

**Impact of Instructional Material Utilization and Students' Academic Performance in
Agricultural Science in Secondary Schools in
Port-Harcourt Metropolis**

By

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Abstract

The study assessed the “impact of Instructional Material Utilization and Students’ Academic Performance in Agricultural Science in Secondary Schools in Port-Harcourt Metropolis. Four objectives guided the study. The design of the study was a descriptive survey, with a sample size of 300 respondents (Students 250, Teachers 50) Selected using random sampling techniques. The instrument for data collection was a structured questionnaire. The instrument was validated by two experts and the reliability of the instrument was established through test- retest process using Pearson Product Moment Correlation to obtain a reliability coefficient of 0.85. Data collected were analyzed descriptively using mean and standard deviation, with a criterion mean of 2.50. The study found out that most of the instructional materials were not available for use in senior secondary schools, both teachers and students agreed that the instructional materials make teaching and learning faster and better, and that students’ performance will improve with the use of instructional materials amongst others. The study recommended that school authorities should sough for agricultural instructional materials and encourage teachers to use them. Government should fund procurement and storage of agricultural instructional materials.

Key words; Impact, Instructional material, Utilization, Academic Performance, Agricultural science.

Introduction

The availability and utilization of instructional material for effective instructional process of agricultural science is indispensable if the teaching of agricultural science in Nigerian Secondary Schools must be properly handled. Efonayi (2010) asserted that importance of instructional materials is to improve students' knowledge, abilities, skills, and for better assimilation of information, to contribute to their overall development and upbringing. He went further to say that it also clarifies important concepts and to arouse and sustain student's interests in the field of agriculture, and enable all students in a class have the opportunity to share experiences necessary for new learning, help make learning more permanent and expand their agricultural knowledge with new improved methods of application.

Agriculture according to Justruan (2010) contributes to the nation's economic development, hence, the need to be taught thoroughly if it is to meet the educational and economic development. More so, that agricultural science is one of the subjects in junior and senior secondary schools and as a vocational subject, it cannot be taught effectively without the use of appropriate instructional materials. World Health Organization (WHO 2005) made the curriculum content of the senior secondary school levels to consist of three major concepts of production, protection and economics. Learning by doing was emphasized in the curriculum so that the students should be able to produce food and other agricultural products for themselves and their community. A series of activities were suggested in the curriculum to ensure the development of psychomotor skills in agricultural science by the students. The (WHO 2005) further recommended that: each student be guaranteed adequate equipment, farm space, farm structures and regular supply of fertilizers and animal feeds. In addition to having a farm, each school should keep at least two farm animals. Students' performance should be continuously assessed through various forms of tests and during field and laboratory practical and individual assessment should be carried out for activities in crop production while group assessment be restricted to performance in animal production activities.

According to Onyedikachi as cited in Okoro (2018), teaching without tools is impossible to attain the instructional goals and competency. The instructional tools or materials make possible a better understanding of the subject, to make students learn from themselves. Furthermore, Mummudu (2019), revealed that developed instructional materials served as an important components in the instructional delivery modalities that carries all important messages and information from a transmitting source (teachers) to the receiver (learner). Effective instructional material are designed to instigate, ignite and bring desirable changes in the students' learning abilities, attitude, and behavior in more interesting and

meaningful classroom settings. Crunkilton and Hemp (2008) viewed instructional materials as a key component that may be used in instructional process that can disseminate information, data, idea, skills and messages that could help learners enhance their academic performance

Specifically, instructional materials are some of the tools that can help teachers convey knowledge in a very natural way leading to good instructional processes (Koko, 2015). The performance of the students in agricultural science should match student's interest and practice of the subject. Olaitan (2006) stated that lack of textbooks, poor management, poor funding, poor instructional material etc. are some of the many factors among others that influence the outcome of instructional process. It is therefore imperative for all stakeholders in the educational system to ensure that instructional materials are encouraged in schools to help the nation achieve its goal in food security through arousing the students' interest in agriculture to enable them practice it as a vocation.

