

**ATTITUDE OF BIOLOGY TEACHERS TOWARD IMPROVISATION OF
INSTRUCTIONAL MATERIALS IN SECONDARY SCHOOLS IN ETCHE LOCAL
GOVERNMENT AREA, RIVERS STATE, NIGERIA**

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ABSTRACT

The study examined the attitude of Biology teachers toward improvisation of instructional materials in secondary schools in Etche Local Government Area. Four research questions guided the study. Descriptive survey design was adopted for the study. The population of the study was the entire 25 Biology teachers from 22 public schools in Etche Local Government Area. Due to manageable size of the group, census (total was adopted at the sample size (25). The instrument for data collection was questionnaire titled Attitude of Biology Teachers toward Improvisation of Instructional Materials Questionnaire (ABTTIIMQ). Reliability co-efficient of 0.74 was obtained using Cronbach's Alpha. Research questions were answered with mean and standard deviation. The findings showed that Biology teachers have negative attitude towards improvisation of instructional materials, they do not utilize improvised instructional materials, and it was also revealed that there are numerous benefits of using improvised instructional material in teaching and learning Biology, the findings also showed that there are problems faced by Biology teachers toward improvisation of instructional materials in teaching and learning of Biology in secondary schools. Based on the findings, it was recommended among others that teachers should develop the right attitude toward the improvisation of instructional materials and not overlook its importance in Biology teaching and learning process.

Keywords: Biology teacher, Improvisation, Attitude, Instructional material, Etche

INTRODUCTION

Science is a dynamic human activity concerned with understanding the workings of our world. This understanding helps man to know more about the universe. Without the application of science, it would have been difficult for man to explore the other planets of the universe. Science comprises the basic disciplines such as Mathematics, Chemistry, Physics, and Biology (FME, 2014). Biology remains a central subject that is invaluable in academic and vocational training. Thus, there is no gainsaying that no meaningful industrial and national developments could be achieved without a thorough understanding of the subject as it aids in the synthesis of new substances, and in refining and upgrading of the raw materials the nature has endowed us with (Bibi & Nawaz, 2020). It has also been established that Biology is a prerequisite to pursuing courses such as Medicine, Pharmacy, Nursing Science, Engineering courses, geosciences (Geology and Geophysics) and other science-related courses which are important ingredients to national development and wealth creation. It is therefore imperative that secondary school students are well-grounded in Biology for Nigeria to attain the state of national development it desires and to rank favorably among the committee of nations.

Studies have shown that secondary school students are exhibiting low interest in Biology. This low interest of students in Biology has led to poor achievement in examinations. In our match towards

scientific and technological advancement, we need nothing short of good achievement in Biology at all levels of schooling. Unfortunately, achievement of students in Biology at the end of the secondary school has not improved in the last decade. Branchaw et al (2020) has linked poor achievement trend in Biology particularly to the lack of instructional resources in schools due to poor funding of schools. The poor funding of schools has hindered the principals from providing the teachers with adequate instructional resources. The Federal Ministry of Education (2014) emphasizes the need for teaching and learning of science processes and principles. The policy recommends practical, exploratory and experimental methods of teaching. In this regards, Harendza (2020) stated that the basic tools that science uses in the learning of science processes are the instructional materials. Studies have shown that the use of instructional materials have improved achievement (Biasutti & Habe, 2021). Instructional materials are wide varieties of equipment and materials use for teaching and learning by teachers to stimulate self-activity on the part of the students. The teaching of Biology without instructional materials may certainly result in poor academic achievement. Poor academic achievement in Biology could also be attributed to many factors such as, low interest of students in Biology, inadequate motivation from teacher, lack of adequate supply of instructional material, lack of qualified teachers, use of teacher centered instructional strategies, inadequate use of instructional materials and use of abstract standardized materials. This implies that the mastery of Biology concepts might not be fully achieved without the use of instructional resources that the students are abreast with. Phelps et al (2021) Observed that there is lack of adequate and appropriate instructional resources for effective teaching of Biology in schools. For Espeland and Stige (2021), the poor achievement in Biology was traced to poor usage of instructional resources for Biology teaching and learning, poor state of infrastructure facilities, large class size, poor teaching, use of faulty assessment practice, and inadequacy of quality teachers. Agnes (2013) described a teacher as person who attempts to help someone acquire or change some knowledge, skills, attitude, idea or appreciation. A teacher is a person who imparts knowledge, skills and attitude to someone in a school. A Biology teacher according to David, (2013) is an individual who is trained in pedagogy area Biology to impart knowledge, skill and attitudes to students in an institution. Teachers of Biology in this study are individuals who have been trained professionally in the art of teaching Biology curriculum to students in senior secondary schools.

