



## LEVEL OF DIFFICULTY OF TOPICS IN AGRICULTURAL SCIENCE AND ACADEMIC ACHIEVEMENT AMONG STUDENTS IN PUBLIC AND PRIVATE JUNIOR SECONDARY SCHOOLS IN YENAGOA METROPOLIS, BAYELSA STATE

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### Abstract

The study examines students' perception of the level of difficulty of topics in Agricultural science in junior secondary school certificates. The sample was made up of three hundred and seventy three (373) junior secondary students drawn from sixty seven (67) public and private secondary schools within Yenagoa Local Government Area of Bayelsa State. The study was guided by two research questions and two hypotheses. The instrument used in the study was Basic Science Topics Checklist (BSTC) which consisted of twenty-one (21) topics drawn from the junior secondary schools Curriculum. The instrument was validated by experts and the reliability coefficient of 0.76 was established using test-retest reliability coefficient. The mean and standard deviation was used to analyse descriptive statistics while two-way analysis of variance was used to test the tenability of the hypotheses at 0.05 confidence level. From the analyses of data, it revealed that students in public schools perceived the topics more difficult than those in private schools; also there was a significant difference between the total means of male and female students as perceived level of difficulty in Agricultural Science subjects. The paper therefore recommends the use of certified teachers in the teaching of Agriculture Science in private schools and the establishment of monitoring and evaluation scheme. Other recommendations were also made.

**Keywords:** Perception, Difficult Topics, Agriculture Science, Certificates, Curriculum

### Introduction

Education is universally acknowledged as the cornerstone of national development, serving as the primary vehicle for the transmission of knowledge, skills, and values from one generation to the next. In Nigeria, the educational system is structured to provide a foundational experience at the basic education level, of which the Junior Secondary School (JSS) is a critical component. The JSS curriculum is designed to expose students to a broad range of subjects, fostering intellectual, practical, and moral development. Among these subjects, Agricultural Science holds a place of unique strategic importance, particularly in a nation like Nigeria where the economy, food security, and rural livelihoods

are deeply intertwined with the agricultural sector. The inclusion of Agricultural Science in the junior secondary school curriculum is predicated on a multifaceted rationale. It aims to: (a) stimulate students' interest in agriculture, (b) equip them with basic practical skills for self-reliance and subsistence, (c) provide a foundation for further studies in agricultural disciplines at the senior secondary and tertiary levels, and (d) cultivate a positive attitude towards farming as a dignified and profitable occupation (Mulei et al., 2020; Ogunleye & Adebayo, 2024). The ultimate goal is to nurture a generation that not only understands the principles of agricultural production but is also willing and capable of contributing to the modernization and sustainability of the sector. Recent policy initiatives by the Federal Government, such as the Agricultural Curriculum Framework reform announced in 2026, aim to modernize agricultural education by integrating science, entrepreneurship, and technology to make the field more attractive to young Nigerians (Federal Ministry of Education, 2026).

The assessment of students' mastery of this foundational knowledge is primarily conducted through the Junior Secondary School Certificate Examination (JSSCE), a standardized, high-stakes examination administered by State Ministries of Education or examination bodies like the Basic Education Certificate Examination (BECE). The performance of students in this examination serves as a critical metric for evaluating the effectiveness of instruction, the quality of the curriculum, and the overall preparedness of students for the next stage of their education. Consequently, persistent poor performance or specific patterns of underachievement in Agricultural Science at the JSSCE level are a source of significant concern for educators, policymakers, and parents alike. For instance, reports from Akwa Ibom State in 2025 indicated that students scored below 20 percent in Agricultural Science and Biology in a state-wide quiz competition, while their performance in Mathematics, Physics, and Chemistry exceeded 85 percent, prompting calls for an "emergency" in agricultural education (Edidem, 2025). Similarly, national data from the 2024 Unified Tertiary Matriculation Examination (UTME) revealed that 47.92 percent of admission slots allocated to agricultural courses in tertiary institutions remained unfilled, signaling a critical gap in student interest and career pursuit in the agricultural sector (Alausa, 2026).

