

## SCHOOL RESOURCES AND SENIOR SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN AGRICULTURAL SCIENCE IN IBADAN METROPOLIS

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### Abstract

The poor academic performance of public secondary school students in Agricultural Science is a significant concern and poses a threat to the future of agriculture in Nigeria. This study investigated the influence of availability and utilization of school resources on academic achievement of Senior Secondary School students in Agricultural Science in Ibadan Metropolis. Employing a descriptive survey design with a multistage sampling technique, data was collected from 721 Senior Secondary School 2 (SSS 2) Agricultural Science students using the Agricultural Science Achievement Test (ASAT) and Students' Questionnaires on School Resources (SQSR). Analysis involved frequency counts, percentages, mean, standard deviation, and multiple regression. Findings indicate a low academic achievement, with 92.5% scoring below 50%. Both resource availability (Mean=2.41; SD=1.132) and utilization (Mean=2.17; SD=0.571) were low in the surveyed schools. There was a significant influence of school resources on academic achievement ( $\beta = .205, p < .000$ ). Recommendations include prioritizing resource acquisition for teaching agricultural science and implementing effective strategies for resource utilization by the government, school administrators, and teachers.

**Keywords:** Academic Achievement, Agricultural Science, Resource availability, Resource utilization, School Resources

### Introduction

Academic achievement refers to observable or measurable behaviour in a specific subject, indicating the extent to which a student accomplishes tasks and studies. It serves as evidence of knowledge acquired through learning activities over time and reflects the attainment of educational goals within a school. The academic achievement of students is a primary indicator of the effectiveness or success of an educational institution and is often assessed using achievement tests administered at the end of a lesson, term, or session.

Agricultural Science introduced into Nigeria's curriculum in 1967 (Haruna, Oketoobo & Ibe, 2017), plays a crucial role in human capital development for the agricultural sector. Despite the importance of Agricultural Science, students' academic performance in the subject has declined over time, particularly in public secondary schools, posing a threat to Nigeria's future manpower supply and agricultural productivity (Otekunrin, Oni & Otekunrin, 2017).

The worsening performance is evident in external examinations where a decline in mean scores is observed. In the year 2019, for example, the total number of 534,206 candidates sat for Agricultural science (paper 3) with a raw mean score of 34 and a standard deviation

of 8.43 as against a raw mean score of 34 and a standard deviation of 12.17 recorded in 2018 with a total of 519,151 candidates in West African Senior School Certificate Examination, WASSCE, an external examination conducted by a major examination body in the West African sub-region (<https://waeconline.org.ng/e-learning/Agriculture/agric329aq.html>). This unpleasant trend in agriculture education is a menace that demands immediate attention. Poor academic performance has far-reaching consequences, affecting students' eligibility to study agriculture or pursue related courses at higher institutions and contributing to potential future food insecurity.

Factors contributing to this decline include students' negative attitudes, poor teaching techniques, inadequate instructional resources, overcrowded classrooms and home factors Otekunrin, Oni & Otekunrin, 2017; (Onwumere, M., Modebelu & Chukwuka, 2016; Adelakun, 2017). While numerous studies have explored the causes of poor academic achievement, research on the combined influence of resource availability and resource utilisation on students' academic performance in Agricultural Science in Ibadan metropolis is scarce.

This study aims to address this research gap by investigating the influence of school resources on students' academic achievement in Agricultural Science in Ibadan metropolis, Oyo State, Nigeria with the aim of proffering solutions to the problems of poor academic achievement in agricultural science.

Specifically, the study examined the availability and utilization of school resources for the teaching and learning of agriculture and their combined influence on students' academic achievement in the subject. School resources, including teaching materials and facilities, are integral to educational programs and play a crucial role in promoting teaching and learning. Eleven (11) key resources for teaching and learning of agriculture, including the school farm, library, classrooms, laboratory, field trips, farm machines, specimens, tools, charts, record books, and textbooks are considered in the study.

School resources are very important in the development of qualitative education. The success or the failure of any system of education depends on the quality and quantity of resources made available to it and the use to which such resources are put (Pitan, 2012).