Attitude is defined as an accumulation of information about an object, person, situation or experience. It is a predisposition to act in a positive or negative way toward some subject (Relich & Martin, 2014). Attitude is an essentially information obtained about someone or something that form an opinion or predisposition about. Owolabi (2014) asserted attitude to be a positive or negative view of a person, place, thing, or event and that people can also be conflicted or ambivalent towards an object, meaning that they simultaneously possess both positive and negative attitude towards the item in question. Instructional materials are also described as concrete or physical objects, which provide sound, visual, or both to the sense organs during teaching. The teaching of Biology cannot be done effectively without interaction between the teacher, students and the environmental resources. The Biology curriculum is planned to enable the teacher use activity oriented, child-centered approach (guided inquiry) to teach Abdullah et al (2021). However, evidence from research has shown that instructional materials, resources and equipment for science, especially Biology are either in short supply or are completely lacking in schools to the extent that most teachers end up with verbal exposition of scientific principles, facts and concepts. Studies have also revealed that the achievement of Nigerian students in Ordinary Level Biology was generally and consistently poor over the years. This has been a major source of concern to the school administrators, parents and the government at large. Biology resources are intensive, and in an era of poor funding or scarcity of resources, it may be very difficult to find some of the original materials and equipment for the teaching of Biology in schools adequately (Abu, 2017). A situation that is further compounded by the galloping inflation in the country, some of the imported sophisticated materials and equipment

are found to be expensive and irrelevant; hence the need to produce materials locally. Researchers such as Alabi and Lasisi (2015) reported that there were inadequate resources for teaching Biology in secondary schools in Nigeria. The authors further stated that the available ones are not usually in good conditions in most cases. According to the author, some of the factory produced/imported instructional materials have also been discovered to be based on foreign ideas and culture. It is against this background that the need to fashion out ways by which local resources can be used for developing instructional materials becomes necessary. There is the need therefore, for improvisation.

According to Maduekwe (2016), improvisation is the provision of alternatives to real things. Improvisation is the making of substitutes when the real equipment or material is not adequate or available. It is the art of providing and using alternative materials or resources in the absence of the real or factory made one. Chukwuka (2013) also defines improvisation as the art of using materials or equipment obtained from local environment or produced by the teacher, and with the assistance of the local personnel to enhance instruction. In other to teach by inquiry method or use activity based instructions, improvisation is required since instructional materials seem not to be adequate. Akano (2015) Further stated that the provision and use of available instructional materials for teaching will lay a sound bases for scientific and reflective thinking among students. The real materials that are the conventional instructional materials are imported or factory made laboratory equipment for science teaching. Examples of conventional instructional materials are: microscope, laboratory reagents, laboratory glassware, Bunsen burner, tripod stand. However, if these conventional Instructional Materials are not available or inadequate, they can be locally made by using resources in the environment as alternative. These will include used electrical bulb for round bottom flask; beverage tins for convex and concave mirror; juices of unripe orange as acid, solution of ash from wood as base, candle or stove as burner, teaspoon for spatula. Improvised instructional materials may not be identical with the conventional one; therefore teachers should be skillful in their handling and using them (Abu, 2017). Improvisation requires a considerable development through imaginative planning and good knowledge. Improvisation serves the following purposes in the education system: It reduces the money spent on the purchase of equipment in educational institutions; ensures the realization of lesson objectives; helps in solving the problem of lack of equipment in educational institutions; gives room for a teacher to demonstrate his creative skills and gives room for the use of cheap local materials as alternatives to the expensive foreign ones. The researcher stated that improvisation encourages students towards the development of creative abilities; strengthen enquiry, discovery and investigative method in sciences; it provides a frame of reference on which students can key their attention during classroom activities; enables teacher to think of cheaper, better and faster methods of making teaching learning process easier for students; affords students the opportunity of becoming familiar with resources in their environment (Phelps et al, 2021).

