

Assesment Of The Utilisation Materials For Teaching Agricultural Sciene In Senior Secondary Schools In Kaduna State, Nigeria

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ABSTRACT

This research study was carried out to determine the extent of the utilization of instructional materials for teaching agricultural science in senior secondary schools in Kaduna State, Nigeria. The study was guided by two specific objectives, two research questions and one null hypothesis. Descriptive survey research design was used for the study. The population of the study was fifteen thousand (15,000) agricultural science teachers and students. Three hundred and ninety (390) agricultural science teachers and students were sampled using multistage sampling procedure. The data collected were analysed using frequency counts and percentages to answer the research questions. The null hypothesis was tested using regression analysis at 0.05 level of significance. The result of the study affirmed that utilization of instructional materials have significantly affect teaching of agricultural science in senior secondary schools in Kaduna State. Effectiveness of instructional materials, number of learners per class, resourcefulness of teachers were the factors that affect the use of instructional materials. It was recommended that, school authorities, zonal education offices and government in collaboration with Kaduna State ministry of Education should organize and sponsor training and retraining programmes through workshops, seminars for teachers on utilization of instructional materials for teaching agricultural science in schools.

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Introduction

In the present world, functional education provides the basic instrument for gainful employment, personality progress, economic prosperity and positive interpersonal relationships, while lack of it, signifies ignorance,

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underdevelopment, crime, poverty, frustration, among others. Effective teaching may be unavoidable without functional instructional materials to enhance innovative production in modern fields such as agricultural science Idris, (2016). Education is the focal point to a country genuine growth and development for every Nigerian child. The teachers who are to implement the curriculum are expected to use a wide range and quality instructional materials for effective and efficient teaching.

Instructional materials comprise all available and accessible practical and skill-oriented resources which facilitate learning and acquisition of knowledge, Olufunke, (2018). These materials also assist teachers in transmitting facts, skills, attitude and knowledge to the learners within the instructional system. Jubay (2014) asserted that these instructional materials are essential for teaching vocational and technical subjects in schools. Such materials must be utilized in the teaching process to achieve the objectives of teaching. Esu, Enuokoha & Umoren (2004) warned that without the use of instructional materials, tools and facilities in teaching vocational and technical subjects in schools, certain skills that might be acquired for entry into vocational occupation areas might not be imparted, it therefore, means that these instructional materials are necessary for vocational skills to be learned by students.

According to Zhan, et al. (2015) and Umaru, (2011), instructional material used in agricultural science can be classified into two classes; visual and audio – visual. The visual instructional materials are those materials that can be clearly seen with our eyes vividly. Examples of visual instructional materials are; chalkboards, agricultural textbooks, charts, models, specimen, practical farm or school garden, survey equipments, simple farm tools, farm machinery, cages for small animals, feeding trough and samples of soil and rock. While audio – visual instructional materials are those that we can hear and see, by producing sound that the sound are expressed in thought. They appeal to human senses of hearing and seeing. Examples of audio – visual instructional materials are; tapes, video, television projectors and motion pictures. Instructional materials can also be print and non – print items that are designed to convey information to students in the educational process, Ogbu, (2015).

Utilization according to Ishaku (2017), is the primary strategy by which transformation of a set of input use into goods or services and creates value of things. Utilization, in the context of this research refers to the rate or how often an instructional material in agricultural science is put into use or services by teachers and students of agricultural science to create meaning in students learning. This means that utilization of instructional materials is the act of using and applying the available instructional materials in the actual teaching and learning process. Where instructional materials are supplied for instructional use, teachers are expected to utilize them to support a smooth and meaningful flow of instruction and promote understanding of the content being taught (Kumar et al., 2021; Ojo, 2013). When instructional materials are not utilized, effective teaching and permanent learning are difficult to take place, because students cannot actively participate in a way that challenge them to think creatively, Abdul – Raheem, (2016).

Ifeako, (2016), explained that to promote technological development for self – reliance, there should be opportunities for technical innovations. These innovations are only possible where instructional materials are utilized, which

reinforce learning and permit high level creativity in the learners. Dwivedi et al. (2022) and Marojos et al. (2016), noted that Utilization of equipment and tools for practical oriented subject like agricultural science is very necessary. Students always remember what they have learned, using these facilities and it enhances active participation since the trainees are actively involved in the teaching and learning process.

