to the substance of any education system. The usefulness of improvisation in education system gained support by the Government which led to the policy statement in the national policy of education (1998).

Frequent observations by educationist concerning teacher's ignorance in the use of improvised material to aids learning has become of concern.

Okeowu, Adeniyi (2000) and Onasanya, Adegbija (2006) observed that teachers mostly neglect the use of appropriate improvisation material because of ignorance of their benefit to their students or laziness of the teacher to put things together or because of time.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the methodology adopted by the researchers in carrying out the study; they include, the design of the study, population of the study, sample and sampling technique, instrument used for data collection, validity and reliability of instrument. It is also include method of data collection and analysis.

3.2 Research Design

This research study adopted the descriptive survey research design. The essence of adopting the design for this research was to elicit data from target population. Because, a survey obtains information from a sample of people by meaning of report; that is, the people respond to series of questions posed by the investigator. In this study the information was collected through self administered questionnaires distributed personally to the subjects of the researcher.

3.3 Population of the Study

The population of the study was made up of 31 biology teachers in all the ten (10) selected secondary schools in Sokoto metropolis.

Table 2: Population of the Study

Schools	Number of science teachers	Number of biological teachers
Usmanu Danfodiyo University Model Secondary School	12	3
Unity Demonstration School Rujin Sambo	8	2
Nana Asma'u College	13	2
Government Day Secondary School Rujin Sambo	18	4
Government Day Secondary School Gidan Igwai	5	2
Nakowa international Secondary School Sokoto	6	2
Nana Girls Secondary School Sokoto	14	3
Sultan Bello Secondary school Sokoto	13	4
Sheikh Abubakar Gummi Memorial College Sokoto	10	3
Nagarta college School Sokoto	23	6
Total	122	31

Research Field Study (2015)

3.2 Sample and Sampling Techniques

All the 31 teachers were used in the study. Sampling was not necessary because the population is manageable

Table 3: Respondents of the Study

Schools	Number of Teachers
Usmanu Danfodiyo University Model Secondary School	3
Unity Demonstration School Rujin Sambo	2
Nana Asma'u College	2
Government Day Secondary School Rujin Sambo	4
Government day secondary school gidan igwai	2
Nakowa International Secondary School Sokoto	2
Nana girls secondary school sokoto	3
Sultan b Bello Secondary School Sokoto	4
Sheikh Abubakar Gummi Memorial College	3
Nagarta Gollege School Sokoto	6
Total	31

Research field study (2015)

3.5 Instrument for data Collection

The researchers developed questionnaire for the purpose of gathering data for the research work, The teachers' questionnaire contains twenty (20) items requiring the teacher to respond accordingly which are divided in to two parts, that is part A and B respectively; part are general information of the teachers qualification (s) and

teachers experiences while part B were used to find out if the teacher use their creative idea to improvised relevant materials for teaching Biology.

3.6 Validity of the Research Instrument

The instrument used for data collection in the study was validated by experts from the department of science and vocational educational, suggestion and correction were properly utilized to arrive at a 20- items questionnaire.

3.7 Reliability of the Research Instrument

To ascertain the reliability of the instrument, a test- retest method was used. The instrument was administered to 20 teachers outside the study population after 2weeks the same instrument was re-administered to the same group of teachers. The results of the two test given to teachers from the different schools selected were compared using pears on product moment correlation coefficient, the score yielded 0.70;this was high enough of the instrument to be reliable.

3.8 Method of data Collection

The researchers carried out collection of data with the introduction letter to various selected secondary schools under study. In order to ensure effective collection of data required, personal visitation was used in administration and collection process of questionnaires .31 copies of questionnaire were distributed to the teachers, this

was to ensure easy collection and valid finds; the researchers used the total of 31 teachers which are the total number of Biology teachers in the Schools selected.

3.9 Procedure for data Analysis

Descriptive statistic was used to generate frequencies and percentages of the collected data. The data was presented in tables for easy interpretation

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION

This chapter is composed of data presentation and analysis of data collected through questionnaires distributed to the selected secondary schools within Sokoto metropolis. It also focuses on answering research questions for the study.

4.2 Data Presentation and Analysis

The presentation of data was based on the responses gathered from the questionnaires distributed and collected from the Biology teachers of selected secondary schools in Sokoto metropolis.

