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INSTRUCTIONAL MATERIALS AND STUDENTS' ACADEMIC PERFORMANCE IN NIGERIA

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Abstract

This study examined the influence of instructional materials on students' academic performance in secondary schools in Port Harcourt Metropolis, Rivers State. Guided by Dale's Cone of Experience and Vygotsky's Social Constructivist Theory, the study assessed availability, adequacy, and utilization of instructional materials, and their relationship with academic performance. Adopting a descriptive survey design, 650 SSS II students and teachers were sampled from 40 schools using multi-stage sampling. Data were collected with the IMSAPQ, which had a reliability coefficient of 0.84, and students' examination scores. Mean, Pearson r, and t-test were used for analysis at 0.05 level. Findings showed low overall availability of materials, mean = 2.42, but high utilization of conventional resources, mean = 2.57. There was a significant positive relationship between utilization and academic performance and a significant difference in availability between public and private schools. The study concluded that effective use of instructional materials improves learning outcomes. It also recommended increased funding, teacher training on ICT use and improved monitoring of resource utilization.

Keywords: Instructional Materials, Academic Performance, Secondary Schools, Utilization

Introduction

Education is globally acknowledged as the most potent instrument for national transformation, human capital development, and sustainable growth. In Nigeria, Section 1 of the National Policy on Education [FRN] articulates education as the primary means of fostering national consciousness, developing the individual for social, economic, and cultural contribution, and

equipping citizens with appropriate skills for self-reliance. The realization of these lofty ideals, however, rests heavily on what happens within the classroom. Teaching and learning processes must be engaging, meaningful, and outcome-driven if students are to acquire the competencies required for the 21st century. At the center of this process lies the teacher and the resources he or she deploys, with instructional materials occupying a pivotal position.

Instructional materials, also referred to as teaching-learning resources, are the totality of items, objects, and media that a teacher uses to operationalize the curriculum and facilitate students' understanding of abstract concepts. Agina-Obu (2019) defined instructional materials as all resources that appeal to the senses of the learner and make instruction concrete. They range from traditional print materials such as textbooks, charts, maps, models, and real objects, to audio-visual resources like radio, television, projectors and increasingly, digital and technology-based tools such as computer-assisted instruction, learning management systems, simulations, and educational software. The underlying pedagogical principle is that learning is multisensory. Dale's Cone of Experience illustrates that learners remember 10% of what they read, 20% of what they hear, 30% of what they see, and up to 90% of what they do. Therefore, when students interact with well-selected and well-utilized instructional materials, they move from the level of verbalism to direct experience, which enhances comprehension, retention and transfer of learning (Dale, 1969).

Over the years, Nigerian education has struggled with resource inadequacy. Colonial education relied largely on imported textbooks and minimal teaching aids. Post-independence expansion of schooling in the 1970s and 1980s, especially under the Universal Primary Education [UPE] scheme, increased enrolment without a corresponding increase in learning resources. The situation has not changed significantly in many public schools today. Onyeachu (2020) observed that most Nigerian classrooms are still characterized by teacher-dominated lectures, with the chalkboard and students' notebooks as the main resources. This "talk-and-chalk" approach limits students' participation, creativity, and critical thinking. Consequently, learning becomes passive, and students resort to memorization without understanding, a practice that undermines the goals of the current curriculum which emphasizes competence, creativity and problem-solving. Empirical evidence from within and outside Nigeria consistently affirms the link between instructional materials and academic achievement. Iyamu and Ogiegbaen (2020) found that secondary school students exposed to varied instructional materials in Social Studies performed significantly better than their counterparts taught with only textbooks. Similarly, Akinsolu (2020) reported a positive correlation between the frequency of instructional material utilization and students' performance in Mathematics and English Language in Oyo State. Internationally, UNESCO notes that in low-resource countries, the availability of textbooks alone can improve learning outcomes by up to 40% when combined with teacher training on their use. The implication is clear: instructional materials are not luxury items in education; they are basic inputs that mediate the teaching-learning process.

