

Assessment of instructional technology in teaching Agricultural Science in public secondary schools in Edo State, Nigeria

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Abstract

The study focused on the assessment of instructional technology in teaching and learning of agricultural science in public secondary schools in Edo State. The design adopted for the study is the descriptive survey research design. The population of the study consist of all the 320 agricultural science teachers in Edo State public secondary schools. The sample of 80 teachers were randomly drawn from the population. A questionnaire was used to collect the data from the sample selected, the data collected were analyzed using simple percentage and real limit of mean. The findings of the study revealed that instructional technology tools are not adequately provided for teaching agriculture science in Edo State public secondary schools and more importantly all the instructional technology tools used for the assessment in the study are all relevant for teaching agricultural science but they are not available for teaching and learning agricultural science. In addition, the very few that are available are not properly utilized for effective teaching and learning. It was recommended that the government of Edo State and other stake holders should provide funds for the supply of relevant instructional tools for teaching of agricultural science in Edo State.

Key Words: assessment, instructional technology, agricultural science, teaching, learning

Introduction

Agricultural science is one of the core vocational curricular subjects taught at both junior and senior secondary schools in Nigeria. Agricultural science is the branch of science which deals with growing of crops and rearing of domestic animals for the benefit of man and production of raw materials for the industries (Ndem, 2013). It also involves the science of processing, preservation, storage, marketing and distribution of the agricultural products. Egbule (2004) defines it as a process of training learners in the process of agricultural productivity as well as the techniques for teaching of agriculture. Presently, Agricultural education in Nigeria takes place at the formal and informal levels. At informed level, extension officers or agents train the learners or farmers on modern agriculture production processes outside the school system while, at the formal level, trained teachers teach students at various level of the educational system.

Agricultural science education is a broad multidisciplinary field which deals with the selection, breeding and management of crops and domestic animals for economic production. It is a subject taught in secondary schools as a means for self-reliance and preparation for further studies. Agricultural science is therefore designed for inculcation of the necessary skills for the practice of agriculture for effective citizenship and contribution to food security for national sustainability. That is why the Federal Republic of Nigeria in the Blueprint for Family Support Programme in 2004 outlined seven major objectives of teaching and learning of Agricultural Science to reflect the: ability to stimulate students' interest in agriculture, ability of students in acquiring basic knowledge

of agriculture, ability to develop basic agricultural skills in students among others. For these objectives to be achieved and for agricultural education to remain viable new ways need to be generated to deliver instruction in the total secondary education program. (National Research Council,1988).

Instructional technology are tools used to support teaching and learning; these include videotape, television, video camera, CD-ROM, laser printer and computer. Recent technological developments have contributed significantly to the instructional tools available for use by secondary school agricultural teachers. Also, recent trends in literature on technology in the classroom focus more on teacher effectiveness and proficiency in using technology. According to Gagne (2013), instructional technology includes practical techniques of instructional delivery that systematically aim for effective learning

Since the 1920s, films, radio, television and microcomputers began to be used as teaching tools and this has increased productivity and efficiency in teaching (Alston, Miller & Williams, 2003). In the 1950s most universities started creating courses in audiovisuals production and in the 1990s there was a progressive increase in the use of computers in teaching agriculture. The extent to which instructional technology facilities are being utilized is of major concern to agricultural science educators and stake holders in secondary schools in Edo State. Thus, there is need to assess the availability and usage of instructional technological tools used for teaching and learning of agricultural science in secondary schools in Edo State. This is the focus of this study and the findings from it should be of benefit to the government, teachers, curriculum planners, and researchers.

Statement of the problem

The integration of instructional technology into agricultural education has become a priority in Nigeria with a focus on technology supported classrooms. This vision is for all students and teachers to be enabled by technology to solve problems, improve productivity, and acquire skills necessary for life-long learning. It is important to engage students in meaningful learning by incorporating a greater level of technology into our schools. Although, technology maybe available to agricultural teachers but some will not utilize it due to their mind set and attitude(Jones, Ricketts, Ulmer & Williams, 2014).

The worry now is how much the Agricultural educators can teach making use of the available instructional technologies despite the huge amount of money used by government in training and retraining of teachers and supply of various equipment to schools. Thus the researcher sought to assess the instructional technology tools available for teaching agricultural science in public secondary schools in Edo State.