Okoro (2018) said that generally, developed instructional materials can be classified as primary and secondary aids and outlines used in effective instructional process. Hence, it is the ability of the teachers to identify the quality and appropriateness upon utilizing the developed instruction materials. He went further to said that on students' parts, instructional agricultural materials may guide them to acquire more information so as to bring the learners much appreciation on the topics under consideration and confidently carry out practice and practical at home without the aid of the teachers showing how much instruction have been achieved.

The study of agricultural science in the Senior Secondary Schools according to Magaire (2016) is divided into General Agriculture, Crop Husbandry and Horticulture, Animal Husbandry, Fishery and Forestry. This means that the teacher who teaches the students should prepare the students adequately for the task of positively influencing the student's attitude, perspectives and habits of mind especially as they affect the theory and practice of agricultural science. Magarire (2016) also observed that the teacher's approach to the subject can stimulate his students to develop interest and subsequently results in good performance. The teacher alone cannot provide all the needed condition for an effective instructional process, other supporting material should be provided. Ekong (2018) noted that students learn better when most of the sense are appealed to in the instruction and use of instructional materials in agricultural science has added to this, and a new dimension in the positive promotion of the instructional process. It provides the much needed sensory experiences required by the learners for an effective and meaningful behavioral change. Instructional materials in agriculture are meant to improve the quality of instruction for

effective academic performance of agricultural science students in schools. Crunkilton, and Hemp (2006) observed that teachers normally dodge the use of instructional materials in most of their teaching topics, while they try to do all they could during their practical teaching in their course of study; even though some of these materials are not usually available in the schools for teachers' use.

Nlebem, (2018) noted that a lot of instructional material in agricultural science exist for the teachers to use. Such includes soil samples, insect pests, seed samples, hone meal, fish meal, survey equipment's, simple farm tools, farm machinery and implements, fruits, sprayer, fertilizer, herbicides, cage, tilapia fish, watering can, feeding trough, hides and skin, weed specimens, hook and line amongst others. He also observed that most of these instructional materials are only made available for student's use during examination. These instructional materials have never been used for teaching or practical for students. Many teachers teach in abstract without using the required materials" (Nlebem, 2018). In making use of any instructional materials, the teacher must have full knowledge of the material; prepare the environment where it will be used; prepare students by means of making sure that the materials to be used will attract attention, arouse, motivate and provide the rationale that could be used in the beginning, middle or end. The effectiveness of utilizing appropriate instructional materials in teaching and learning of agricultural science is not void of quality instructor.

In order to give quality education to the younger generation, there is need for employment of more competent, experienced and qualified agricultural science teachers. The questions are what are the types of agricultural instructional materials that can be used in the instructional resource? Will it make the students perform better? What are the difficulties in it use? Will there be remedies for the difficulties? Since the scenario is to use instructional materials to improve students' academic performance. The answers to these questions necessitated a study of this nature.

Purpose of Study

The main purpose of the study is to determine the impact of instructional materials in instructional process and students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis. Specifically the study sought to;

1. Determine the types of instructional materials used in instructional process and students' academic performance in agricultural science in Secondary Schools in Port-Harcourt Metropolis.

2. Ascertain the benefits of using instructional materials in instructional process and students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis.
3. Examine the difficulties in using instructional materials in the instructional process and students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis.
4. Determine the remedies to the difficulties of using instructional materials in instructional process and students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis.

Research Questions

The following research questions guided the study.

1. What are the types of instructional materials used in instructional process for students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis?
2. What are the effects of using instructional materials in instructional process for students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis?
3. What are the difficulties in using instructional materials in instructional process for students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis?
4. What are the proposed remedies to the difficulties of using instructional materials in the instructional process and students' academic performance in agricultural science in secondary schools in Port-Harcourt Metropolis?

Methodology:

The study was conducted in Port-Harcourt Metropolis, Port-Harcourt Metropolis was chosen because of large number of secondary schools in the area. The design of the study was a descriptive survey. The population of the study was 150 agricultural science teachers and 3000 senior secondary (SS2) agricultural science students in the area. Random sampling technique was used to sample 50 teachers and 250 students, given 300 respondents. The instruments for data collection was a structured questionnaire designed in 4 -points Likert rating scale of agreement. The instrument was validated by two experts and the reliability of the instrument was established through test-retest process using Pearson Product Moment Correlation to obtain a reliability coefficient of 0.85. Data collected were analyzed descriptively using mean and standard deviation. Decision was made based on a criterion mean value of 2.50, it showed that mean value equal or more

than the criterion mean is accepted as positive response, otherwise rejected as negative response.