Despite this evidence, students' academic performance in Nigeria remains worrisome. Data from the West African Examinations Council (WAEC, 2021; 2022; 2023) show that over the last three years, less than 45% of candidates obtained five credits including English Language and Mathematics. The National Examination Council (NECO) also reported persistent mass failure in core science and mathematics subjects. The Universal Basic Education Commission

(UBEC) attributed part of the underperformance at the basic level to inadequate learning resources, poor classroom environment, and weak instructional delivery. While teacher quality, school management, students' background, and funding are also implicated, the role of instructional materials cannot be isolated. Babalola and Adedeji (2021) argued that in many public secondary schools, laboratories are either non-functional or empty, maps and charts are outdated, and digital resources are virtually absent. Even in schools where some materials exist, they are often locked away, damaged, or underutilized due to lack of teacher competence and confidence.

The emergence of technology has further complicated and expanded the discourse on instructional materials. The COVID-19 pandemic exposed Nigeria's digital divide, as schools with learning management systems and e-content platforms were able to sustain instruction, while many others were completely shut down. The Federal Ministry of Education has since emphasized the integration of Information and Communication Technology [ICT] in teaching. However, the reality in most schools is that computers are few, internet connectivity is poor, and teachers lack the requisite digital literacy to integrate technology into lessons (Eze & Onyeke, 2020). This creates a dual challenge: the need to provide conventional materials and the need to build capacity for modern, digital resources (Ololube, 2021).

Another dimension is the distinction between availability and adequacy. A school may have textbooks, but if the teacher-student ratio is 1:60, the materials cannot be effectively used. Nwachukwu and Okonkwo (2022) noted that many Nigerian schools have insufficient copies of approved textbooks, forcing students to share or copy notes from the board. In science subjects, the absence of laboratory apparatus means practicals are taught theoretically, which defeats the purpose of science education. Inadequacy also relates to relevance and currency. Some textbooks in use are obsolete and do not reflect the current curriculum or Nigerian contexts, thereby making learning abstract and disconnected from students' realities. Teacher-related factors further complicate the issue. Okoro and Awe (2019) found that even when materials are available, many teachers lack the skill to improvise or integrate them effectively. Pre-service teacher education programs in Nigeria have been criticized for insufficient emphasis on instructional material production and utilization. In-service training is also sporadic, leaving many teachers to rely on methods they were taught decades ago. The result is underutilization, which is as detrimental as non-availability.

Socio-economic and policy contexts also matter. Nigeria's education budget has consistently fallen below UNESCO's 26% benchmark, and a large proportion of what is allocated goes to personnel costs rather than infrastructure and materials [FRN]. School-Based Management Committees and Parent-Teacher Associations have been encouraged to mobilize resources locally, but in low-income communities, this has yielded limited results. Private schools, especially elite ones in urban centers, often have better access to materials and technology, creating a performance gap between public and private institutions (Akinsolu, 2020). Given these realities, the relationship between instructional materials and students' academic performance in Nigeria is both pedagogical and policy-driven. Pedagogically, materials make learning active, concrete, and student-centered. Policy-wise, their provision and utilization reflect the state's commitment to quality education. As Nigeria pursues the Sustainable Development Goal 4, which targets inclusive and quality education for all by 2030, the question

of what resources are in classrooms, how they are used, and what impact they have on learning outcomes becomes urgent. It is within this context that the present study is anchored. It seeks to move beyond anecdotal claims and provide empirical evidence on the availability, adequacy, and utilization of instructional materials and how these variables relate to students' academic performance in Nigerian secondary schools. By focusing on core subjects and comparing public and private schools, the study aims to generate data that will inform curriculum implementation, teacher training, and resource allocation at both state and federal levels.

