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Availability And Utilization Of Biology Teaching Resources In Secondary Schools In Dekina Local Government Area, Kogi State.

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ABSTRACT

The study investigated availability and utilization of Biology teaching resources in secondary schools in Dekina Local Government Area of Kogi State. The study adopted descriptive survey design with two research questions answered. The population for the study was 250 teachers in Dekina Local Government Area of Kogi State and a sample size of 80 teachers which was drawn using the disproportionate stratified random sampling technique. The instrument for data collection was a 13-item questionnaire validated by three experts and it gave a reliability coefficient of 0.75 obtained using Cronbach Alpha method. The data collected were analyzed with mean and standard deviation. The findings showed low availability of Biology teaching resources and facilities and that even their utilization was at a low extent. It was then recommended that Biology teachers should imbibe the practice of improvisation since there is low availability of Biology teaching resources and facilities, school principals should through the help of Parent Teachers; Association build laboratories for schools that currently have no laboratories in order to enhance the teaching and learning in all science areas especially Biology in Dekina, the government should do well to carry out strategic mapping of Kogi State and provide standard science schools in each ward where possible or better still two science schools in each local government area for quality educational provision to her populace etc.

Keywords: Biology, teaching resources, senior secondary schools

INTRODUCTION

Science is doing and involves regular hands-on practical work for learners to develop scientific literacy to face global challenges. Aleyideino, (2020) 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 (FRN, 2016) states that science education shall emphasize the teaching of science processes 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, 2012).

In the study of Biology as an integral branch of science, the facilities and equipment 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, 2020). 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, 2019).

According to Ogunkola and Olatoye (2014) practical work is the back-bone of effective science teaching and learning. It has been repeatedly emphasized that scientific enterprise is an activity packed in one compartment 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. Again, Ogunkoya and Olatoye (2014) 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. They said that 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 (2019) said that teaching of Biology involves three major domains of educational objectives namely cognitive, affective and psychomotor. It was 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 equipment. Mustapha (2021) stated that practical work in school science provides learners with opportunities to use scientific equipment to develop basic manipulative or inquiry activities and develop problem-solving attitudes needed for future work in science.

Also, Etukudo, (2014) 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. Furthermore, it was said that the use of instructional materials which laboratory techniques offer, enhance better understanding of the curriculum content. Etukudo (2014) 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 of learners. Ige (2010) noted that Biology teacher is an indispensable human resource who has a vital role to play in the utilization of all other resources and therefore must be aware of various types of facilities available. The teacher must also know to get the equipment/facilities and the situations where they can effectively be put to use. However, Ivowi, (2019) observed that the lack of science teaching equipment 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 Etukudo, (2014) believes that practicing Biology teachers who are not trained within 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, hence, the study in progress.

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, (2019) secondary school laboratories and equipment 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, 2019). Based on this, students always perform very poor in the practical part of their examination thereby leading to poor academic performance in Biology as affirmed by (Nworgu, 2019) and this could be connected to the level of availability and extent of utilization of teaching resources in secondary schools. Thus the focus of this study is to investigate the availability and utilization of Biology teaching resources in senior secondary schools in Dekina Local Government Area of Kogi State. Specifically, the study sought to achieve the following objectives:

1. To investigate the level of Availability of Biology teaching Facilities in Senior Secondary Schools in Dekina Local Government Area, Kogi State.
2. To determine the extent of utilization of biology teaching resources in Senior Secondary Schools in Dekina Local Government Area, Kogi State.

The following research questions guided the study:

1. What is the level of availability of Biology teaching Facilities in Senior Secondary Schools in Dekina Local Government Area, Kogi State?
2. What is the extent of utilization of biology teaching resources in Senior Secondary Schools in Dekina Local Government Area, Kogi State?