Results and Discussions

Availability of instructional materials used in instructional process in agricultural science for students' academic performance in Port-Harcourt Metropolis

Table 1: Distribution of Respondents on Availability of instructional Materials Used in Instructional Process in Agricultural Science for Students' Academic Performance in Secondary Schools in Port-Harcourt Metropolis.

S/N	Items	Students – (250)			Teachers – (50)		
		X	S.D	Decision	X	S.D	Decision
1.	Insect pests	2.05	1.12	Disagree	2.20	1.11	Disagree
2.	Seed samples	2.08	1.02	Disagree	2.17	1.04	Disagree
3.	Bone meals	2.15	1.03	Disagree	2.30	1.02	Disagree
4.	Fish meals	2.00	1.10	Disagree	2.10	1.08	Disagree
5.	Survey equipment	2.30	1.01	Disagree	2.42	0.96	Disagree
6.	Simple Farm tools	2.50	1.09	Agree	2.60	0.08	Agree
7.	Farm Machinery and Implements	2.02	1.10	Disagree	2.14	1.08	Disagree
8.	Fruits	2.30	1.10	Agree	2.10	1.08	Disagree
9.	Sprayer	2.54	1.08	Agree	2.58	1.07	Agree
s10.	Fertilizer	2.40	1.02	Disagree	2.42	1.04	Disagree

11.	Herbicides	2.20	1.03	Disagree	2.30	1.02	Disagree
12.	Cage	1.90	1.20	Disagree	2.00	1.10	Disagree
13.	Tilapia Fish	1.72	1.22	Disagree	2.20	1.14	Disagree
14.	Watering can	2.30	1.01	Disagree	2.40	0.96	Disagree
15.	Feeding Trough	2.02	1.10	Disagree	2.20	1.04	Disagree
16.	Hides and Skins	2.08	1.12	Disagree	2.20	1.02	Disagree
17.	Weed specimens	2.65	1.03	Agree	2.80	0.09	Agree
18.	Hook and Line	2.46	1.03	Disagree	2.30	1.13	Disagree
	Grand Mean & SD	2.20	1.20	Disagree	2.30	1.13	Disagree

Source: Field Survey 2022

Data in Table 1 showed the respondents mean responses to the availability of instructional materials utilize and students' academic performance in agricultural science in secondary school in Port-Harcourt Metropolis. The findings revealed that the respondents agreed that only items 6, 9, and 17 had their mean values above 2.50 and are therefore available, while items numbers 1, 2, 3, 4, 5, 7, 8, 10, 11, 12, 13, 14, 15, 16, .and 18 had their mean values below 2.50 were therefore not available Furthermore, result revealed that the students had a standard deviation ranging from 1,01 to 1.22 while the teachers had a standard deviation ranging from 1,02 to 1,14. These indicated homogeneities in the opinions of both categories of respondents. The findings corroborates that of Ekong (2018), in his work titled "Use of Instructional Material in Instruction in Nigerian Secondary Schools. He stated that most instructional materials are unavailable in the school environment for the teacher to use and enrich teaching and learning and motive the students to achieve higher grades.

Benefits of instructional materials utilization in Agricultural Science in senior secondary schools and students' academic performance in Port-Harcourt Metropolis.