It is being observed that memorization of facts have replaced experimentation in Biology among students in secondary schools. This is sad because this subject is expected to be life science. But the researcher observed that most Biology teachers do not expose their students to practical work, instead they prefer to teach only theory aspects of Biology concepts and neglect the practical/Laboratory activities that are expected to accompany the theory lessons. The failure to organize practical work for student by their Biology teachers can be attributed to unavailability of Biology laboratory, poor motivation of Biology teachers and deficiency in practical skills required to put the available Biology laboratory equipment into productive use as well as lack of improvised instructional materials. Due to this attitude of Biology students towards the learning of this subject, its advancement and breakthrough remains a hope of many decades to come. Against this foreseen, this study aims to assess the attitude of Biology teachers towards improvisation of instructional

materials in secondary schools in Etche Local Government Area. The following research questions guided the study:

1. What is the attitude of Biology teachers toward improvisation of instructional materials in secondary schools?
2. To what extent do Biology teachers utilized improvised instructional materials in secondary schools?
3. What are the benefits of using improvised instructional material in teaching and learning Biology in secondary schools?
4. What are the problems faced by Biology teachers toward improvisation of instructional materials in teaching and learning of Biology in secondary schools?

LITERATURE REVIEW

Nuhu et al (2021) carried out a study on the Attitude of Biology Teachers towards Improvisation and Utilization of Instructional Materials in Private Secondary Schools in Potiskum Local Government Area. Four research questions in line with the purpose of the study were formulated to guide the study. Descriptive survey research design was adopted for the study. The findings of the study revealed that, Biology teachers give students group projects to produce instructional materials and Biology teachers request that students bring materials in the environment to be used as improvised material during lessons. The findings of the study also revealed that, Biology teacher utilized improvised Visual aids like diagram, charts, posters, pictures and photographs for effective teaching of Biology, and Biology teachers utilized available resource person in the community to improvised instructional materials for teaching Biology. The findings of the study further revealed that, the use of Improvised Biology Materials helps the Biology teachers to capture and sustain the curiosity and interest of the learners towards the lesson in schools and that the use of Improvised Biology Materials helps the Biology teachers to motivate students in the subject being taught. The findings of the study also revealed that, lack of awareness on where to obtain facilities for improvising instructional materials and lack of motivation on part of government for Biology teachers in their efforts towards improvisation of instructional materials for teaching Biology are some of the problems faced by Biology teachers towards improvisation of Instructional Materials for Teaching and Learning of Biology in Private Secondary Schools in Potiskum Local Government Area.

Anyanwu and Alafiatayo (2015) investigated the attitude of Biology teachers towards the production and utilization of instructional materials in the teaching of Biology in Kaduna State. A descriptive survey research design was adopted for the study. Simple random sampling technique was used in selecting one hundred and twenty teachers (120) from 20 secondary schools. A structured questionnaire was prepared, validated and used for collecting data. Percentage and t-test statistics were used in data analysis. Results shows that less than average number of teachers produce instructional materials for use when teaching; few teachers use microscope, magnifying glasses, preserved specimen, models, quadrat and aquarium, and male teachers' perception of utilization of resources is significantly higher than their female counterparts.