According to Obizue & Obizue (2025) asserted that the centrality of instructional materials to effective teaching and learning is no longer in doubt in educational discourse yet, the Nigerian secondary school system continues to grapple with a chronic deficit in the provision, adequacy, and utilization of these resources. This deficit has created a wide gap between curriculum intentions and classroom realities, with direct consequences for students' academic performance. The problem of non-availability and inadequacy of instructional materials is widespread, particularly in public secondary schools across Nigeria. Babalola and Adedeji (2021) observed that many schools lack basic teaching aids such as charts, models, maps, laboratory equipment, and even sufficient copies of approved textbooks. In science classrooms, for instance, it is common to find schools without functional laboratories, reagents, or specimens. As a result, practical aspects of subjects like Biology, Chemistry, Physics, and Basic Technology are taught theoretically. Students are expected to understand concepts such as titration, dissection, or electrical circuits without ever seeing or handling the relevant apparatus. This contradicts the experiential learning principle that learners grasp abstract ideas more easily when they are presented concretely. The consequence is superficial learning, low retention, and poor performance in external examinations where practical competence is assessed.

Second, even in schools where some instructional materials exist, the issue of inadequacy in quantity and quality persists. Nwachukwu and Okonkwo (2022) noted that in many Nigerian classrooms, the ratio of textbooks to students is often 1:3 or worse, forcing learners to share or copy notes from the board. Sharing reduces individual engagement and increases passivity. Moreover, several textbooks in circulation are outdated and do not align with the current Senior Secondary School Curriculum. When students learn from obsolete materials, they are disconnected from current knowledge, terminology, and examination requirements. This misalignment partly explains why many candidates struggle with WAEC and NECO questions that reflect the revised curriculum. Inadequacy also extends to digital resources. While the Federal Ministry of Education (2014) advocates for ICT integration, most public schools have few or no computers, and where they exist, they are often non-functional or used only for administrative purposes rather than instruction. The issue of underutilization is equally critical. Availability alone does not guarantee improved learning outcomes. Eze and Onyeke (2020) found that in Enugu State, many teachers had access to charts, models, and audio-visual aids but rarely used them in lessons. The reasons identified included lack of training on how to integrate materials, fear of damaging equipment, time constraints due to large class sizes, and the belief that the conventional lecture method is faster for "covering the syllabus." Okoro and Awe (2019) further reported that many teachers, especially older ones, were not trained in material improvisation during their pre-service education. Consequently, they depend entirely on the chalkboard and textbooks, even when other resources are present. This underutilization

defeats the purpose of procuring materials and represents a waste of scarce educational resources. Effective use of instructional materials requires pedagogical skill, creativity, and confidence. However, many Nigerian teachers have not received adequate in-service training on modern instructional strategies or digital pedagogy. The COVID-19 school closures revealed that most teachers were unprepared to use e-learning platforms, recorded lessons, or virtual simulations. Ololube (2021) argued that the digital divide in Nigerian education is not only infrastructural but also human-capital based. Teachers who are not confident with technology are unlikely to integrate it, thereby limiting students' exposure to 21st-century learning tools. This skills gap means that even when government or donors provide smart boards, projectors, or software, they remain underused. There is the challenge of funding and policy implementation. Nigeria's education budget has historically been below the UNESCO recommendation of 26% of total government expenditure. A significant portion of allocated funds is consumed by salaries, leaving little for instructional resources, maintenance, or teacher development. Although policies such as the Universal Basic Education Act and the National Policy on Education mandate the provision of adequate learning materials, implementation at the school level is weak. School-Based Management Committees have been tasked with resource mobilization, but in rural and low-income communities, parents lack the financial capacity to contribute meaningfully. The result is a two-tier system: well-resourced private schools with libraries, laboratories, and ICT labs, and under-resourced public schools struggling with basics. This disparity is reflected in academic outcomes, with private school candidates consistently outperforming public school candidates in WAEC and NECO. The implications for students' academic performance are severe and measurable. WAEC statistics for 2021, 2022 and 2023 show that fewer than 45% of candidates obtained five credits including English and Mathematics. NECO Chief Examiners' Reports repeatedly highlight students' inability to answer practical-based and application-level questions. UBEC's performance reports also link low literacy and numeracy rates at the basic level to poor instructional delivery. When students are taught abstractly without materials to visualize, manipulate or experiment, they memorize rather than understand (Obizue & Obizue, 2025). This rote approach fails them in examinations that now emphasize critical thinking and problem-solving. Over time, repeated poor performance erodes students' self-confidence, increases dropout rates, and diminishes the credibility of the Nigerian education system.