Table 2: Distribution of Respondents on Benefit of Instructional materials utilized in Agricultural Science in Secondary schools for students’ academic performance in Port-Harcourt Metropolis

S/ N	Items	Students - (250)			Teachers -(50)		
		X	SD	Deco.	X	SD	Deci.
1.	Make teaching and learning Easier	2.91	1.07	Agree	2.88	1.05	Agree
2.	Students respond faster	3.13	0.94	Agree	3.07	0.99	Agree
3.	Student understand better and are motivated	2.85	1.02	Agree	3.15	0.94	Agree
4.	Students make better grades	2.74	1.16	Agree	2.67	1.03	Agree
5.	Learning is internalized	2.70	0.99	Agree	2.79	1.11	Agree
6.	Students concentrate better	2.88	0.91	Agree	2.77	1.08	Agree
7.	Students ask more and Realistic questions	2.88	0.91	Agree	2.78	1.00	Agree
8.	Make teaching and learning interesting	2.74	1.10	Agree	2.85	1.05	Agree
9.	Make teaching demonstrative	2.90	1.00	Agree	3.27	0.84	Agree
10.	All senses are applied	2.94	0.98	Agree	3.26	0.94	Agree
11.	Make teaching and learning interactive	3.20	.92	Agree	3.07	0.99	Agree
Grand mean & SD		2.79	1.02	Agree	2.89	1.09	Agree

Source: Field Work 2022

Data in Table 2 revealed the respondents mean responses on benefits of instructional materials to be utilized in agricultural science in secondary schools for students’ academic performance in Port-Harcourt Metropolis. The findings showed that, the respondents agreed that make teaching and learning easier had a mean value of (3.91 & 2.85), students respond faster (3.13 & 3.07), Students make better grades (2.74 & 2.67), learning is internalized (2.70 & 2.79), students concentrate better (2.88 & 2.78), students ask more and realistic questions (2.88 & 2.78), make teaching and learning interesting (2.74 & 2.85), make teaching demonstrative (3.90 & 3.27), all senses are applied (2.94 & 3.21), make teaching and learning interactive (3.20 & 3.07). All had mean values above 2.50 and therefore beneficial to the students. Furthermore findings revealed that the students had standard deviation ranging from 0/91 to 1.11 while the teachers had standard deviation ranging

from 0.99 to 1.13. These indicated homogeneities in the opinions of both categories of respondents. The findings is in line with Mammudu (2019) in his work titled “Causes of students Low Enrollment and Under-achievement in Sciences. He noted that students achieve poorly and do not have the courage to enroll in sciences because the teachers do not use lively instructional resources that will motivate the students and bring out the best in them.

Difficulties in utilizing instructional materials in agricultural science in secondary schools for students’ academic performance in Port-Harcourt Metropolis.

Table 3: Distribution of Respondents on Difficulties in Utilizing Instructional Materials in Agricultural Science in Secondary Schools for Students’ Academic Performance in Port-Harcourt Metropolis.

S/ N	Items	Students - (250)			Teachers- (50)			
		X	SD	Deci.	X	SD	Deci.	
	Large number of students	2.73		Agree	3.08	1.03	Agree	Agree
		1.22						
	Non-agricultural science teachers teaching agricultural science.	3.09	1.01	Agree	3.36	0.70	Agree	
	Non-availability of instructional materials	3.47	1.31	Agree	3.11	0.95	Disagree	
	Use of instructional material Require funding	3.06	0.98	Agree	3.30	0.79	Agree	
	Lack of interest on the part of the teachers	3.23	0.90	Agree	3.31	0.68	Agree	
	Schedule of timetable	2.71	1.21	Agree	3.08	1.01	Agree	
	Most schools do not have farms	3.28	0.95	Agree	3.22	0.99	Agree	
	No motivation on the part of the teachers	3.36	1.23	Agree	3.30	0.95	Agree	
	Poor preservation of available instructional	3.05	1.00	Agree	3.24	0.74	Agree	