RESEARCH METHODS

The study was carried out in secondary schools in Rivers State, Nigeria, particularly, in ten (10) secondary schools in Dekina Local Government Area of Kogi State. The study adopted descriptive survey design. The population for the study was made up of 250 secondary school teachers in Dekina Local Government Area, Kogi State. The sample for the study is made up of 80 secondary school teachers in Dekina drawn using the stratified disproportionate sampling technique. The instrument used by the researchers for data collection was a questionnaire titled: Questionnaire on Availability and Utilization of Biology Teaching Facilities and Resources in Senior Secondary Schools in Dekina Local Government Area of Kogi State (QAUBTFRSSSDLGKS) which was constructed by the researchers. It consist of 13-items which were arranged in two sections A and B. Section A contains the biodata, while section B consists of two subgroups on the level of availability of biology teaching facilities and on the extent utilization of Biology teaching resources in senior secondary schools in Dekina Local Government Area of Kogi State. The questionnaire was built on a modified four-point Likert Scale in two dimensions, namely: Very High Level Availability (VHLA), High Level Availability (HLA), Low Level Availability (LLA) and Very Level Low Availability (VLLA) and Very High Extent (VHE), High Extent (HE), Low Extent and Very Low Extent (VLE) while the levels of responses were weighted as 4, 3, 2, 1 respectively. The instrument was face validated by three experts; one from Measurement and Evaluation Unit, one from Curriculum and Instruction unit of Educational Foundations Department and another from the Biology Education Unit of Science Education Department of Prince Abubakar Audu University, Anyigba. The suggestions given were used in producing the final copy of the instrument. Cronbach alpha was used in calculating the reliability to determine the internal consistency which gave an alpha value of 0.75 which was considered high after it was administered on ten secondary school teachers in Ankpa Local

Government Area. The instrument was administered and collected back by the researchers on the spot. The data obtained were analyzed using, mean and standard deviation for answering the research questions. Hence, $4+3+2+1=10/4=2.5$. Therefore, items whose mean were less than 2.5 were seen as and Low Level Availability (LLA) for research question 1 and Low Extent (LE) for research question 2 responses as those whose mean were 2.5 and above were seen as High Level Availability (HLA) for research question 1 and High Extent (HE) for research question 2 responses respectively.

RESULTS

Research Question 1: *What is the level of availability of Biology teaching facilities in senior secondary schools in Dekina Local Government Area, Kogi State?*

Table 1: Mean and Standard deviation on Level of Availability of Biology Teaching Facilities in Senior Secondary Schools in Dekina Local Government Area of Kogi State

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S/N	Items	Mean	SD	N	Remark
1.	Laboratories	1.7	0.89	LLA	80
2.	Specimen collection	2.6	0.93	HLA	80
3.	Models and charts	2.37	0.96	LLA	80
4.	Textbooks and other reference materials	1.8	0.89	LLA	80
5.	Audio-visual resources	2.1	0.98	LLA	80
6.	Field trip	2.08	0.91	LLA	
	Grand mean and Standard Deviation	2.10	0.92		

Source: Field Survey, 2025

The results on table 1 above showed that the respondents perceived that the level of availability of Biology teaching facilities was low based on the grand mean (2.10). The result indicated that the most available facility for teaching Biology in senior secondary schools in Dekina was specimen collection and followed by others in the order listed below: models and charts, audio-visual resources, field trip, textbooks and other reference materials and laboratories in that order. The results clearly showed that the facilities available for teaching Biology in Dekina Local Government Area of Kogi State was low and showing it is inadequate. The implication is that the science student level of the preparedness for the world ahead would be very low and it would also be a herculean tasks for Biology teachers to communicate the curriculum contents to their students due to shortage of teaching aids. Thus, it becomes important for education stakeholders in the area to close-up the gap in availability of facilities by providing needed resources

Research Question 2: *To determine the extent of utilization of biology teaching resources in senior secondary schools in Dekina Local Government Area, Kogi State.*

Table 2: Mean and Standard deviation on the Extent of Utilization of Biology Teaching Resources in Senior Secondary Schools in Dekina Local Government Area of Kogi State