Though the Federal Government and various stakeholders have since independence made some bold attempts to improve the teaching and learning of science in order to produce the needed manpower for the scientific and technological advancement of Nigeria. Despite these efforts students achievement had remained very low in science in external examinations as noted by Okebukola (2002), Jeremiah (2007) and Ndioho (2007). This persistent low or poor achievement in science is a clear indication that science education in Nigeria is unsatisfactory and as such, needs more pragmatic approach than mere policy statement from its foundation i.e. the junior secondary school level. Contrary to expectations, the result of the monitoring of learning achievement (MLA) of 1994 -1996 reported a low trend in science literacy among primary school pupils in Nigeria (Urebvu, 2006). The low trend in scientific literacy has been attributed to many factors such as poor facilities, high teacher-pupils ratio, inadequate resource materials, libraries, laboratories, poor teaching method and lack of qualified science teachers, as well as perception of both the teacher and students (Jeremiah & Alamina 2006). Njoku (2002) revealed that most secondary school teachers deliberately skip certain concepts that are due in the basic science curriculum because of their incompetence and lack of knowledge in explaining such topics.

Asime (2001) carried out a research on male and female students' perception of some concepts in mathematics. The t-test and ANOVA statistics used in explaining the data revealed a significant difference between male and female students perception of the mathematics topics as male students perceived the topics more difficult than their counterpart female students. The study also revealed that students from private schools perceived the mathematics topics easier than those from public schools. The researcher therefore concluded that age and school environment might have influenced the



perceptual ability in the research. It can be argued that the backwardness of science and technology breakthrough in Nigeria is due to the defect in the implementation of science education curriculum in the junior secondary schools. Wokocha (2000) opined that the need for developing nations like Nigeria to meet up with the developed Nations call for rapid improvement in the teaching and learning of science in our schools system starting from the primary school level. Over the years, reports and observations from Bayelsa State, like many other parts of Nigeria, have indicated a fluctuating, and often underwhelming, level of student performance in Agricultural Science in external examinations. While a multitude of factors can contribute to this phenomenon including teacher quality, pedagogical approaches, availability of instructional materials, and socio-economic background one critical, yet often under-explored, factor is the students' own perception of the subject matter (Egbri & Okorie, 2018).

The cognitive and affective domains of learning are inextricably linked; how a student perceives the difficulty of a topic can significantly influence their motivation, study habits, engagement in class, and ultimately, their performance (Ogunleye & Adebayo, 2024). The Theory of Planned Behavior suggests that students' attitudes, subjective norms, and perceived behavioral control significantly influence their intentions and behaviors toward a subject, including their perception of its difficulty (Ajzen, 1991; Ogunleye & Adebayo, 2024). A study by Olatunji and Nwakor (2011) in Rivers State, which shares similar geographical characteristics with Bayelsa, found that students rated theoretical aspects of the Agricultural Science syllabus as more difficult than practical aspects, and that significant differences existed based on school location, with urban students rating the subject as more difficult than their rural counterparts.

Therefore, a critical gap in the existing body of knowledge is a nuanced understanding of how JSS students in Yenagoa LGA perceive the difficulty levels of specific topics within the Agricultural Science curriculum as they prepare for and undertake the JSSCE. While broad-stroke assessments of student performance are available, they do not disaggregate the data to reveal which topics are consistently perceived as "hard" and why.

### **Statement of the problem**

The effectiveness of the educational system in Bayelsa State, particularly in foundational subjects like Agricultural Science, is a matter of significant concern. Despite the acknowledged importance of the subject for national development and individual self-reliance, evidence suggests that student performance in the JSSCE Agricultural Science is often suboptimal. This underperformance limits students' career aspirations, reduces the pool of potential entrants into agricultural higher education, a trend reflected in the national data showing nearly half of agricultural tertiary education slots unfilled (Alausa, 2026), and fails to foster the desired interest in the agricultural sector (Edidem, 2025). While numerous interventionist studies have focused on external factors such as teacher training, resource availability, and curriculum structure, the student's voice, their own perception of the learning process has been largely marginalized. It is posited that a student's subjective appraisal of a topic's difficulty is not merely a reflection of its inherent complexity but is a critical mediating variable that determines their cognitive engagement, metacognitive strategies, and emotional resilience when confronting that topic (Ogunleye & Adebayo, 2024). The gap between students' positive attitudes toward agriculture as a concept and their reluctance to pursue it as a career, a phenomenon documented across several African countries including Nigeria—suggests that perceived difficulty may be a key barrier (Mulei et al., 2020).