Purpose of the Study

The main purpose of the study was to assess the availability and usage of instructional technology tools for teaching agricultural science in public secondary schools in Edo State. The purposes were to:

1. Assess the instructional technological tools available for teaching agricultural science in public secondary schools in Edo State
2. To find out the relevance of instructional technology tools used in teaching agricultural science in public secondary school in Edo State.
3. To find out the level of utilization of instructional technology tools used for teaching agricultural science in public secondary schools in Edo State.

Research Questions

The following research questions guided the study:

1. What instructional technology tools are available for teaching agricultural science in public secondary schools in Edo State?
2. How relevant are the available instructional technology tools for teaching agricultural science in public secondary schools in Edo State?
3. What is the level of utilization of the available instructional technology tools for teaching agricultural science in public secondary schools in Edo State?

Methodology

Descriptive Survey design was used for the study. The population of the study consists of all the 320 Agricultural science teachers in public secondary schools in Edo State. A sample of 80 teachers were selected from 18 secondary school in Edo State using simple random sampling technique. The instrument used was a questionnaire titled 'Questionnaire on Assessment of Instructional Technology in Teaching Agricultural Science' The scale was divided into two sections –section A and section B. Section A sought information about the bio-data of respondents while section B sought information about the available instructional tools, their relevance and level of utilization. The respondents responded on a scale ranging from Very High (VH), High (H) and Moderately High (MH) to Low (L) and Very Low (VL). The instrument was face validated by three experts; two in the Department of Educational Evaluation and Counselling Psychology and one from the Department of Vocational and Technical Education of the University of Benin. Test-retest measurement technique was used to establish reliability of the instrument. To achieve the objective, six agricultural science teachers were selected from each of three secondary schools and used for pilot study in Edo state. Data was obtained from the respondents on two occasions with the use of questionnaire within an interval of two weeks. Data gathered were analyzed using Pearson product moment correlation coefficient formula and a co-efficient of 0.74 was obtained.

The instrument was administered by the researcher and two research assistants. All the questionnaires distributed were retrieved immediately Data collected were answered using descriptive statistics of mean and applying the decision rule based on the Real limit (RL) of mean. The RL are the possible values for the variables as shown in Table 1.

Table 1: Decision Rule

Variable	Mean	Boundary Real Limit
Very High (VH)	5	4.50-5.00
High (H)	4	3.50-4.49
Fairly High (FH)	3	2.50-3.49
Low (L)	2	1.50-2.49
Very Low (V)	1	0.50-2.49

Data analysis

This section discussed the analysis of data and result.

Analysis of Data obtained on the research questions

Research Question One

What instructional technology tools are available for teaching agricultural science in public secondary school in Edo State?

Table 2: Frequency distribution and means of instructional technology tools

S/N	Items	VH	H	FH	L	VL	Mean	Decision
1	Videotape				60	20	1.75	Low
2	Television		20	10	40	10	2.50	Fairly High
3	Video camera			10	20	60	1.50	low
4	Laptop Computer			10	30	40	1.44	Very Low
5	Desktop computer					80	1.00	Very Low
6	Computer Projector			2	2	76	1.08	Very Low
7	Internet	5	10	12	45	8	2.24	Low
8	Laser Printer	10	12	10	40	8	2.70	Fairly High
9	Disk Player				60	20	1.75	Low
10	Email					80	1.00	Low

From Table 2, it was observed that the availability of videotape, video camera, internet and disk player is low as indicated by the mean 1.75, 1.50, 2.24, and 1.75 respectively which fall within the real limit of 1.50-2.49. Also the availability of laptop computer, desktop computer, computer projector, and Email is very low the means of 1.44, 1.00, 1.08, and 1.00 respectively are within the real limits of 0.50-2.49. However, the availability of television and laser printer is Fairly High as the means of 2.50 and 2.70 respectively are within the real limits of 2.50-3.49.

Research Question Two

How relevant are the available instructional technology tools for teaching agricultural science in public secondary schools in Edo State?