Jiriko, Olorunaiya, Nwafulugo & Omengala, (2015) outline steps to be taken in utilizing instructional materials, which include: (a) they should be used in relation to lesson objectives; (b) instructional materials should be used as supplement to and not substitute to the teacher; (c) instructional materials should be used only when necessary; (d) varied materials should be employed when necessary; (e) preserve materials carefully after use and (f) instructional materials to be used must be in good order. Daudu (2012), outline six importance of using instructional materials. These include: (a) they make learning more permanent; (b) they help students develop interest in the subject; (c) they offer a reality of experience, which stimulates self-activity on the part of the students; (d) they develop a continuity of thought; (e) they contribute to growth, hence to vocabulary development and (f) they provide experiences not easily obtained through other materials and contribute to the efficiency depth and variety of learning.

Zakari, (2015), further posits that when using instructional materials, it is important that agricultural science teachers ensure that the material is accurate and acceptable to the students. preview such materials before using them in the class, arrange the material in such away that the students will see it from the place they are sitting, use the materials in the appropriate time in the lesson and after that remove them, do not use only one type of instructional material to the exclusion of others. Ensure there is a change and variety and always remember that students are different in age, interest and experience. According to Yohanna, (2017), in determining the instructional materials to be used for conveyance of information in agricultural science, the following factors affect the use of instructional materials: (i) nature of the subject matter and the objective to be attained, (ii) number of learners involved in learning activities, (iii) facilities and materials available, (iv) interest of agricultural science teachers, (v) ability of agricultural science teachers and (vi) effectiveness of instructional materials used in teaching; among others.

Effective transfer of practical skills and other learning skills by the teachers to students in agricultural science required the use of relevant instructional materials. This implies that technological changes have always necessitated the need for continuous provision and use of instructional materials to meet the societal needs. Despite the usefulness of instructional materials in teaching and learning, the researchers have taught for number of years and through interaction with agricultural science teachers and students observed that, most agricultural science teachers have lukewarm attitude on the use of instructional materials. This condition can lead to ineffective teaching and learning in senior secondary schools in Kaduna State. This study was therefore undertaken to find out the extent of utilization of instructional materials.

Objective of the Study

The specific objective was to;

- i. Determine the extent to which teachers make use of instructional materials in teaching agricultural science in senior secondary schools in Kaduna State.
- ii. Examine the factors affecting the use of instructional materials in teaching agricultural science in senior secondary schools in Kaduna State.

Research Question

The study answered the following question;

- i. What is the extent of the use of instructional materials by teachers in teaching agricultural science in senior secondary schools in Kaduna State?
- ii. What are the factors affecting the use of instructional materials in teaching agricultural science in senior secondary schools in Kaduna State?

Research Hypothesis

The extent of instructional materials utilization has no significant effect on teaching agricultural science in senior secondary schools in Kaduna State

Method

Research Design and Area

Descriptive research design was adopted for the study, Kaduna State, Nigeria was the study area. The state has ministry of Education that takes charge of education matters. This ministry of Education is sub-divided into twelve education zones for easy management and supervision of secondary Schools.

Population of the Study

The population of the study was all agricultural science teachers and students of senior secondary School II, (SSS II). The population size was 372 teachers and 14,628 students, given a total population of 15,000.

Sample of the Study

A sample of 390 SSS II Agricultural Science teachers and students were selected as sample of the study based on the recommendation of Glenn (2009), using his table of sample size determination for survey research. Multistage sampling technique was used to select the respondents. In the first stage, six (6) education zones out of the twelve (12) educational zones in Kaduna State were randomly selected. The second stage involved the random selection of sixty (60) education zones using proportion sampling procedure. In the third stage, 390 respondents were sampled, comprising of 60 teachers and 330 students, who were selected using proportion sampling procedure.

Instrumentation

A structured questionnaire was constructed and used by the researcher for collection of data. The questionnaire was divided into three sections; section A, B and C Section A Sought information on bio-data of the respondents, section B Consisted of 11 items which sought information on the extent of the use of instructional materials by teachers and students. Section C consisted of 13 items

which sought information on the factors affecting the use of instructional materials.

The questionnaire was face validated by two research experts in the department of vocational and technical Education, Ahmadu Bello University, Zaria, and two experts from Department of Psychology/Guidance and counselling, Ahmadu Bello University Zaria. The questionnaire in section B has four rating scale of very often (VO), Often (OF), Rarely used (RU), Not used (NU). The questionnaire in section C were designed on continuous rating scale of the number of question items responded.

Data collected and analysis

The 390 sampled agricultural science teachers and students responded to all the items in the questionnaires. The data were analyzed using frequency counts and percentage. The null hypothesis was tested using regression analysis at the probability level of 0.05 level of significance.