While debates continue regarding the relationship between school resources and academic achievement, research indicates a positive influence, particularly in Agricultural Science. Studies by Onwumere, Modebel & Chukwuka (2016) and Amao (2017) found that resources such as textbooks, conducive environments, classrooms, instructional materials, health services, laboratories, and libraries significantly contribute to student achievement in Agricultural Science. Similarly, Ajiboye's (2022) research on "Educational Resources Availability and Utilization as Determinants of Students' Academic Performance in South-west Nigeria" revealed a strong positive relationship between resource adequacy and student academic performance, although resource utilization showed a lower positive correlation. These findings emphasise the importance of adequate facilities and equipment in effectively teaching Agricultural Science.

However, research by Otekunrin, Oni & Otekunrin (2017), conducted in selected schools in Ibadan North Local Government Area of Oyo State, and did not find a significant relationship between school resources and students' academic performance.

### **Statement of the Problem**

The introduction of Agriculture into the Nigerian education system was aimed at building human capital for agricultural sector development and to equip youths with practical knowledge for self-reliance. Despite these goals, a trend of low academic performance in Agricultural Science among secondary school students has emerged. This poses a threat to Nigeria's agricultural manpower supply and food security. Students' dwindling achievement in agricultural science has been attributed to quite a few factors including students' attitudes, inadequate resources, teaching methods, and home environment. However, the focus of this study is to interrogate the level at which the availability and utilisation of school resources for teaching and learning of Agricultural Science influence the academic achievement of senior secondary school students in the subject in Ibadan Metropolis. In achieving the aim of the study, answers were provided to three research questions and the only one hypothesis raised was tested at 0.05 significant level.

### **Research Questions**

The following research questions were raised in the study:

1. What is the level of students' academic achievement in agricultural science in public senior secondary schools in Ibadan metropolis?
2. What is the level of availability of relevant school resources in the teaching and learning of agricultural science in the sampled schools?
3. What is the extent of utilization of available school resources in the teaching and learning of agricultural science in the sampled schools?

### **Research Hypotheses**

The following null hypothesis is formulated and tested at 0.05 level of significance:

**H<sub>0</sub>:** There will be no significant influence of school resource availability and resource utilization on academic achievement of secondary school students in agricultural science in Ibadan metropolis.

### **Methodology**

The study employed a descriptive survey research design, utilizing a multistage sampling technique. In the final stage, a cluster sampling technique was applied, specifically intact class clusters, to select 721 Senior Secondary School Two (SSS2) Agricultural Science students from seventy-five schools in Ibadan Metropolis, spanning two Local Government Areas (Ibadan North and Ona Ara). Two sets of instruments namely, "Agricultural Science Achievement Test (ASAT)" and "Students' Questionnaires on School Resources" (SQSR) were used for the study.

The first set of instrument ASAT, was used to measure the students' Academic Achievement in Agricultural Science. It consists of 25 - item multiple choice questions (MCQ) with duration of 30 minutes (Otegunrin, Oni & Otegunrin, 2017). It was administered on seven hundred and twenty one (721) students that were used as sample for the study. The Multiple Choice Questions were extracted from West African Examinations Council (WAEC) past questions with full consideration given to questions on senior secondary school 2 Agricultural Science scheme of work.

The second adapted instrument SQRS, was designed to answer research questions 2 and 3. It comprised twenty-two adapted questions (Soetan et al., 2021). Eleven questions assessed

the availability of school resources, while the remaining eleven focused on their utilization for teaching agricultural science. Employing a 4-point Likert scale, the rating for resource availability ranges from Always available (4) to Not Available (1). Similarly, for resource utilization, the scale ranges from Very High Extent (4) to Very Low Extent (1). Two experts in Agricultural Science Education and Educational Management validated the instrument for face validity. Trial-testing was conducted in a separate school, resulting in necessary adjustments before administering it to the 721 sampled students. Reliability was assessed using Cronbach's Alpha method ( $r = 0.85$ ) and Kuder Richardson–twenty-one (KR-21) for SQSR and ASAT instruments, respectively.