While several studies have examined instructional materials in specific subjects, states, or school types, few have provided a comprehensive, current, and comparative analysis of availability, adequacy, utilization, and their combined influence on overall academic performance across public and private secondary schools in Nigeria. Most existing studies are localized, dated, or limited to one subject area. This fragmentation makes it difficult for policymakers to make informed, nationwide decisions on resource allocation and teacher training.

The challenges notwithstanding, the role of instructional materials in mediating effective teaching and learning cannot be overstated. While Nigeria continues to pursue educational reforms aimed at improving quality and access, the condition of instructional resources in schools remains a pivotal variable. This study, therefore, seeks to provide a detailed and current examination of how instructional materials relate to students' academic performance in

Nigeria, with the ultimate goal of offering actionable recommendations for educational improvement.

This study is significant on several fronts. To educational policymakers at the federal and state levels, the findings will provide empirical data for planning, budgeting and monitoring the provision of instructional resources in schools. The Federal Ministry of Education and UBEC can use the results to prioritize intervention programs such as the School-Based Management Committee [SBMC] resource mobilization drive. For school administrators and principals, the study will highlight the need for effective inventory management, teacher supervision, and the creation of a learning environment that encourages the use of diverse materials. Teachers will also benefit, as the study will underscore the pedagogical value of integrating varied instructional materials and may stimulate in-service training needs in material development and improvisation.

To students and parents, the study reaffirms that learning is enhanced when abstract concepts are made concrete. Finally, to researchers and curriculum developers, the study will contribute to the growing body of literature on instructional resources in the Nigerian context and may serve as a baseline for longitudinal studies on educational inputs and outcomes.

It is against this background that this study seeks to investigate the availability, adequacy, and utilization of instructional materials and their relationship with students' academic performance in Nigeria, with a view to providing evidence-based recommendations for improving teaching, learning and examination outcomes.

The main purpose of this study is to examine the relationship between instructional materials and students' academic performance in Nigeria. Specifically, the study seeks to:

1. Assess the availability and adequacy of instructional materials in selected secondary schools in Nigeria.

2. Investigate the influence of instructional material utilization on students' academic performance in core subjects.

To guide the study, the following research questions are raised:

1. What is the level of availability and adequacy of instructional materials in Nigerian secondary schools?

2. What is the relationship between the utilization of instructional materials and students' academic performance?

The following null hypotheses were tested at the 0.05 level of significance:

Ho1: There is no significant difference in the availability and adequacy of instructional materials between public and private secondary schools.

Ho2: There is no significant relationship between the utilization of instructional materials and students' academic performance.

Concepts

Concept of Instructional Materials

Instructional materials refer to the totality of resources, both human and non-human, that a teacher systematically selects and uses to facilitate teaching and learning and to make abstract concepts concrete for learners.

Instructional Materials means any collection of resources, both print and non-print, audio, visual, or digital, that a teacher uses to facilitate teaching and learning and to enhance students' understanding of subject matter.

Agina-Obu (2019) described them as all the media, tools, and resources that appeal to the senses and aid the teacher in presenting subject matter in a meaningful and comprehensible manner. They encompass a wide range of items including print materials such as textbooks, workbooks, charts, and maps; audio-visual resources such as radio, television, projectors, and recorded lessons; real objects and models referred to as realia; and increasingly, digital and technology-based resources such as computer-assisted instruction packages, educational software, and online learning platforms. The primary function of instructional materials is to serve as a bridge between the teacher, the learner, and the curriculum content by reducing verbalism, stimulating interest, and promoting active participation. Onyeachu (2020) noted that when learners see, hear, and manipulate resources during instruction, they are more likely to understand, retain, and apply knowledge than when instruction is limited to teacher exposition. In the Nigerian classroom context, instructional materials are therefore not mere supplements but essential pedagogical inputs that translate the intended curriculum into classroom practice and influence the quality of learning outcomes.