Isma'il and Lukman (2022) investigated the availability and utilization of instructional materials in the teaching and learning of Biology in senior secondary schools in Talata Mafara Town, Zamfara State. Five research questions guided the study and a descriptive survey research design was adopted for the study. The findings of the study revealed that some of the required instructional materials are fairly available but are not regularly used by Biology teachers. Biology laboratories and instructional materials relating to multimedia are lacking in most of the schools in Talata Mafara Town. Lack of fund for procurement and large class size coupled with lack of in-service training for serving Biology teachers were major factors identified to inhibit effective provision and utilization of instructional materials respectively.

Amos, et al (2022) examined the impact of instructional materials in teaching and learning Biology in the college of Education in Central Region of Ghana. Qualitative research design was adopted for the study. The population of the study consists of three Biology tutors in the college of Education in the central region. The study concluded that instructional materials boost students' cognitive abilities and arouse their interest in the lesson by helping them to reason critically during teaching and learning. The study also revealed that the competency level of tutors help them in the assessment of the subject, selecting relevant materials for each concept. Their pedagogical skills depend on their competencies in the classroom instructions. The study also concluded that a good presentation of a lesson has a substantial impact on teaching and learning situations, as well as the vast amount of information available to students, to supplement their instruction and the principles for appropriate use of instructional materials.

Effiong et al (2015) carried out a study on the impact of instructional materials in teaching and learning of Biology by SS2 students in Yakur Local Government Area of Cross River State. Four research questions were formulated to guide the study. The descriptive statistical method was employed so as to determine the impact of teacher's effectiveness. Five (5) comparable secondary schools were selected to represent the population of the study. The data collected were analyzed using simple percentage method to verify the research questions formulated for the study. The result of the findings revealed that there is a positive achievement in students with instructional materials. It was recommended that government make available to schools the basic instructional materials as this will enhance an effective teaching and learning process.

Mgbomo (2021) investigated the influence of teacher attributes on problems of improvisation of instructional resources among Biology teachers in secondary schools in Oyigbo Local Government Area of Rivers State. The study was guided by four (4) research questions and three null hypotheses. The study adopted a descriptive survey design. The study also revealed that gender, professional status of teachers, and years of teaching experience had no significant influence on problems of improvisation. Based on the findings, it was recommended, among others, that the teachers show commitment to the job by improvising whenever the need arises.

RESEARCH METHODS

The design adopted for this study was descriptive survey design and the study was carried out in Etche Local Government Area of Rivers State. Etche is one of the 23 Local Government Areas of Rivers State and amongst the 13 federal constituencies representing River State in Nigeria's National Assembly and part of the Rivers East Senatorial District. Okehi is the Council Headquarters and political capital of Etche, while Eberi is the political capital of Omuma. There are 19 political wards in Etche local government and 10 in Omuma. There are several communities and towns in Etche, some of which include: Akwu/Obuor, Eberi, Amaji, Opiro, Chokocho, Elele, Egwi, Afara, Mba, Igbodo, Ofeh, Ohimogho, ObiohiaUmuogba, UmuajulokeOkehi, Obibi, Odufor, Nihi, Okomoko, Ulakwo, Umuakonu, Umuanyagu, Okoroagu, Obite, Umuoye, Igbo, Umuechem, Egbeke and Odagwa. Etche people are basically farmers who use direct labour to handle most of the agricultural activities. Agriculture is mostly not mechanized and the use of tractors for farming these crops has dropped slightly in the 1986–2004 period. The climate of Etche is typical of the tropical rainforest; with rainfall between 160–236cm annually. Wet seasons usually last for 9 months (March–November) with short dry season from December–February. Temperature ranges between 24°C and 38°C, with high humidity. The population of this study consists of all Biology teachers in public secondary schools in Etche Local Government Area of Rivers State. According from the department of statistics, Rivers State Ministry of Education, there are about 22 government owned school in Etche Local Government Area. The total number of Biology teachers in public schools is 25. When the population is small, the entire population serves as the sample. On this note, census was adopted since the population is small and manageable. The sample for the study comprises of 25 Biology teachers