Table 3: Frequency and mean of relevance of instructional technological tools

S/N	Items	VH	H	FH	L	VL	Mean	Decision
1	Videotape	50	20	10			4.50	Very High
2	Television	5	60	10	10	5	3.80	High
3	Video camera	10	10	40	10	10	3.13	Fairly High
4	Laptop Computer	20	50	5	5		4.06	High
5	Desktop computer	30	40	50	50		4.19	High
6	Computer Projector	40	25	5	5		4.13	High
7	Internet	50	20	10			4.50	Very High
8	Laser Printer	20	30	20	8	2	3.73	High
9	Disk Player	30	40	5	5		4.19	High
10	Email	40	30	10			4.38	High

From table 3, it was observed that the extent of relevance of videotape and internet is very high as indicated by the mean of 4.50 for each of them. Also, television, laptop computer, desktop computer, laser printer, disk player and Email are high with means of 3.80, 4.06, 4.19, 4.13, 3.37, 4.19 and 4.38 respectively. While the relevance of video camera is fairly high with a mean of 3.13.

Research Question three

What is the level of utilization of the available instructional technology tools for teaching agricultural science in public secondary schools in Edo State?

Table 4: Frequency and mean of the level of utilization of instructional technological tool

S/N	Items	VH	H	FH	L	VL	Mean	Decision
1	Agriculture science teacher's utilization of Videotape for teaching			50	20	10	2.50	Fairly High
2	Agriculture science teacher's utilization of laptop computer for teaching				10	70	2.13	Very. Low
3	Agriculture science teacher's utilization of Laser printer for teaching			50	30		0.94	Very. Low
4	Agriculture science teacher's utilization of internet for teaching			20		20	2.0	Low
5	Agriculture science teacher's utilization of Disk player for teaching		5	30	25	20	2.25	Low
6	Agriculture science teacher's utilization of Email for teaching		5	10	25	40	1.75	Low

Table 4 shows that the utilization of laptop computer and laser printer for teaching is very low with mean of 2.13 as indicated by the real limit of 4.50-5.00 while the utilization of internet, disk player and Email for teaching agricultural science is low as indicated by the mean of 2.0, 2.55 and 1.75 respectively which fall within the real limits of 1.50-2.49.

Discussion of Findings

Data from research question one revealed that television and laser printer are fairly available for use and instructional technology like laptop computer, desktop computer and computer projector are not available. This indicates that there is acute shortage of technology tools for teaching agriculture in secondary schools. This is in agreement with the study carried out by Aniebonam (2008) that lack of computer skills exists among faculties at the universities in Nigeria. The implication of this that it can result in poor quality instructional service delivery in the classroom and this can translate into a major setback in an effort to enhance learning.

It was observed from the findings in question two that all the instructional technology tools (Video tape, television, video camera, internet, laser printer, disk player, email, laptop computer, desktop computer and computer projector) mentioned are relevant in teaching agricultural science. This is in line with the findings of Osakwe (2010) who argued that there are significant benefits of using instructional tools as part of teaching and learning process as long as the teacher recognize the relationship between use of instructional technology and the overall curriculum. The use technology tools are vital tools that provides teachers and students with opportunities for experimenting with emerging technologies.

The findings in three show that the utilization of video tape is fairly utilized while the utilization of laptop computer, laser printer, internet, disk player and E mail are low. This may be due to low availability of instructional tools in secondary schools and possibly due to the low competency level of teachers in the application of the tools. However, Telia, Toyobo, Adika and Adeyinka (2012) maintained that students who use technology gain deeper understanding of complex topics and concepts and they are more likely to recall information and use it to solve problems outside the classroom. The findings of this study indicate that there is no provision and utilization of instructional technology tools for teaching agriculture in public secondary schools in Edo State.

Conclusion

It is well known that instructional technology plays a vital role in the delivery of agriculture in secondary schools. From the findings of the study, provision and utilization of instructional technology are inadequate for teaching agriculture and all the technology tools mentioned are relevant for teaching and learning agricultural science. However, the tools available are not properly utilized for effective teaching and learning.

Recommendation

Based on the findings, some recommendations were made. The state Government should make effort to provide the relevant technological tools needed for teaching Agricultural science in Edo state public secondary schools. This should involve the release of funds for the purchase of some these technological tools. Periodically, seminars and workshops should be organized for agricultural teachers on the use instructional technology so as to improve their skills and awareness on new technological usage.

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