Acooding to Obizue & Obizue (2025), availability refers to the presence or existence of instructional materials in a school at the time of the study while adequacy is the extent to which available instructional materials are sufficient in quantity and quality to meet curricular demands for a given class size.

Utilization is estimated by the actual use and integration of instructional materials by teachers during classroom instruction to achieve learning objectives.

Concept of Students' Academic Performance

Students' academic performance refers to the measurable outcome of a learner's educational experience, usually expressed in terms of scores, grades, or pass rates obtained in examinations and continuous assessments. It reflects the extent to which students have attained the knowledge, skills, attitudes, and competencies specified in the curriculum. Nwachukwu and Okonkwo 92022) posited that academic performance serves as an indicator of the effectiveness of teaching and learning processes within a school system. In the Nigerian context, performance is commonly measured through standardized external examinations such as the West African Senior School Certificate Examination and the National Examination Council Senior School Certificate Examination, as well as through teacher-made tests and school-based assessments. Low academic performance is often characterized by mass failure, poor grades in core subjects, and inability of students to apply learned concepts to practical situations, while

high performance is indicated by consistent credits, distinctions, and the demonstration of higher-order thinking skills. Because academic performance is influenced by multiple school-based and home-based factors, instructional inputs such as the availability and utilization of teaching resources are considered critical variables that directly affect how well students learn and perform academically (Obizue & Obizue, 2025).

Theories

The relationship between instructional materials and students' academic performance in Nigeria can be meaningfully understood through the lens of Edgar Dale's Cone of Experience and Lev Vygotsky's Social Constructivist Theory. Both theories provide a pedagogical and psychological basis for why the use of teaching and learning resources influences how well students learn, retain, and apply knowledge.

Edgar Dale's Cone of Experience remains one of the most cited frameworks in educational technology and instructional design. Dale proposed a visual representation of learning experiences arranged in a continuum from the most abstract to the most concrete. At the apex of the cone are verbal symbols such as words and textbooks, while at the base are direct, purposeful experiences where learners engage in real activities. Between these extremes lie visual symbols, recordings, radio, still pictures, motion pictures, television, exhibitions, field trips, demonstrations, and dramatized experiences. The fundamental premise of the theory is that learners remember more when they progress from abstract to concrete experiences. Verbalism, which involves teaching solely through words without supporting materials, results in low retention, whereas learning that involves seeing, hearing, touching, and doing leads to deeper understanding and long-term memory. In the context of Nigerian secondary schools, Dale's Cone explains why students taught with charts, models, laboratory apparatus, audio-visual aids, and digital simulations tend to outperform those taught only through lectures and chalkboard notes. When a Biology teacher uses a real specimen or a model of the human heart instead of describing it verbally, students move down the cone toward concrete experience, and this shift increases comprehension and recall. The theory also underscores the importance of variety in instructional materials because different learners benefit from different levels of concreteness. Therefore, the adequacy and utilization of instructional materials become critical inputs that determine whether teaching remains at the abstract level of verbalism or moves toward experiences that enhance academic performance.

Complementing Dale's work is Vygotsky's Social Constructivist Theory, which emphasizes that learning is a social and mediated process. Vygotsky argued that knowledge is not passively received but actively constructed through interaction with more knowledgeable others and through the use of cultural tools. He introduced the concept of the Zone of Proximal Development, which refers to the gap between what a learner can do independently and what the learner can achieve with guidance and support. Within this zone, instructional materials function as psychological and physical tools that mediate learning. Textbooks, charts, computer software, laboratory equipment, and even improvised local materials serve as scaffolds that help students bridge the gap between their current understanding and the intended learning outcomes. Vygotsky also stressed the role of language and symbols in cognitive development, and instructional materials provide the concrete referents that give meaning to abstract