teaching in public schools in Etche local government area. The research instrument used for collection of data for this study was a well-structured questionnaire titled "Attitude of Biology Teachers towards Improvisation of Instructional Materials Questionnaire (ABTTIIMQ)". The questionnaire was divided into two sections, the first section consist of demographic or personal data while the second section was in line with the study objectives, aimed at providing answers to the research questions. Participants were required to respond by placing a tick at the appropriate column. The questionnaire was personally administered by the researcher. The questionnaire was designed using the four 4- point modified Likert-type scale of Strongly Agreed (SD), Agreed (A), Strongly Disagreed and Disagreed (D). Copies of ABTTIIMQ were submitted to three experts in the department of Science Education (Biology) for critical, analytical and logical examination of relevance of the contents. Their contributions were adopted to validate the instrument. The instrument was pilot tested on 20 Biology teachers who were not part of the study area and reliability co-efficient of 0.74 was obtained using Cronbach's alpha. The researchers administered the questionnaires directly to Biology teachers in Public schools. the filled questionnaires were retrieved on the spot, to minimize cost and loss. Descriptive statistics; mean and standard deviation were used to answer the research questions.

RESULTS

Research question 1: What is the attitude of Biology teachers toward improvisation of instructional materials in secondary schools?

Table 1: Mean and Standard Deviation Showing the Attitude Of Biology Teachers Toward Improvisation Of Instructional Materials In Secondary Schools

S/N	Items	Mean	Std.dev	Decision
1.	Biology teachers have no interest in the use of improvised instructional materials.	2.80	.97	Agreed
2.	Biology teachers request that students bring materials in the environment to be used as improvised materials during lessons.	2.21	1.17	Not agreed
3.	Improvisation of instructional materials is too time consuming	1.60	.49	Not agreed
4.	Improvisation of instructional materials is a waste of time	1.19	.40	Not agreed
5.	I feel confident in my ability to improvise instructional materials	1.64	0.48	Not agreed
6.	I feel that improvising instructional materials is a creative outlet for me as a teacher	2.85	0.96	Agreed
7.	Improvisation of instructional materials is only suitable for small class size	1.17	0.41	Not agreed
8.	Improvising instructional materials increases my workload	2.82	0.97	Agreed

Grand mean = 2.03

Table 1 shows the attitude of biology teachers toward improvisation of instructional materials in secondary schools. There is an agreement that biology teachers lack interest in using improvised instructional materials (Mean: 2.80, Std. Dev: 0.97). Teachers do not agree that students should bring materials from their environment for improvisation (Mean: 2.21, Std. Dev: 1.17). It is not seen as too time-consuming to improvise instructional materials (Mean: 1.60, Std. Dev: 0.49). Teachers largely disagree that improvisation is a waste of time (Mean: 1.19, Std. Dev: 0.40). There is a lack of agreement regarding confidence in improvising materials (Mean: 1.64, Std. Dev: 0.48). Teachers agree that improvisation serves as a creative outlet (Mean: 2.85, Std. Dev: 0.96). Grand mean of

2.03 is an indication that teachers have a negative attitude toward improvisation of instructional materials in secondary schools. Research question 2: To what extent do Biology teachers utilize improvised instructional materials in secondary schools?

Table 2: Mean and Standard Deviation Showing the Extent Biology Teachers Utilize Improvised Instructional Materials in Secondary Schools

S/N	Items	Mean	Std.dev	Decision
9.	I cannot teach Biology effectively without the use of improvised instructional materials	1.59	0.80	VLE
10.	I make use of charts and pictures during Biology lessons for easy understanding by the students	1.89	1.13	VLE
11.	I use specimen when necessary for illustration during Biology class/practical	1.81	0.87	VLE
12.	I always teach Biology with models for my students to understand faster	2.00	0.63	LE
13.	Sometimes I teach Biology without any instructional material	1.91	1.06	VLE