Data were analysed with the use of both descriptive and inferential statistics. Descriptive statistics of percentages, mean and standard deviation were used to answer the three research questions while inferential statistics of Multiple Regression analysis was used to test the hypothesis at 0.05 levels of significance.

## Results

**Research Question One:** What is the level of students' academic achievement in Agricultural Science in public senior secondary schools in Ibadan metropolis?

**Table 1. Student Academic Achievement in Agricultural Science**

Score (%)	Frequency	Percent
Less Than 25	173	24.0
25-49	494	68.5
50-69	44	6.1
70-100	10	1.4
<b>Total</b>	<b>721</b>	<b>100.0</b>

**Decision Rule:**

Scores less than 25 is very low, 25-49 is low, 50-69 is high, 70-100 is very high

The outcomes of the first research question on students' academic performance in agricultural science within public senior secondary schools in Ibadan metropolis, reveal a disturbing scenario. The data indicates a noteworthy majority (92.5%) of students encountering difficulties in this subject, with only 7.5% achieving a score of 50% or higher. Since a majority of the sampled students fall in the low category, it can therefore be concluded that the level of students' academic achievement in agricultural science in public senior secondary schools in Ibadan metropolis is low.

**Research Questions Two:** What is the level of availability of relevant school resources in the teaching and learning of agricultural science in the sampled schools?

**Table 2. Analysis of the level of Availability of school Resources for Teaching Agricultural Science**

S/N	Items	Availability		Remarks
		Mean	Std	
1	Functional school farm for practical lessons	2.35	1.21	LL
2	Field trips to local farms and agro-based industries	1.89	1.04	VLL
3	School library	2.85	1.26	HL
4	Agricultural laboratory	2.23	1.18	LL
5	Functional Farm machines and equipment	1.89	1.10	VLL
6	Specimens of agricultural produce	2.56	1.12	HL
7	Simple farm tools (e.g. watering can, Knapsack Sprayer)	2.76	1.18	HL
8	Agricultural charts	2.29	1.12	LL
9	Farm Manager	1.88	1.10	VLL
10	Agricultural Activities Record book	2.59	1.13	HL
11	Current and relevant Agricultural textbooks	3.18	1.04	VHL
	<b>Weighted Mean</b>	2.41	1.13	LL

Source: Fieldwork survey, 2023

Criterion Mean = 2.50

**\*\*\*Threshold:** Mean Value of 1.0-1.99 = Very Low Level (VLL); 2.00-2.49 = Low Level (LL); 2.50-2.99 = High Level (HL); 3.0- 4.00 = Very High Level (VHL)

Table 2 shows the results for availability of school resources for teaching Agricultural Science in secondary schools in Ibadan metropolis.

The weighted mean for availability of school resources is 2.41, which shows that the resources for teaching agricultural science are only available at a low level. Using the criterion mean, which is 2.50, five out of the listed eleven school resources can be said to be available at a high level for teaching agricultural science. These are school library (2.85), specimens of agricultural produce (2.56), simple farm tools (like watering can, Knapsack Sprayer) (2.76), Agricultural activities record book (2.59) and current relevant agricultural textbooks (3.18).

**Research Question Three:** What is the extent of utilization of available school resources in the teaching and learning of agricultural science in the sampled schools?

**Table 3. Analysis of the Extent of Utilisation of school Resources for Teaching Agricultural Science**

S/N	Items	Utilisation		
		Mean	SD	Remarks
1	Functional school farm for practical lessons	1.62	1.01	VLE
2	Field trips to local farms and agro-based industries	1.46	.50	VLE
3	School library	2.39	1.08	LE
4	Agricultural laboratory	2.08	1.33	LE
5	Functional Farm machines and equipment	1.39	.63	VLE
6	Specimens of agricultural produce	2.47	.93	LE
7	Simple farm tools (e.g. watering can, Knapsack Sprayer)	2.77	.89	HE
8	Agricultural charts	2.62	.84	HE
9	Farm Manager	1.54	.94	VLE
10	Agricultural Activities Record book	2.31	1.07	LE
11	Current and relevant Agricultural textbooks	3.23	.58	VHE
<b>Weighted Mean</b>		2.17	0.89	LE