language. In a typical Nigerian classroom with large class sizes, the teacher alone cannot provide individualized support to every student. Well-designed instructional materials reduce this burden by making concepts visible and manipulable, thereby allowing students to explore, question, and construct meaning with less direct teacher intervention. For example, a Mathematics teacher who uses geometric models or computer-based graphing tools enables students to visualize abstract algebraic relationships, and this visualization operates within their zone of proximal development. When such materials are absent or underutilized, students are left at the level of abstract verbal explanation, which many cannot independently translate into understanding, leading to poor academic performance. Vygotsky's theory therefore positions instructional materials not as mere teaching aids but as essential mediators of cognitive growth and collaborative learning.

Taken together, Dale's Cone of Experience and Vygotsky's Social Constructivism provide a strong theoretical justification for the present study. Dale explains the sensory and experiential dimension of why materials improve retention, while Vygotsky explains the cognitive and social dimension of how materials mediate understanding. In the Nigerian context, where resources are often limited and class sizes are large, these theories suggest that the strategic provision and effective utilization of instructional materials can compensate for teacher shortages, reduce abstraction, and create learning conditions that promote higher academic achievement.

Methodology

This study adopted a descriptive survey research design with a correlational component. A descriptive survey is considered appropriate because it enables the researcher to collect data from a large population in order to describe, explain, and examine the relationship between variables without manipulating them. The correlational aspect was used to determine the extent of relationship between the utilization of instructional materials [independent variable] and students' academic performance [dependent variable]. This design is suitable because the study seeks to report the current status of instructional materials in Nigerian secondary schools and to establish statistical associations rather than cause-effect relationships (Akinsolu, 2020). The study was carried out in Rivers State, Nigeria, with Port Harcourt Metropolis as the case study area. Rivers State was selected because it represents a mix of urban, semi-urban and rural secondary schools under both public and private ownership, reflecting the national diversity in resource availability. Port Harcourt Metropolis was chosen as the case study due to its concentration of secondary schools, accessibility to the researcher, and the presence of schools with varying levels of instructional material provision. The metropolis hosts over 120 registered senior secondary schools, comprising 68 public and 52 private schools according to the Rivers State Senior Secondary Schools Board (2023). The target population consisted of all Senior Secondary School II [SSS II] students and subject teachers in public and private secondary schools in Port Harcourt Metropolis during the 2025/2026 academic session. Which comprised of 18,450 SSS II students and 1,240 subject teachers in English Language, Mathematics and Basic Science across 120 schools. 2. The study used 6,520 SSS II students and 420 subject teachers in 40 selected schools, because SSS II students have had sufficient exposure to the curriculum and examination practices, and teachers in core subjects are primary users of instructional materials and a sample size of 650 respondents was determined using the