Grand Mean = 1.84

VLE 1.0-1.99, LE= 2.0-2.49, HE= 2.50-3.49, VHE= 3.5-4.0

Teachers largely disagree that they cannot teach biology effectively without improvised instructional materials (Mean: 1.59, Std. Dev: 0.80). There is limited agreement that teachers make use of charts and pictures during lessons for better understanding (Mean: 1.89, Std. Dev: 1.13). Teachers generally do not frequently use specimens for illustration during classes (Mean: 1.81, Std. Dev: 0.87). Teachers tend to agree that they teach with models to enhance student understanding (Mean: 2.00, Std. Dev: 0.63). There is a tendency for teachers to sometimes teach without any instructional materials (Mean: 1.91, Std. Dev: 1.06). The grand mean of 1.84 suggests a general tendency among teachers to not prioritize the use of improvised instructional materials and highlights a reliance on traditional methods.

Research question 3: What are the benefits of using improvised instructional material in teaching and learning Biology in secondary schools?

Table 3: Mean And Standard Deviation Showing The Benefits Of Using Improvised Instructional Material In Teaching And Learning Biology In Secondary Schools

S/N	Items	Mean	Std.de v	Decision
14.	The use of improvised Biology materials helps the Biology teachers to capture and sustain the curiosity and interest of the learners towards the lesson in schools	3.52	.67437	Agreed
15.	It helps the Biology teachers to motivate students in the subject being taught	3.73	.44318	Agreed
16.	It helps to improve the overall performance of students in Biology	3.16	.86592	Agreed
17.	The use of improvised Biology materials is not time consuming in the course of lesson presentation in Biology	2.95	.88400	Agreed
18.	There is much retention of memory of what is taught whenever improvised or local Biology materials are used in the teaching of Biology	3.58	.67437	Agreed

Grand mean = 3.03

There is strong agreement that the use of improvised biology materials helps teachers capture and sustain students' curiosity and interest in lessons (Mean: 3.53, Std. Dev: 0.67). Teachers agree that improvised materials motivate students in biology (Mean: 3.73, Std. Dev: 0.44). There is moderate agreement that the use of improvised materials improves overall student performance in biology (Mean: 3.16, Std. Dev: 0.87). Teachers are somewhat neutral regarding the perception that using improvised materials is not time-consuming during lesson presentations (Mean: 2.96, Std. Dev: 0.88). There is an agreement about the notion that using improvised or local materials enhances memory retention of what is taught (Mean: 3.58, Std. Dev: 0.67). The grand mean of 3.03 indicates a general positive perception of the benefits of using improvised materials, particularly in enhancing student motivation and interest.

Research question 4: What are the problems faced by Biology teachers toward improvisation of instructional materials in teaching and learning of Biology in secondary schools?

Table 4: Mean and Standard Deviation Showing Problems Faced by Biology Teachers toward Improvisation of Instructional Materials in Teaching and Learning of Biology

S/N	Items	Mean	Std.dev	Decision
19.	Lack of awareness on where to obtain facilities for improvising instructional materials	3.52	0.66	Agreed
20.	Lack of motivation on the part of government for Biology teachers in their efforts towards improvisation of instructional materials for teaching Biology	3.73	0.44	Agreed
21.	Irregular power supply is a problem to the improvisation of materials (from the internet)	3.17	0.85	Agreed
22.	Most of the Biology teachers lack technical knowledge on how to improvise instructional materials for their teaching	2.96	0.87	Agreed
23.	Biology teachers do not have full access to the available instructional materials	2.90	0.88	Agreed
24.	Lack of funds for buying relevant components for improvisation of instructional materials.	2.94	0.87	Agreed

Grand mean = 3.20

Table 4 presents result on the problems faced by Biology teachers toward improvisation of instructional materials in teaching and learning of Biology in secondary schools. Teachers agree they are not well-informed about where to find resources for improvisation (Mean: 3.52, Std. Dev: 0.66). There is a strong consensus that the government does not adequately motivate teachers in their efforts to create teaching materials (Mean: 3.73, Std. Dev: 0.44). Many teachers identify inconsistent power supply as a significant barrier to accessing online resources. (Mean: 3.17, Std. Dev: 0.85). While there is some agreement, it indicates that many teachers feel they lack the necessary technical skills for improvisation (Mean: 2.96, Std. Dev: 0.87). Teachers feel they do not have full access to available instructional materials (Mean: 2.90, Std. Dev: 0.88). There is a consensus that insufficient funds limit their ability to purchase materials for improvisation (Mean: 2.94, Std. Dev: 0.87).