**Source:** Researcher Fieldwork survey, 2023

**Criterion Mean = 2.50**

**\*\*\*Threshold:** Mean Value of 1.0-1.99 = Very Low Extent (VLE); 2.00-2.49 = Low Extent (LE); 2.50-2.99 = High Extent (HE); 3.0- 4.00 = Very High Extent (VHE)

Considering the utilization of available school resources as depicted on Table 3 above; the weighted mean, which represents the overall extent of utilization of available school resources for teaching and learning agricultural science in the sampled schools, is 2.17. This falls within the "Low Extent" category according to the provided thresholds. The finding suggests that, on the school resources available for teaching and learning agricultural science are being utilized only at a low extent in the sampled schools. Out of the eleven available resources, only three are well utilised (i.e. fall within the threshold). These are simple farm tools (2.77), current and relevant Agricultural textbooks, (2.62) and Current and relevant Agricultural textbooks (3.23).

**Hypothesis:** There will be no significant influence of school resources (availability and utilization) on academic achievement of secondary school students in agricultural science in Ibadan metropolis

**Table 4.** Model Summary of Influence of School Resources on Academic Achievement of Secondary School Students in Agricultural Science in Ibadan metropolis.

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.378	.073		46.114	.000
	SCHRES	.003	.001	.205	4.088	.000

Dependent Variable: Student Academic Achievement

The Hypothesis was tested using multiple linear regression. The results ( $\beta = .205$ ,  $p = < .000$ ) show that availability and utilisation of school resources has a significant influence on students' academic achievement in agricultural Science. The standardized coefficient (Beta), 0.205 indicates that for every one-unit increase in school resources, there will be 0.205 increase in students' academic achievement.

### Discussion of the findings

The result of Research Question 1 as depicted in Table 1 shows that (93.5%) of the students scored below 50, which is an alarming indicator of the state of agricultural science education in the sampled schools. This result could be an indication that a high proportion of the students are grappling with challenges in comprehending the concepts and skills associated with Agricultural Science. This raises several critical questions about the quality of teaching, curriculum relevance, and support systems in place. These questions require adequate and urgent attention considering the fact that Agricultural science plays a significant role in preparing students for careers in agriculture, agribusiness, and related fields. The result of Research question one is in consonance with Ilesanmi, Owoseni, and Fasanmi, (2022) and Otekunrin, Oni and Otekunrin (2017) who found that students' performance in Agricultural Science in external examinations and enrolment in the subject are on the decline. Low academic achievement in Agriculture among students implies that a significant number may be ineligible to pursue courses in Agriculture at higher institutions. Consequently, this has a multiplier effect, discouraging many young individuals from considering a career in Agriculture, ultimately contributing to the issue of food insecurity in the country (Otekunrin, Oni & Otekunrin, 2017).

The findings from Research Question two indicate that the availability of school resources for teaching and learning agricultural science in the surveyed public senior secondary schools in Ibadan metropolis is at a low level. This suggests that these schools face challenges in providing adequate resources for agricultural science education. These findings have important implications for the quality of Agricultural Science education in public senior secondary schools in Ibadan metropolis. The low level of resource availability suggests that students may face limitations in their practical learning experiences, which could impact their academic achievement in the subject.

The result of unavailability of school resources in the teaching of Agriculture is in line with the findings of some related studies. For instance, Otekunrin et al (2017) conducted a study

on the challenges confronting Agricultural Science Education and found that inadequate farmlands for practical lessons and inadequate funds to manage practical oriented Agricultural Science are two of the major four challenges confronting Agricultural Science Education.