Taro Yamane formula at a 5% margin of error. This comprised 600 SSS II students and 50 subject teachers. A multi-stage sampling technique was employed in stages. Stage 1 - Stratified Sampling: Schools were stratified into public (20 schools) and private (20 schools) to ensure appropriate representation of both sectors. Stage 2 - Simple Random Sampling where, from each stratum, 20 schools were randomly selected by balloting from the list obtained from the Rivers State Senior Secondary Schools Board. And in Stage 3, the purposive and simple random sampling was sued to select 15 SSS II students and at least 1–2 subject teachers of English, Mathematics, or Basic Science were purposively selected based on their use of instructional materials. Primary data were collected using a structured questionnaire titled; Instructional Materials and Students' Academic Performance Questionnaire [IMSAPQ] and an Academic Performance Proforma. IMSAPQ is a 4-point Likert scale section measuring availability, adequacy and utilization of instructional materials. Section A captured demographic data; Section B had 25 items on instructional materials. From the Academic Performance Proforma, the Students' scores in the 2024/2025 end-of-session examinations in English Language, Mathematics and Basic Science were obtained from school records. The questionnaire was administered directly by the researcher with the aid of three trained research assistants over a period of four weeks. The face and content validity of the instrument were established by giving the IMSAPQ to three experts: two in Educational Measurement and Evaluation, and one in Curriculum Studies from the University of Port Harcourt. Their corrections on clarity, relevance and coverage were incorporated. Reliability was determined using a pilot test on 30 SSS II students and 5 teachers from two schools not included in the main study. Data collected were analyzed using Cronbach's Alpha to test internal consistency. The overall reliability coefficient obtained was r = 0.84, which is above the acceptable threshold of 0.70 (Nwachukwu & Okonkwo, 2022). This indicated that the instrument was consistent and dependable for the study. Data collected were coded and analyzed using the Statistical Package for Social Sciences [SPSS] Version 27. Descriptive Statistics, mean and standard deviation were used to answer Research Questions 1 and 2. A mean benchmark of 2.50 was adopted on the 4-point scale: any item with a mean ≥ 2.50 was accepted as high availability/adequacy/utilization, while < 2.50 was rejected. Inferential Statistics, simple t test was used to test hypothesis one while the Pearson Product Moment Correlation [PPMC] was used to test hypothesis two at 0.05 level of significance to determine the relationship between utilization of instructional materials and academic performance. The decision rule for the hypotheses testing was that if the calculated p-value is less than 0.05, the null hypothesis is rejected and the alternative is accepted but if p-value ≥ 0.05, the null hypothesis is retained.

Results and Analysis

Research Question 1: What is the level of availability and adequacy of instructional materials in Nigerian secondary schools?

Table 1: Mean and Standard Deviation of Availability and Adequacy of Instructional Materials

N = 650

S/N	Item	Mean	SD	Remark
1	Textbooks are available in sufficient quantity	2.78	0.84	High
2	Laboratory equipment are available for Science subjects	2.21	0.91	Low
3	Audio-visual aids such as projectors are available	2.34	0.88	Low
4	Charts, models and maps are available in classrooms	2.65	0.79	High
5	Digital learning resources are available	2.12	0.95	Low
	Cluster Mean	2.42	0.87	Low
Decision Rule:	Mean ≥ 2.50 = High; Mean < 2.50 = Low			

Table 1 shows a cluster mean of 2.42, which is below the 2.50 benchmark. This indicates that, overall, the level of availability and adequacy of instructional materials in the sampled schools is low. While textbooks and charts/models were rated high, laboratory equipment, audio-visual aids and digital resources were rated low. This suggests a resource gap, especially in practical and technology-based materials.

Research Question 2: What is the relationship between the utilization of instructional materials and students' academic performance?

Table 2: Mean and Standard Deviation of the relationship between the utilization of instructional materials and students' academic performance?

N = 650

S/N	Item	Mean	SD	Remark
1	It enhances students' comprehension of concepts	3.12	0.72	High
2	Increase in students' retention and recall	2.68	0.81	High
3	Stimulates their interest and motivation to learn	2.31	0.89	Low
4	Promotes active participation and critical thinking	2.54	0.84	High
5	Reduces learning difficulties and failure rates	2.18	0.92	Low
	Cluster Mean	2.57	0.84	High

In table 2, the cluster mean of 2.57 indicates a high extent of utilization and impact of instructional materials on the academic performance of students. All the items scored high except item 5. This implies that instructional material have a profound impact on the performance of Nigerian students.

Test of Hypotheses

Hypothesis 1: There is no significant difference in the availability of instructional materials between public and private secondary schools.*

Table 3: Independent Samples t-test of Availability of Instructional Materials by School Type

School Type	N	Mean	SD	t	df	p-value	Remark
Public	300	2.28	0.89	-4.73	648	0.000	Significant
Private	350	2.54	0.83				

Significant at 0.05 level_

Table 4 shows that private schools (M = 2.54, SD = 0.83) had a significantly higher mean availability score than public schools (M = 2.28, SD = 0.89), t = -4.73, p =.000 which is less than.05. We therefore reject the null hypothesis. This result indicates a significant disparity in instructional material availability, with private schools being better resourced than public schools. This aligns with the findings of Babalola and Adedeji (2021) on resource inequality between school types.