Results

Research question 1: What is the extent of the use of instructional materials for teaching agricultural science in senior secondary schools in Kaduna State?

Table 1: Extent of instructional materials usage for teaching agricultural science in senior secondary schools in Kaduna State.

Items	Very often	Often	Rarely use	Not use
Simple farm tools (32/390)8.20%	(24/390)6.15%	(271/390)69.50%	(63/390)16.15%	
Irrigation tools (8/390)2.10%	(19/390)4.87%	(103/390)26.40%	(260/390)66.66%	
Relevant agric. Textbook (7/390)1.79%	(98/390)25.13%	(264/390)67.69%	(21/390)5.39%	
Agricultural albums (34/390)8.72%	(65/390)16.67%	(197/390)50.51%	(94/390)24.10%	
ICT equipments (307/390)78.72%	(0/390)0.00%	(14/390)3.59%	(69/390)17.69%	
Functional chalk/smartboards (0/390)0.00%	(296/390)79.90%	(85/390)21.79%	(9/390)2.31%	
Samples of soil and rock (8/390)2.05%	(93/390)23.85%	(210/390)53.85%	(79/390)20.25%	
Agric sci. lab. Equipments (98/390)25.13%	(42/390)10.78%	(51/390)13.07%	(199/390)51.10%	
Livestock production units (246/390)63.07%	(19/390)4.87%	(54/390)13.85%	(71/390)18.21%	
Crop production units (100/390)25.64%	(46/390)11.79%	(187/390)47.95%	(57/390)14.62%	

Farm consumables (72/390)18.46%	(55/390)14.10%	(71/390)18.21%	(192/390)49.23%
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Field Study, 2019

Table 1: shows the extent to which instructional materials are used in the teaching of agricultural science in secondary schools, Kaduna State. The result indicates that only chalkboard/smart boards (75.9%) were the most frequently used instructional materials. However, simple farm tools (69.55%), good and relevant textbooks (67.69%), samples of soil and rock (53.85%), agricultural albums (50.51%) and crop production units (47.95%) were instructional materials often used for teaching agricultural science. Rarely used instructional materials were irrigation tools (66.66%) and farm consumables (49.23%). Similarly, ICT equipment (78.72%) and livestock production units (63.07%) were not use by teachers for teaching agricultural science in secondary schools in Kaduna State.

Research question 2: What are the factors affecting the use of instructional materials in teaching Agricultural Science in Senior Secondary School in Kaduna State.?

Table 2: factors affecting the use of instructional materials in teaching Agricultural Science in Senior Secondary Schools in Kaduna State.

S/no	Items	Response
1.	Effectiveness of instructional materials	(318) 81.54%
2.	Number of learners	(274)70.26%
3.	Resourcefulness of teachers	(261) 66.92%
4.	School facilities	(259) 66.41%
5.	Teacher interest	(254) 66.13%
6.	Teacher ability	(246) 63.08%
7.	Nature of subject matter	(238) 61.03%
8.	Students' interest	(232) 59.49%
9.	Fund allocation	(229) 58.72%
10.	Student background	(217) 55.64%
11.	Period allocation	(211) 54.10%
12.	Water supply	(175) 44.87%
13.	Power supply	(96) 24.62%

*Multiple responses. Field Study, 2019

Table 2: Revealed that effectiveness of instructional materials (81.54%) was ranked as the first factor affecting the use of instructional materials for teaching agricultural science in Kaduna State senior secondary schools. Other factors were number of learners per class (70.26%), resourcefulness of teachers (66.92%), school factors (66.41%) teachers' interest (65.13%), teachers' abilities (63.08%) and nature of the subject matter (61.03%). The result further shows that students' interest (59.4%), fund allocation (58.72%), students' background (55.64%) and period allocation (54.10%) were other important factors affecting the use of

instructional materials. Similarly, water supply (44.87%) and power supply (24.62%) were among factors ticked by the respondents.

Test of hypothesis

H₀₁: The extent of instructional materials utilization has no significant effect on teaching agricultural science in senior secondary schools in Kaduna State.

Table 3: Regression analysis showing the extent of instructional materials utilization for teaching agricultural science in senior secondary schools in Kaduna State.