In recent times, subsequent governments have manifested a strong desire for agricultural science and sciences in general and motivated innovations and policies aimed at improving the teaching and learning of science and agriculture but all these have not yielded many dividends, Research works conducted to improve the study of agricultural science and the sciences focused mainly at the senior secondary school level with little or, no attention on the junior secondary level. Some research works such as Okeke and Imoniesa (1989), Nwagbo (2002) and Giwa (2004), emphasized mainly on instructional strategies, teacher-student ratio, instructional material and evaluation of the content area of basic / agricultural science curriculum, without matching them with students and pupils perceptions of scientific topics as they influence the implementation of the curriculum.

The Agricultural Science curriculum, often designed with a terrestrial, arable-farming bias, may not fully resonate with the local reality of fishing, swamp rice farming, and limited land for practical agriculture. This mismatch could lead students to perceive topics that are culturally or environmentally remote as disproportionately difficult, a finding consistent with earlier research in the Niger Delta region (Olatunji & Nwakor, 2011). Additionally, Egbri and Okorie's (2018) study in Bayelsa State demonstrated that school facilities, parental perceptions, and teacher professionalism all have significant relationships with student learning outcomes, suggesting that these factors may also influence how students perceive the difficulty of specific topics. Therefore, the core problem this study seeks to address is the lack of systematic, empirical evidence regarding the specific topics in the JSS Agricultural Science curriculum that students in Yenagoa LGA perceive as difficult, and the underlying reasons for these perceptions. Without this evidence, educational stakeholders including curriculum developers, teachers, examiners, and policymakers are operating on assumptions rather than data-driven insights. Interventions to improve performance will remain generic and may fail to address the specific cognitive and affective barriers faced by students in this unique context.

### **Purpose of the Study**

The purpose of this study is to investigate the junior secondary school students' perception of the level of difficulty of topics in agricultural science. To this effect, the study was specifically designed to achieve the following objectives.

1. to determine the difference between public and private schools students level of academic achievement and perceived level of difficulty of topics in Agricultural Science
2. to determine the difference in between boys and girls students level of academic achievement and perceived level of difficulty of topics in Agricultural Science.

### **Research Questions**

In order to guide this study, the following research questions were posed:

1. What is the difference in means between public and private school students' level of academic achievement and perceived level of difficulty of topics in Agricultural science?
2. What is the difference in mean between male and female students' level of academic achievement and perceived level of difficulty of topics in Agricultural science?

### **Hypotheses**

The following hypotheses were formulated to guide the research.



1. There is no significant difference between public and private school students' academic achievement and perceived level of difficulty of topics in Agricultural Science?
2. There is no significant difference between male and female students' academic achievement and perceived level of difficulty of topics in Agricultural Science?

## Methodology

The target population was made up of 4,500 JSS students in the sixty seven (67) public and private junior secondary schools in Yenagoa Local Government Area of Bayelsa State. Junior secondary was chosen because it is the level that the students are first exposed to external examination on the subject Agriculture science. A total of three hundred and eighty (380) junior secondary school Agricultural Science students drawn from nineteen (19) sampled schools in Yenagoa Local Government Area of Bayelsa State participated in the study, twenty (20) students per school were used for the study, among whom 10 males and 10 female students chosen as the sample size. A total of 190 males and 190 females drawn from public and private schools in Yenagoa metropolis. Selection of schools were done using purposive sampling technique, while Selection of students was done through simple random sampling techniques by balloting. Taro Yamen's as well as the table of minimum suitable sample size from population were used to draw and arrived at the samples size of (380), which was used for the study. Two major instruments were used to gather information for this study. First is the teacher made achievement test with multiple choice questions in agricultural science for junior secondary (MCQAJ) of 20 objective questions with 4 alternatives and the Basic Science topic checklist (BSTC), which consist of twenty topics drawn from Agricultural science curriculum to which a 4-point rating scale was attached. The respondents were required to rate the level of difficulty in learning of the topics in agricultural science, as well answer the multiple choice achievement (OBJ) questions. Rating for the checklist include: very difficult (VD), difficult (D), easy (E), and very easy (VE). The two instruments were administered to students at the same time in order to assess their level of academic achievement and perceived levels of difficulty of topics in agricultural science.