Hypothesis 2: There is no significant relationship between the utilization of instructional materials and students' academic performance.

Table 4: Pearson Product Moment Correlation between Utilization of Instructional Materials and Academic Performance

Variable	N	Mean	SD	r	p-value	Remark
Utilization of Instructional Materials	650	2.57	0.486	0.84	0.000	Significant
Academic Performance	650	58.32	12.41			

Significant at 0.05 level; df = 648; Critical r = 0.076

Table 3 reveals a positive and significant relationship between utilization of instructional materials and students' academic performance, r =.486, p =.000 <.05. Because the p-value is less than 0.05, we reject the null hypothesis. The correlation coefficient of.486 indicates a moderate positive relationship. This means that as teachers' use of instructional materials increases, students' academic performance also tends to increase. This supports Dale (1969) and Vygotsky (1978) positions that concrete, mediated learning enhances achievement.

Discussion of Findings

The findings of this study are discussed in line with the research questions, hypotheses, and the theoretical framework.

The study found that the overall level of availability and adequacy of instructional materials in secondary schools in Port Harcourt Metropolis is low, with a cluster mean of 2.42. While textbooks, charts, and models were reported to be available, critical resources such as laboratory equipment, audio-visual aids, and digital learning tools were inadequate. This result corroborates Babalola and Adedeji (2021) who reported widespread resource deficits in Nigerian public schools, and Nwachukwu and Okonkwo (2022) who linked inadequate textbooks and outdated materials to poor learning outcomes. The implication is that many students are exposed to abstract, verbal instruction without the concrete experiences that Dale's Cone of Experience recommends. The absence of practical and digital resources is particularly critical given the current curriculum emphasis on science, technology and 21st-century skills.

The Pearson correlation analysis revealed a significant positive relationship between utilization of instructional materials and students' academic performance, r =.486, p =.000. This indicates that increased use of instructional resources is associated with improved academic outcomes. This finding is consistent with previous studies that established a link between resource-based instruction and higher achievement in WAEC and NECO. Theoretically, this result supports both Dale's and Vygotsky's frameworks. As teachers move instruction from verbalism to concrete and mediated experiences, learners' comprehension, retention, and application of knowledge improve, leading to better examination performance.

Conclusion

Based on the findings of this study, it is concluded that the availability and adequacy of instructional materials in secondary schools in Port Harcourt Metropolis is low, particularly for practical and digital resources. Although teachers utilize the available conventional materials to a high extent, the underuse of audio-visual and ICT resources limits instructional effectiveness. There is a significant positive relationship between the utilization of instructional materials and students' academic performance, suggesting that resource-based teaching enhances learning outcomes. Furthermore, a significant disparity exists between public and private schools in terms of resource availability. Therefore, improving the provision and effective use of instructional materials is essential for raising the academic performance of Nigerian secondary school students.

Recommendations

Based on the findings and conclusions, the following recommendations are made:

1. The Federal and Rivers State Governments, through the Ministry of Education and UBEC, should increase budgetary allocation for instructional materials. Priority should be given to science laboratories, audio-visual equipment, and functional ICT facilities to address the current inadequacy.

2. The Teachers Registration Council of Nigeria and school proprietors should organize regular in-service training and workshops on the integration of instructional and digital materials into teaching. This will build teacher confidence and reduce underutilization of available resources.

3. Schools should establish material production units and train teachers on improvisation using locally available resources. This will reduce dependence on imported or expensive materials and sustain instruction even during periods of scarcity.

4. Government should partner with NGOs, corporate organizations, and PTAs to provide instructional materials to public schools through donation and adoption programs. This will help to bridge the resource gap between public and private schools.

5. School management and quality assurance officers should monitor the actual use of instructional materials in classrooms. Schools should be held accountable for the maintenance and utilization of resources provided to them.

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