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S/N	Items	Mean	SD	N	Remark
1.	Laboratory facilities	3.05	0.78	HA	80
2.	Visual aids	2.6	0.93	HA	80
3.	Digital resources	2.38	0.96	LA	80
4.	Field trip and outdoor activities	1.76	0.89	LA	80
	Grand mean and Standard Deviation	2.44	0.89		

Source: Field Survey, 2025

The results on table 2 above showed that the respondents perceived low extent of utilization of Biology teaching resources in senior secondary schools based on the grand mean (2.44). The result showed that the most utilized facility for teaching Biology in senior secondary schools in Dekina was the laboratory followed by visual aids, digital resources and field trip was the least utilized. The results may be pointing to the fact that most senior secondary school biology teaching resources are either not utilized or where they are in use, there is the challenge of underutilization. It therefore implies, that teachers need to learn how to maximize the utilization of teaching resources in Biology to aid them to communicate effectively to their students, reduce time for teaching and save energy perhaps, and were they do not have knowledge on how to use such materials, it would be required that they go for in-service training to enhance their competence and capability in teaching Biology in senior secondary schools in Dekina Local Government Area of Kogi State.

DISCUSSION OF THE FINDINGS

The result on table 1 above showed low level availability of Biology teaching facilities in senior secondary schools in Dekina Local Government Area of Kogi State. The result from this study revealed that teaching resources are low in the level of availability in senior secondary schools in Dekina Local Government of Kogi State. The result indicated that the facility with the highest level of availability for teaching Biology in senior secondary schools in Dekina was specimen collection while others like models and charts, audio-visual resources, field trip, textbooks and other reference materials and laboratories follow in that order. This means that the availability of laboratories stands at the lowest level here. This finding is confirmed by the study carried out by Etuk (2018) who found that secondary schools in Nigeria have low availability of teaching resources and equipment for Biology. In another study, it was revealed that 60% of some selected secondary schools in Dekina LGA lack physical laboratories for conducting Biology practical (Adeyemi, 2016). This means that, non-availability of Biology laboratory implies that Biology practical is not being conducted in such schools, thus, leading to the situation where the principals' offices are used for conducting practical and for the storage of the few laboratory equipment and other instructional materials in some schools. This implies that the teacher and the students would have to constantly convey the instructional materials to the classrooms if they are to be used in cases where the principals' offices cannot contain the number of people to participate in the practical process. The stress involved in this kind of situation may discourage Biology teachers to use available teaching resources, the damage done to the equipment and even the reduced motivation felt by the students towards learning Biology as a subject are enough problems. Therefore, education stakeholders have a lot to do in ensuring that Science equipment and the laboratories to house them are provided as well as

training should be provision made for the teachers for better productivity and their use of improvisation for higher performance of the students.

The result on table 2 above indicated that there was low extent of utilization of Biology teaching resources in senior secondary schools in Dekina Local Government Area of Kogi State. The result showed that the most utilized facility for teaching Biology in senior secondary schools in Dekina was the laboratory then visual aids, digital resources and field trip as the least utilized. This by implication is indicating that even when the laboratory was the most utilized facility, yet, its availability cannot be guaranteed in most schools as found in the result on table one above. Even other resources and facilities do not enjoy full utilization based on the result presented on the same table. This result is confirmed by the findings of (Oboh, 2018; 2017; Oyetunde, 2018) who found in separate studies that instructional materials in form of audio-visuals are mostly not available in secondary schools and are such are not being utilized by teachers for teaching and learning process. The implication of the findings of this study is that the teachers in who teach Biology in secondary schools in Dekina would be struggling to effectively communicate with their students while the students on their part may not be able to learn much from every instructional delivery opportunity due to the barriers the low utilization of Biology teaching facilities and resources pose. So, it is pertinent that concerned persons from the locality should come together and ensure provision of facilities and the training of teacher to be competent in the utilization of such facilities.