The instruments were validated by two instructional material specialists and two experts in measurement and evaluation. The instrument was later trial tested in four (4) schools using fifty (50) male students and fifty female students. The result yielded a reliability coefficient of 0.75, which was established using test retest reliability coefficient. This was considered adequate for the study. The instrument was administered to the subjects by the researchers with the help of local teachers from the various schools. The administration of the instrument lasted for (10) days (two weeks). A schedule was drawn for the administration of the instrument and adhered to strictly. All the copies of instrument administrated were completed and returned within specific time. Data collected were transformed and analysed using two-way ANOVA

## Results:

**Table 1: Independent samples two-way ANOVA**

Between-Subjects Factors		N
male & female	1.00	190
	2.00	190
public & prinate	3.00	190
	4.00	190



**Descriptive Statistics**

Dependent Variable: Scores

male & female	public & private	Mean	Std. Deviation	N
1.00	3.00	39.2737	24.50942	95
	4.00	46.6737	21.20891	95
	Total	42.9737	23.15703	190
2.00	3.00	48.1158	17.95732	95
	4.00	49.6526	15.80046	95
	Total	48.8842	16.88609	190
Total	3.00	43.6947	21.88139	190
	4.00	48.1632	18.71139	190
	Total	45.9289	20.45402	380

**Levene's Test of Equality of Error Variances<sup>a</sup>**

Dependent Variable: Scores

F	df1	df2	Sig.
7.321	3	376	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Genda + School + Genda \* School

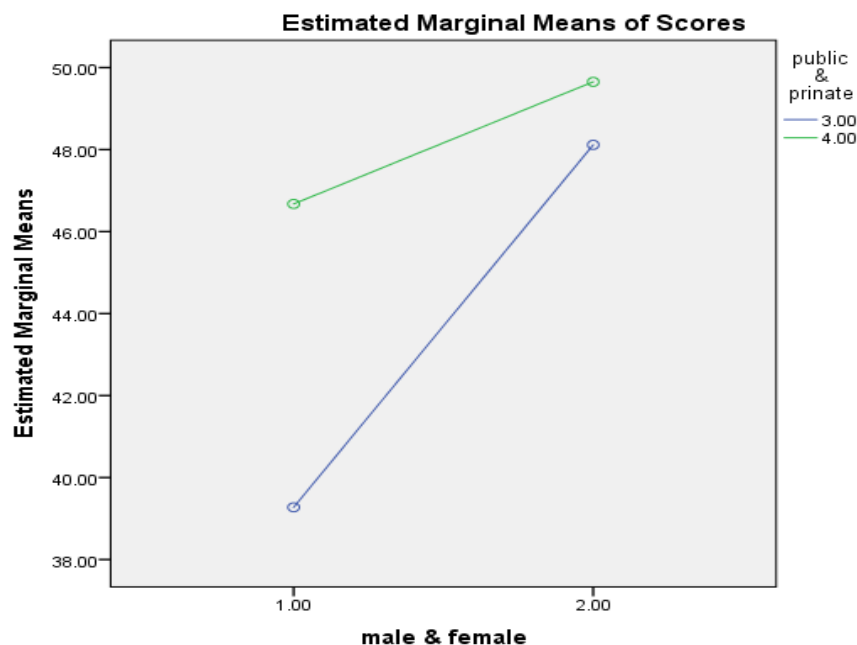
**Tests of Between-Subjects Effects**

Dependent Variable: Scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta
Corrected Model	6032.050 <sup>a</sup>	3	2010.683	4.957	.002	.038	
Intercept	801597.918	1	801597.918	1976.023	.000	.840	
Genda	3318.761	1	3318.761	8.181	.004	.021	
School	1896.845	1	1896.845	4.676	.031	.012	
Genda * School	816.445	1	816.445	2.013	.157	.005	
Error	152529.032	376	405.662				
Total	960159.000	380					
Corrected Total	158561.082	379					

a. R Squared = .038 (Adjusted R Squared = .030)

## Profile Plots



From the table above, is the SPSS Univariate analysis of variance (2-way ANOVA) at 0.5 level of significance. The Descriptive statistics makes the first part of the table Showing the mean and standard deviation of the students in public and private schools respectively. The first table shows the (means and standard deviation) as well as number of cases for each of the cells and for the total of the data. It seen that the Male in Public school has a mean of 39.2737 & standard deviation of 24.50942, while the mean for Male students in Private school is 46.6737 and a standard deviation of 21.20891. The combine mean for all male students in the public and private school is 42.9737. Total number of male in public & private school is 190 respectively 95 each of public and private school. The female in public school had a mean of 48.1158 and standard deviations of 17.95732 while the female in private school a mean of 49.6526 and a standard deviation of 15.80046. The combined mean of the females in public and private school is 48.8842, total number of girls that participated in the study is 190 respectively 95 each of public and private school.

The second part of the output has shown Leven's Test of Equality of Error Variances (F) to be 7.321 which is not significant ( $p > .05$ ) at 3 and 376 degrees of freedom.