Research Question 1: Are instructional materials for teaching biology available in secondary schools in Sokoto state?

TABLE 4: *Availability of instructional materials for teaching biology in secondary schools in Sokoto state*

<i>Responses</i>	<i>Frequency</i>	<i>percentages</i>
YES	17	54.84%
NO	14	45.16%
TOTAL	31	100%

Research field study (2015)

Table 4 shows that 54.84% of the teachers responded YES while 45.16% responded NO, this means there is an availability of instructional materials for teaching and learning biology in their secondary school but not sufficient.

Research Question 2: Are the available instructional materials adequate for teaching of biology in secondary school in Sokoto state?

TABLE 5: Adequacy of instructional materials for teaching of biology in secondary schools in sokoto state

<i>Responses</i>	<i>Frequency</i>	<i>percentages</i>
YES	11	35.48%
NO	20	64.52%
TOTAL	31	100%

Research field study (2015)

Table 5 shows that 35.48% of the respondents responded YES while 64.52% responded NO. This means that there is an adequate instructional material for teaching biology in secondary school in Sokoto state.

Research Question 3: Are teachers in Sokoto state are improvising instructional for teaching biology in Sokoto state?

TABLE 6: Rate at which teachers are improvising instructional materials in teaching biology in Sokoto state

<i>Responses</i>	<i>Frequency</i>	<i>Percentages</i>
YES	18	58.06%
NO	13	41.94%
TOTAL	31	100%

Research field study (2015)

Table 6 shows that 58.06% of the teachers responded YES while 41.94% responded NO. This means that the biology teachers in the selected secondary school state are making use of improvised materials in teaching and learning process but at low rate.

Research Question 4: Is there any differences in the performance of student taught biology using improvised materials and those taught with no instructional materials

TABLE 7: Differences between the performances of students taught with or without instructional materials.

<i>Responses</i>	<i>Frequency</i>	<i>percentages</i>
YES	25	80.65%
NO	6	19.35%
TOTAL	31	100%

Research field study (2015)

Table 7 shows that 80.65% of the teachers responded YES while 19.35% responded NO; this means that there is a great differences in between the performance of the students taught with improvised and those without any instructional aid.

4.3 Summary of Major Findings

Based on the analysis of data collected, the following are the major findings of this study:

- I. There is availability of instructional materials for teaching and learning biology in schools.
- II. There is an adequate instructional material for teaching biology in secondary school in Sokoto state.

- III. The biology teachers in the selected secondary schools in sokoto state are making use of improvised materials in the teaching and learning process but not sufficient.
- IV. There is a great difference between the performance of the students taught with improvised materials and without any instructional aid

4.4 Discussion of Findings

The data collected and findings of this research shows that, there is availability of instructional materials for teaching and learning biology in the secondary Schools but not sufficient; with this, one of the factors that hindered the insufficient of the instructional materials is financial limitation as stated earlier in the summary of the review and the uniqueness of the study of this research .this is a great factors that needs to be care for in other to make the instructional materials sufficient for teaching and learning .another factors that need to be considered is the availability of the resources .

The second finding of this study shows that; there is adequate instructional material for teaching biology in secondary schools selected for this study. However, as stated earlier, the materials resources that should be available in the schools such as Text books, Maps, Audio visual and electronics other instructional materials include Crayon, Chalk, Radio, Tape recorder etc must be in good condition for proper teaching and learning process.

The third finding of this study shows that the biology teachers in the selected secondary schools in Sokoto state are making use of improvised materials in teaching and learning process but not sufficient; that is from result gathered, the biology teachers are trying to improvised materials for their student in the teaching process. The insufficiency here may be as a result of lack of fund, disbursement from the school authority or lack of interest from the learner.