materials for further
usage

Grand mean & SD **2. 0.72** **Agree** **3.27** **0.54** **Agree**
84

Source: Researcher’s field work 2022

Data in table 3 showed the respondents mean responses on difficulties in utilizing instructional material in agricultural science in secondary schools for students’ academic performance in Port-Harcourt Metropolis. The findings revealed that the respondents agreed that, large number of students had a mean value of (2.73 & 3.08), non-agricultural science teachers teaching agriculture (3.09 & 3.36), non-availability of instructional materials (3.06 and 3.11), lack of interest on the part of teachers (3.23 and 3.31), schedule of timetable (2.71 & 3.08), most schools do not have farm (3.28 & 3.22), no motivation on the part of the teachers (3.36 & 3.30), and poor preservation of available of instructional materials for further usage (3.05 & 3.24). All had mean score value above 2.50 and were therefore difficult. Furthermore, result revealed that the students had a standard deviation ranging from 0.94 to 1.16, while the teachers had a standard deviation from 0.83 to 1.13. These indicated homogeneities in the opinions of both categories of respondents. The findings is in line with Odukwe (2018) in his work titled “ Hindrances in the use of community oriented resources as a means of instruction in agricultural science classes in Secondary Schools in Nigeria, the way forward. He noted that school authorities do not care to avail themselves of available instructional materials in their environment, large number students per classrooms, no incentive to the teacher to encourage the use of agricultural resources in teaching and learning, schedule of school timetable amongst others hinder its usage.

Proposed remedies for difficulties in utilizing instructional materials in agricultural science in secondary schools for students’ academic performance in Port-Harcourt Metropolis.

Table 4: Distribution of Respondents on Proposed Remedies to the Difficulties in Utilizing Instructional Materials in Agricultural Science in Secondary Schools for students' Academic Performance in Port-Harcourt Metropolis.

S/ N	Items	Students - (250)			Teachers -(50)		
		X	SD	Deci.	X	SD	Deci.
1.	Maximum number of 100 students per class	2.91	1.09	Agree	2.85	1.03	Agree
2.	Agricultural science teachers should teach agriculture	3.13	0.94	Agree	3.07	0.99	Agree
3.	School authorities should source for agricultural resources (X)	2.85	1.02	Agree	3.15	0.94	Agree
4.	Government should fund agricultural practical	2.74	1.16	Agree	2.67	1.03	Agree
5.	Timetable should accommodate agricultural practical	2.72	0.99	Agree	2.79	1.11	Agree
6.	Schools should own farms	2.88	0.91	Agree	2.77	1.08	Agree
7.	Teachers should be motivated for practical	2.88	0.91	Agree	2.78	1.00	Agree
8.	Schools should provide stores for agricultural materials	2.74	1.13	Agree	2.85	1.05	Agree
9.	Communities should make available community oriented resources in their area	2.91	1.02	Agree	2.85	1.05	Agree
Grand mean & SD		2.89	1.04	Agree	2.90	1.03	Agree

Source: Researcher's field work 2022

Data in table 4 showed the respondents mean responses on the proposed remedies to the difficulties in utilizing instructional materials in agricultural science in secondary schools for students' academic performance in Port-Harcourt Metropolis. The findings revealed that the respondents agreed that all items were remedies for they had mean values above 2.50, maximum number of 100 students per class. (2.91 & 3.85), agricultural science teachers should teach agriculture (3.13 & 3.07), government should fund agricultural practical (2.74 & 2.67), timetable should enable the use of instructional materials (2.72 & 2.79), schools should own farms (2.88 & 2.77), teachers should be motivated for practical (2.88 & 2.78), schools should provide store for agricultural materials (2.74 & 2.85), communities should make available community oriented resources in their areas (2.91 & 3.27). Furthermore,

result revealed that the students had a standard deviation ranging from 0.94 to 1.16, while the teachers had a standard deviation from 0.83 to 1.13. These indicated homogeneities in the opinions of both categories of respondents. The findings agree with that of Ajayi and Salami (2019) in their study titled "Remedies in the use of instructional materials in teaching and learning in secondary schools' in South-South Nigeria, they stated that, establishment of farms in each school, motivation of science teachers, making available right practical materials among others will help.

Conclusion

Based on the findings of the study, it was concluded that teacher did not utilize instructional materials in teaching and learning of Agricultural Science in Secondary Schools in Port-Harcourt Metropolis. Therefore, teachers should be encouraged to utilize these instructional materials in teaching and learning of agricultural science and other science subjects for this will improve students' academic performance in Port-Harcourt Metropolis and others of Nigeria.

Recommendations

Based on the findings of this study, the following recommendations were made.

1. School authorities should sought for agricultural instructional materials and encourage teachers to use them during instruction.
2. Government should fund agricultural practices since they help the students to understand better and internalize what they learned.

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