The third part of the results titled, Test of Between-Subjects Effects, is the main summary of the independent samples two-way ANOVA. Male & Female Gender has 3318.761 sum of squares, 1 degrees of freedom, 3318.761 mean square and F ratio of 8.181 that is not significant even at .004 alpha. That is, the main effect of gender is statistically significant as  $F(1, 376) = 8.181, p < .05$  at 0.05 alpha. School has 1896.845 Sum of Squares, 1 degree of freedom, 1896.845 mean square and 4.676 F ratio that is statistically significant at .05 alpha. The second main effect is significant as  $F(1, 376) = 4.676, p < .05$ . The interaction effect of gender and school has 816.445 sum of squares, 1 degrees of freedom, 816.445 mean square and F ratio of 2.013 that is not significant at .05 alpha  $F(1, 376) = .157, p < .05$ . The Error or Within Sum of Squares is 152529.032 with 376 degrees of freedom and 405.662 Mean

Square. The corrected total sums of squares and degrees of freedom are 960159.000 and 380, respectively.

The last part of the output is a Profile of the Estimated Marginal Means of school against gender graphically, Position of the group means in this profile for gender (in blue) and group school (in green) visually illustrate the effects of the two independent variables, individually and collectively, on the dependent variable (academic performance).

### **Discussion of Findings**

The descriptive statistics shows the mean and standard deviation of the students in public and private schools respectively, as well as number of cases for each of the variables. Data shows that male students in Public school has a mean of 39.2737 & standard deviation of 24.50942, while the male students in Private school is 46.6737 and a standard deviation of 21.20891. This confirm the fact that, private schools male students are doing better than the male students in public schools in terms of teaching, learning and academic achievement amongst students. The combine mean for all male students in the public and private school is 42.9737. Out of 190 students sampled. Generally public and private schools students with mean of 42.9737 shows that, the performance of male students in public and private schools is below average.

The female students in public school had a mean of 48.1158 and standard deviations of 17.95732 while the female students in private school has a mean of 49.6526 and a standard deviation of 15.80046. From data, it is observed that, the means of the female students in private school is higher than their counterpart in public school, which is slightly below average. The combined mean for the female students in public and private school is 48.8842, out of 190 students sampled. Generally with the combined mean of 48.8842 for public and private school male students, data has shown that the performance of male students in public and private schools are close to average, and it is better than the males.

### **Conclusion**

From the finding of this study, it could be concluded that students in public schools performed poorly and perceived the Basic science topics more difficult than those in private schools. Female students performed a little better than the male students and perceived the topics in agricultural science as difficult but were better than the male students.

### **Recommendations**

Based on the conclusions the following recommendations are made:

1. Proprietors of private schools should do more in terms of recruiting more qualified science teachers in the teaching of Agricultural science.
2. Students should be exposed to science. Workshops, seminars and conference to update their knowledge on recent innovations in Agricultural Science.
3. Ministry of Education should establish effective curriculum monitoring and evaluation procedure in schools, especially public schools.
4. Inter school science debate and quiz should be encouraged amongst male and female students.



5. Schools especially the private schools should ensure they engage xertified agricultural science teachers at all levels.

## References

- Alausa, T. (2026, February 16). FG revamps agricultural education to boost food security, jobs. *BusinessDay*. <https://businessday.ng/news/article/fg-revamps-agricultural-education-to-boost-food-security-jobs/>
- Asime, P. P. (2001). Teachers' and students' perception of some concepts in mathematics. *Education review in sub-Saharan Africa*, 11(3-4), 111-121.
- Edidem, K. A. (2025, November 30). Lawmaker seeks emergency in Agric, Biology education in Akwa Ibom schools. *Daily Post Nigeria*. <https://dailypost.ng/2025/11/30/lawmaker-seeks-emergency-in-agric-biology-education-in-akwa-ibom-schools/>
- Egbri, J. N., & Okorie, M. U. (2018). School facilities, parental subject perception and teachers' professionalism as correlates of students' learning outcome in agricultural science in Bayelsa State. *Journal of Educational Research and Development*, 11(2), 45–58.
- Federal Ministry of Education. (2026). *Agricultural curriculum framework reform: A roadmap for modernizing agricultural education in Nigeria*. Federal Ministry of Education.
- Giwa, O. Y. (2004). Effects of children science clinic on primary school pupils' academic performance in Integrated Science. In M.A.B. Akali (Ed), Science, Technology and Mathematics (STM) Education for Sustainable development in Africa. *Proceeding of the 44th annual conference proceeding of the science teachers association of Nigeria 426-429*, Heinemann educational books (Nigeria) plc.
- Jeremiah, .S. (2004). *Summative evaluation of Basic Science Curriculum in Nigeria*. Unpublished M. Ed. thesis. Rivers State University of Science and Technology, Nkpolu Port Harcourt.
- Jeremiah, S. & Alamina, J. L. (2006). Innovations in primary science curriculum in Nigeria. A pivot for sustainable science and technology in the 21st Century. *Nigeria journal of education planning and finance*, 1(1&2), 98-100.
- Jeremiah, S. (2007). Assessment of the national policy on primary education: Implication for the universal basic education curriculum in Nigeria. *Nigerian journal of research and production*, 10(1), 111-120.
- Kothari, C. R., & Gaurav, G., (2016). *Research methodology, methods and techniques*. New age international publishers.
- Kpolovie P. J. (2018). Statistical approaches in excellent research methods. [www.patridgepulishig.com/africa](http://www.patridgepulishig.com/africa)