The fourth finding of this study indicates that, there is a great difference between the performance of the student taught with improvised materials and those without any instructional aid. This is simply because concrete learning result to permanent remembrance in the brain than the abstract teaching process. Learning with improvised materials make teaching to be more effective, both the teacher and the learner will gain from it and share more clarification to the subject matter compared to the rote learning 'moreover with reference to all the tables ,the results indicate that improvisation has a great importance in teaching and learning process.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the summary of the study, conclusions and recommendations

5.2 Summary of the Study

The main objective of this research work were to find out the importance of improvisation in teaching Biology in selected senior secondary schools in Sokoto metropolis. The research consist of five chapters; chapter one consist of the introductory part of the research work, the background to the study, the statement of the problem, objective of the study, research questions, significant of the study, scope and the definition of terms; chapter two of this research reviewed related literature on the concept of instructional materials, concept of improvisation with various meaning from different scholars, rationale for improvisation, it also include the importance of improvisation especially to teaching and learning process, tools and improvised materials to be improvised in the teaching and learning of biology, advantages of improvisation, the factors affecting improvisation in schools also identified the summary of the review and the uniqueness of the study.

Chapter three deals with the research methodology, the design of the study, the population of the study, sample and sampling techniques, instrument used was

questionnaire, validity and reliability of instrument was also indicated, Simple percentages were used for data analysis. Chapter four consists of data presentation and analysis using simple percentages. Summary of the major findings were made and discussed. Chapter five of this research consists of the summary of the study, conclusion and recommendations.

5.3 Conclusions

It is clearly evident that the secondary schools in Sokoto metropolis lacked adequate facilities and learning resources. The status of instructional materials, equipment and facilities are inadequate, obsolete, dilapidated and unsuitable for effective teaching and learning process .with this fact it is well known that, using improvised materials in the classroom setting could have a great positive impact in the teaching and learning process.

Inappropriate used of improvisation materials has many effect on teachers and students such as misunderstanding, confusion and inachievement of specified objectives but proper use of it lead to student understanding, interesting in learning process, recognition facts, teaching enhancement, achievement of instructional objective and educational objective in general; more so the entire neighbourhood of the school and community resources should be viewed and utilize for students learning. The teacher should be well trained in making and uses of improvised

materials for effective learning and the authority should provide necessary thing for teachers.

5.4 Recommendations

The following recommendations were made in line with the findings of the study:

- i. Teachers should be resourceful so as to improvised when the original materials are not available
- ii. Improvised materials should be used properly in relation to the topic to be taught
- iii. School authorities should encourage the teachers in making use of improvised materials in the teaching –learning process
- iv. School authority should provide funds to buy the required materials

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APPENDIX

USMAN DANFODIYO UNIVERSITY SOKOTO

FACULTY OF EDUCATION AND EXTENSION SERVICE

DEPARTMENT OF SCIENCE AND VOCATIONAL EDUCATION

TEACHERS QUESTIONNAIRE

We are final year students of Usmanu Danfodiyo University Sokoto, conducting a research on the topic” The importance of improvisation in teaching Biology to secondary school students in some selected secondary schools in sokoto metropolis”. The research is in partial fulfillment of the requirement for the award of Bachelor degree of science Education. Please kindly answer the questions below, make a tick [] or write on the provide space.

Your assistance in completing this questionnaire would be highly appreciated in order to make the study successful, your responses will be treated logically, systematic and confidential.

PART A: BIO DATA OF RESPONDENTS

- 1. Name of school
.....
- 2. Sex : Male [] Female []
- 3. Teaching class (es)
.....
- 4. Qualification (s)
.....
- 5. Year(s) of teaching experience
.....

PART B:

- 6. Do you have instructional materials in your school?
YES [] NO []
- 7. Have you ever used improvised material as an aid in teaching Biology before?
YES [] NO []

8. If yes, what improvised material did you used?
.....And.....
9. Does improvised material impact a positive value in the student?
YES [] NO []
10. Do you compare your students' performance after using improvised materials?
YES [] NO []
11. Do you have well equipped laboratory practical room in your school?
YES [] NO []
12. Does the laboratory practical room in your school motivate you in conducting experiment for your students?
YES [] NO []
13. Does the school environment favour the use of improvised material?
YES [] NO []
14. Does the authority encourage the use of the improvised material?
YES [] NO []
15. Does the school authority provide material for improvisation
YES [] NO []
16. Does the use of improvised material make teaching –learning process easy?
YES [] NO []
17. Do you think the use of improvised material help your students in recalling?
YES [] NO []
18. Do you encourage student to construct improvised materials on their own?
YES [] NO []

19. Do you encourage students to make use of improvised material on their own?

YES []

NO []

20. Do the students comply in using the improvised material?

YES []

NO []