Also, the result supported Umar et al, (2018) whose study was carried out to determine the availability and adequacy of equipment for teaching practical Agriculture in Federal Colleges of Education (COE) in the North East Zone of Nigeria and found that 54% of the equipment for teaching practical Agriculture in COE were not available while 46% were available. The study also indicates that 77% of equipment for teaching practical Agriculture were not adequate. However, the result of the present study negates the findings of Soetan et al (2021) whose research among secondary schools in Ogbomosho, Oyo state indicated that instructional resources for teaching Agricultural Science are available.

The low extent of utilization of identified school resources such as field trips to local farms and agro-based industries, farmlands for practical lessons, agricultural laboratory and specimens of agricultural produce as found in this study implies that students are not exposed to real-world agricultural settings. For instance, field trips provide students with practical exposure to various aspects of agriculture, and their underutilization may hinder students' ability to connect theoretical knowledge with practical application. Also, agricultural laboratory and specimens of agricultural produce are essential for conducting experiments and understanding the scientific aspects of agriculture. Their underutilization suggests a lack of emphasis on the practical and scientific aspects of agricultural science. The "Very Low Extent" of the utilization of the Farm Manager role indicates that there might be a lack of expertise and guidance in managing the school farm resources. Although, not all the resources are adequately available but the analysis on the extent of utilization of the available resources indicate a potential gap between the availability of resources and their effective utilization for teaching and learning of agricultural science in Ibadan metropolis. This implies that, on average, schools are not making optimal use of the few resources available for teaching agricultural science. This raises a concern about the efficiency and effectiveness of agricultural education in the sampled schools. This study corroborated with that of Adeniran, (2020) who investigated the Influence of Teaching and Learning Resources on students' Performance in Senior Secondary Schools in Gusau, Zamfara State of Nigeria. His study found that teaching and learning materials were not adequately available and the little that were available were not adequately utilized in school by the teachers because of gross inadequacy of skills and knowledge for the resources utilization.

To enhance the quality of agricultural science education, there is a need for strategies and interventions that promote the more effective and comprehensive utilization of available resources. Efforts to increase the extent of resource utilization could positively impact students' learning experiences and academic achievement in agricultural science.

Lastly, the result of test of hypothesis on significant influence of school resources (availability and utilisation) on academic achievement of secondary school students in agricultural science in Ibadan metropolis suggested that schools should not only ensure that the necessary resources for teaching and learning Agricultural Science are available but also focus on their effective utilization. This dual approach is likely to have a positive influence on students' academic outcomes.



The result of the hypothesis agreed with extant literature on the relationship between academic achievement in agriculture and school resources. For instance, Amao (2017) conducted a research to assess the effect of school resources on academic achievement of agricultural science students in senior secondary schools in Oyo West Local Government Area of Oyo state. His findings revealed that all the school resources considered in his study contributed significantly to students' achievement in Agricultural science. However, the work of Otekunrin, Oni & Otekunrin (2017) which was carried out in selected schools in Ibadan North Local government Area of Oyo state did not show any relationship between school resources and students' academic performance.

### **Conclusion**

The study was carried out with the aim of investigating the influence of school resources on student academic achievement in Agricultural Science. The findings from the research show that the level of students' academic achievement in agricultural science in public senior secondary schools in Ibadan metropolis is low. The extent of both resource availability and utilisation are low in the sampled schools and lastly, the result of hypothesis shows that resource availability and utilisation have a positive significance influence on secondary school students' academic achievement in Agricultural Science in the sampled schools.

### **Recommendations**

Based on the findings of this study, the following recommendations are made:

1. The concerned government should increase allocation of funds to facilitate the provision of essential school resources for the effective teaching and learning of agriculture. Schools, in turn, should prioritize the acquisition and allocation of funds towards crucial resources like field trips, functional school farms, operational farm machinery, agricultural charts, and up-to-date textbooks for teaching agricultural science.
2. There is a need to develop and implement strategies to ensure the effective utilization of available resources, including training teachers on how to maximize the use of resources for teaching and practical lessons. Government and school administrators should invest in teacher training and capacity building. This can be done by providing professional development opportunities for agricultural science teachers to improve their pedagogical skills and expertise in utilizing available resources effectively.

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