Summary of Findings

1. Findings shows that Biology teachers have negative attitude towards improvisation of instructional materials in secondary schools
2. Findings shows that Biology teachers do not utilize improvised instructional materials in secondary schools

3. Findings reveal there are numerous benefits of using improvised instructional material in teaching and learning Biology in secondary schools
4. It was also found that there are problems faced by Biology teachers toward improvisation of instructional materials in teaching and learning of Biology in secondary schools

DISCUSSION OF FINDINGS

Attitude of Biology teachers toward improvisation of instructional material.

The study was on attitude of Biology teachers toward improvisation of instructional materials. Table 1 presents result on attitude of Biology teachers toward improvisation of instructional material. There is an agreement that biology teachers lack interest in using improvised instructional materials. Teachers do not agree that students should bring materials from their environment for improvisation. It is not seen as too time-consuming to improvise instructional materials. Teachers largely disagree that improvisation is a waste of time. There is a lack of agreement regarding confidence in improvising materials. Teachers agree that improvisation serves as a creative outlet which recorded means of 2.80, 2.21, 1.60, 1.19, 1.64, and 2.85 respectively. With a grand mean of 2.03, an indication that teachers have a negative attitude toward improvisation of instructional materials in secondary schools. These findings are in line with the work of Nuhu et al (2021) who observed that Biology teachers do not request students bring materials in the environment to be used as improvised materials during lessons. He also revealed that improvisation serves as a creative outlet for Biology teachers, yet they do not have positive attitude toward improvisation.

Extent of utilization of instructional material by Biology teachers

Table 2 presents the data that answered research question 2 on the extent of utilization of instructional materials by Biology teachers in item 9-13. These include, disagreement that they cannot teach Biology effectively without improvised instructional material, limited agreement that teachers make use of charts and pictures during lessons for better understanding, they generally do not frequently use specimens for illustration during classes and they tend to agree that they teach with models to enhance student understanding. And there is also a tendency for teachers to sometimes teach without any instructional materials with means of 1.59, 1.89, 1.81, 2.00 and 1.91 respectively. With the grand mean of 1.84 suggests a general tendency among teachers to not prioritize the use of improvised instructional materials and highlights a reliance on traditional methods. This is in agreement with Isma'il and Lukman (2022) who observed that Biology teachers rarely use improvised instructional materials. Also, that teachers' manipulative skills and technical know-how for proper utilization of instructional materials is not encouraging.

Benefits of using improvised instructional material in teaching and learning of Biology

Table 3 presents result on benefits of using improvised instructional material in teaching and learning Biology in secondary schools which include, strong agreement that the use of improvised Biology materials helps teachers capture and sustain students' curiosity and interest in lessons, an agreement that improvised materials motivate students in Biology, a moderate agreement that the use of improvised materials improves overall student performance in Biology. Teachers are somewhat neutral regarding the perception that using improvised materials is not time-consuming during lesson presentations. There is also an agreement about the notion that using improvised or local materials enhances memory retention of what is taught which recorded means of 3.53, 3.73, 3.16, 2.96 and 3.58 respectively. Items 14-18 had their mean greater than the criterion mean of 3.03. This indicated a general positive perception of the benefits of using improvised materials, particularly in enhancing student motivation and interest. This is in line with Amos, et al (2022) who revealed that instructional materials boost students' cognitive abilities and arouses their interest in the lesson by helping them to reason critically during teaching and learning. Also, Effiong, et al

(2015) further revealed that there is a positive achievement in students with instructional materials. Furthermore, the findings of the study is in line with the work of Nuhu, et al (2021) who reported that the use of improvised Biology materials helps the Biology teachers to capture and sustain the curiosity and interest of the learners towards the lesson in schools and that the use of improvised Biology materials helps the Biology teachers to motivate students in the subject being taught.