CONCLUSION

Based on the research findings of this study, it could be concluded that Biology teaching resources and facilities should be made available to schools in Dekina Local Government Area of Kogi State. The teachers of the subject should be exposed to trainings that would enhance their competence and capacity in order to deliver adequately to the students what they need to learn both in the classroom teaching and learning and in practical sessions. Morseo, it is encouraged that the government should put more effort in providing laboratory facility for schools in the area while concerned persons should compliments the effort of the government by providing teaching resources that supports adequately the teaching and learning of Biological Sciences in secondary schools in Dekina Local Government, Area, Kogi State.

RECOMMENDATIONS

The following are the recommendations given based on the findings of this study:

1. Biology teachers should imbibe the practice of improvisation since there is low availability of Biology teaching resources and facilities.
2. School principals should through the help of Parent Teachers' Association in the schools should build laboratories for schools that currently have no laboratories in order to enhance the teaching and learning in all science areas especially in Biology in Dekina.
3. The government should do well to carry out strategic mapping of Kogi State and provide standard science schools in each ward where possible or better still two science schools in each local government area for quality educational provision to her populace.
4. Teachers should do well to seek further training that would enhance their competence and capability in lesson delivery.
5. Individuals in the locality who have interest in advancing the course of education of the students from the area should partner with the school to provide needed facilities and resources they can afford to better the lot of their people.

REFERENCES

- Adeyemi, T. O. (2016). Science Laboratories and the quality of output from Secondary School in Ondo state Nigeria. *Sokoto Educational Review* 8 (1) 8187.
- Abdurahman, H. (2019) The Relationship between Laboratory Facilities availability and Students Academic Performance and Attitude in Biology in Mani Educational zone, Kastina State. Unpublished seminar paper, in Science Education. Presented to the Department of Science

- Education, Ahmadu Bello University, Zaria.
- Aleyideino, S.C. (2020). Teacher Production, Utilization and turnover pattern in Educational System in Nigeria, Kaduna. National Commission for Colleges of Education.
- Etuk, G.K (2018). A survey of Material Resources for Teaching around Uyo. STAN Journal 22 (2).
- Etukudo E.U. (2014). The effect of Laboratory and Discussion methods of Teaching on Students Performance in Mathematics at the Secondary School level. Journal of Teacher education 12:32-37.
- Ige, T.A. (2010). Boosting Resource Utilization in biology Classrooms, 41st Annual Conference Proceedings of Science Teachers Association of Nigeria 141-145.
- Ivowi, V.M.O. (2019). Beyond enriching Science, Technology and Mathematics Educational Content. 40th Annual Conference Proceedings of Science Teachers Association of Nigeria.
- Milgwa, D.M (2020). Assessment of the Knowledge and Practice of Safety Measures amongst Welders in Kaduna metropolis. Master in Public Health (M.PH) thesis. Ahmadu Bello University, Zaria.
- Mustapha, M.T. (2021). Integrated Science Lecturers' Perception of Practical work Assessment Practices in Colleges of Education in Nigeria. Journal of Teacher Education 10(1) 1-12.
- Nworgu, L.N. (2019). Diagnosis of Students' Difficulties in Biology Practical. 40th Annual Conference Proceedings of Science Teachers Association of Nigeria.
- Oboh, F.O. (2018). The Need of Improvised Teaching Aid for Effective Teaching – Learning of Biology. Bichi journal Education 8 (1) 64-69.
- Federal Republic of Nigeria (FRN, 2016). National policy of education. Yaba: NERDC Press.
- Ogunkola, B.J. and Olatoye, R.A.(2014) Student Gender Self-Concept and Attitude Towards Science as Predictors of Performance in Practical Biology Tasks. Sokoto Educational Review 7:124-125.
- Oyetunde, A.A (2018). School Size and Facilities as Correlate of Junior Secondary School Student's Performance in Oyo state. Nigeria. Pakistan Journal of social sciences 5 (8) 836 – 840
- Ughamadu, K.A. (2012). Curriculum Concept Developments and Implementation. Onitsha, Nigeria. Emba Publishing Company Limite