- Mulei, W. M., Larinde, B., Adefioye, A., Bobo, P., & Woomeer, P. L. (2020). Understanding the perceptions of secondary school youth toward agricultural careers in Democratic Republic of Congo, Kenya and Nigeria. *Journal of International Agricultural and Extension Education*, 27(4), 62–78. <https://doi.org/10.5191/jiaee.2020.27462>
- Mustapha, S. (2024, October 14). Food security: Senator urges FG to make agric studies compulsory in schools. Daily Trust. <https://dailytrust.com/food-security-senate-panel-urges-fg-to-make-agric-studies-compulsory-in-schools/>
- Ndioho, O. (2007). Effect of constructivist based instructional model on senior secondary students in biology. In U. Nzewi (Ed); Science, Technology and Mathematics (STM) Education for Sustainable Development. *Proceeding of 50th Annual Conference of Science Teachers Associations of Nigeria*, 98-100. HEBU publishers (Nigeria) plc.
- Njoku Z. C. (2005). Identification and analysis of topic which teachers perceive Difficult to teach in the primary Science curriculum. *Journal of science teachers association of Nigeria*, 40(1&2), 11-20.
- Njoku Z. C. (2002). Nigeria university non-sciences' level of scientific literacy as an indicator of national readiness for sustainable development. The case of university of Nigeria Nsukka. In M.A.B. Akali (Ed), Science, technology and mathematics (STM) Education for Sustainable Development in Africa. *Proceeding of the 3rd annual conference proceeding of the science teachers association of Nigeria* 69-72. Heinemann Educational Books (Nigeria) Plc.
- Nwaghbo, C. R. (2002). Level of scientific literacy of secondary school science students. Implication for sustainable development. In M.A.B. Akali (ed), science, technology and mathematics (STM) education for sustainable development in Africa. *Proceeding of the 43rd annual conference proceeding of the science teachers association of Nigeria*. 73-77. Heinemann educational books (Nigeria) Plc.
- Nwankwo, O. C., (2016), *A practical guide to research writing for students in education and social science* (6<sup>th</sup> ed) M & J Grand Orbit and communications Ltd. Port Harcourt. Pp351
- Ogunleye, B. O., & Adebayo, K. (2024). Students' perception and attitude to agricultural science subject acceptance in government-owned secondary schools in Edo state, Nigeria. *World Journal of Advanced Research and Reviews*, 24(1), 101–112. <https://zenodo.org/records/14950513>
- Okebukola, P. (2002). *Beyond the stereotype to new trajectories in' science teaching*. Science teachers association.
- Okoro, C. C. (2002). *Basic concepts in education psychology*. Uco publisher.
- Olatunji, S. O., & Nwakor, F. N. (2011). Students' assessment of the content of senior school agricultural science syllabus: Implications for agricultural extension and development. *Journal of Technology and Education in Nigeria*, 16(2), 45–58. <https://www.ajol.info/index.php/joten/article/view/78574>



Urebvu, A. D. (2006). Quality of primary education in Nigeria: Problems and prospect for the 21st century. *Nigerian Journal of Curriculum Studies*, 139(2), 1-14.

Wokocha, G. A. (2000). Major issues on the quality of primary science programmed. *Journal of the association for promoting quality education in Nigeria*, 10(2), 391-400.