Variables	Coefficients	SE	T	Sign
Simple farm tools	0.546	0.312	1.750	0.002
Irrigation tools	0.487	0.143	3.406	0.001
Relevant agric. Textbooks	0.352	0.108	3.259	0.001
Agricultural albums	0.512	0.221	2.317	0.003
ICT equipments	0.386	0.146	2.644	0.071
Functional chalk/smart boards	0.471	0.210	2.243	0.000
Soil & rock samples	0.391	0.203	1.926	0.001
Agric Sci. lab. Equipments	0.472	0.131	3.603	0.002
Livestock production units	0.511	0.260	1.965	0.135
Crop production units	0.289	0.102	2.833	0.001
Farm consumables	0.321	0.171	1.877	0.001

$R^2 = 0.532$ Adj $R^2 = 0.531$ α 0.05 level of significance. Field study, 2019

The regression analysis in Table 7 above shows that the R^2 of value was 0.532 and the adjusted R^2 of 0.531 representing 53%, which explain the total contribution of the independent variables (utilization of instructional materials). All the instructional materials included in the model were significant at 0.05 of the total number of the instructional materials studied, the coefficients which show the percentage contribution of each variable indicate that, one unit increase in simple farm tools will increase their utilization for teaching agricultural science by (0.546 or 55%). Irrigation tools (0.487 or 49%), relevant textbooks (0.352 or 35%), agricultural album (0.512 or 51%), ICT equipment (0.386 or 37%), functional chalkboard/smart boards (0.471 or 47%) will increase utilization of instructional materials by their corresponding coefficients other variables include; soil and rock samples (0.391 or 39%), agricultural science laboratories equipments (0.472 or 47%), livestock production unit (0.511 or 51%), crop production unit (0.289 or 29%) and farm consumables (0.321 or 32%).

Discussion

The result of research question 1 in table 1 revealed that chalkboard/smart boards were the most frequently used instructional materials. However, simple farm tools, samples of soil and rock, agricultural albums and crop production units were instructional materials often used for teaching agricultural science. This finding implied that there was low use of instructional materials for teaching agricultural science in senior secondary schools as only chalkboards/smart boards

were most frequently used. This finding supports the findings of Jiroko et al. (2015), who found that secondary schools are lacking behind in terms of acquisition and usage of available instructional materials in agricultural curriculum delivery. The finding was further supported by that of Daudu (2012) who observed that the instructional materials mostly used by teachers to facilitate learning are chalkboards, textbooks, pictures, charts. This is not in tandem with that of Abdul-Raheem (2016), who observed that the available instructional materials for teaching in schools were not utilized. Marojos et al. (2016), also reported that a situation in which agricultural science teachers use few or no instructional materials in the classroom or laboratories does not portray any seriousness on their parts towards harnessing the available resources for meaningful teaching. The null hypothesis in table 3 affirmed that the extent of instructional materials utilization had significant effects on teaching agricultural science in senior secondary schools α 0.05 level of significance. This finding agrees with the report of Zakari (2015), that there is a strong positive link between instructional materials utilization and good academic performance, Ogbu (2015), also reported that schools that possess and utilize more instructional materials perform better than schools that have and utilize less instructional materials.

The results of research question 2 showed that effectiveness of instructional materials was the important factor affecting the use of instructional materials for teaching agricultural science in senior secondary schools in Kaduna State. The finding agreed with that of Ifeako (2016), who reported that most agricultural science teachers are not effective in the use of available instructional materials in terms of the objectives to be accomplished, and the situation at hand and choose the one that will best meet the goals of the programme. This finding is in line with the findings of Yohanna, (2017), that emotion and feeling, students background, motivation, learning environment, insufficient fund are among the factors affecting the use of instructional materials in teaching. The implication of this is that teacher will only utilize the instructional materials they have the knowledge and skill in teaching. This implied that teachers who lack the skills to utilize the available instructional materials or skill to improvise the needed non-available materials will end up teaching without instructional materials which will discourage active participation of students in the classroom, lower students' interest in subject, make them learn and retain less.

Conclusion

The researcher concluded that the issue of utilization of instructional materials in teaching agricultural science is not satisfactory in senior secondary schools in Kaduna State. The needed improvement in the quality of teaching and learning in senior secondary schools can be achieved greatly, if teaching strategy is enhanced through the utilization of more instructional materials in agricultural science teaching. The study also concluded that utilization of instructional materials in Kaduna State was challenged by the effectiveness of the instructional materials, number of learners per class, resourcefulness of teachers, schools' facilities and teachers' interest.

The following are recommended;

- i. School authorities, zonal education offices and government in collaboration with Kaduna State Ministry of Education should organize and sponsor training and retraining programmes through workshops, seminars for teachers on utilization of instructional materials for teaching agricultural science in schools.
- ii. Teachers should be encouraged to improvise the non-available instructional materials where necessary and use them in teaching agricultural science..

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