Problems faced by Biology teachers toward improvisation of instructional materials

Table 4 presents result on problems faced by Biology teachers toward improvisation of instructional materials in teaching and learning of Biology in secondary schools like an agreement that they are not well-informed about where to find resources for improvisation, a strong consensus that the government does not adequately motivate teachers in their efforts to create teaching materials, also teachers identify inconsistent power supply as a significant barrier to accessing online resources, some agreement indicates that many teachers feel they lack the necessary technical skills for improvisation, and some teachers feel they do not have full access to available instructional materials, and there is also a consensus that insufficient funds limit their ability to purchase materials for improvisation which recorded means of 3.52, 3.73, 3.17, 2.96, 2.90 and 2.94 respectively. With the grand mean of 3.20, it shows that there are problems faced by Biology teachers toward improvisation of instructional materials in teaching and learning of Biology in secondary schools. This finding is in line with the work of Mgbomo (2021) who revealed that finances were impediments to improvisation among the Biology teachers. It also agrees with Isma'il and Lukman (2022) who stated that lack of fund and irregular use of instructional materials by Biology teachers are the problems they faced.

CONCLUSION

The study was on attitude of Biology teachers toward improvisation of instructional materials in secondary schools in Etche Local Government Area of Rivers State, Port-Harcourt, Nigeria. Conclusively, the improvisations of Biology instructional materials are presented as indispensable tasks in the scientific enterprise to enrich the teaching and learning of Biology as a subject. The Biology teacher must improvise, produce and use both materials and ideas to aid instruction at all times. Some issues which could aid adequate training of teachers in improvisation and utilization of available Biology resources should be highlighted in the teacher education curriculum and instructions.

Educational implication of findings

The findings of the study have obvious implications thus:

- The negative attitude towards improvisation of instructional materials in secondary schools may result in an over-reliance on textbooks and standard curricula. This can limit critical thinking and creativity as students are not encouraged to explore beyond the written material. It can hinder teachers' willingness to seek professional development opportunities related to innovative teaching strategies, stunting their growth and effectiveness.
- Biology teachers not utilizing improvised instructional materials in secondary schools may hinder students not developing essential interpersonal skills and Biology teachers may become stagnant in their teaching methods and this can limit their professional growth and also lead to a lack of innovation in the classroom.
- The benefits of using improvised instructional materials in teaching and learning Biology in secondary schools can help students see relevance of Biology to their daily lives, which enhances retention and application of knowledge. It can also foster an innovative mindset, which is essential in scientific inquiry and problem-solving. This benefit can also help students

to develop a solid understanding of abstract concepts, leading to better academic performance.

- The problems faced by Biology teachers towards improvisation of instructional materials in teaching and learning of Biology in secondary schools can hinder teachers' ability to create effective improvised resources, resulting in a reliance of textbooks and lectures and this restricts student engagement and practical experiences. This problem can make teachers lack the necessary skills or knowledge to effectively improvise materials and this can also lead to ineffective teaching practices and a failure to inspire students in their understanding of Biology.

RECOMMENDATIONS

Based on the findings on the attitude of Biology teachers toward improvisation of instructional materials in secondary school; the following recommendations were made:

1. Biology teachers should have should be encouraged to develop the right attitude towards improvisation of instructional materials
2. Biology teachers should learn to use improvised instructional materials whenever the original materials are not available.
3. Due to the enormous benefit of using improvised instructional materials, which include sustenance of students' interest and curiosity, its use should be regular
4. All stakeholders involved in Biology teaching and learning in secondary school should cooperate in finding solution to the problem of improvisation

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