

IMPROVISING INSTRUCTIONAL RESOURCES FOR TEACHERS' QUALITY SERVICE DELIVERY IN PUBLIC SENIOR SECONDARY SCHOOLS IN RIVERS STATE

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ABSTRACT: This study investigated improvising instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. Three (3) research questions and three (3) corresponding null hypotheses were used for the study. A Descriptive Survey Research Design was used for the study. The population of this study comprised 5,833 teachers (males = 2,844 and females = 2,989) in 320 public senior secondary schools in the twenty-three (23) local government areas of Rivers State. A sample of 583 teachers, representing 10% of the total population of the study in the 320 public senior secondary schools in Rivers State was used for the study. Stratified random sampling technique was used to select the sample for this study. The instrument for collection of data for the study was a 15 items self-structured questionnaire titled Improvising Instructional Resources for Teachers' Quality Service Delivery Questionnaire (IIRTQSDQ). The reliability index was determined using the Pearson Product-Moment Correlation (PPMC) reliability statistics tool, which yielded a coefficient of 0.82. The statistical tools used for answering the research questions was mean and standard deviation; while independent t-test was used to test the null hypotheses at 0.05 Alpha level of significance. The findings of the study showed that, to a high extent local materials, low-cost materials and recycled material were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. Based on the findings, the study concluded that improvising instructional resources using local materials, low-cost materials, and recycled materials play a vital role in enhancing teachers' quality service delivery. The study therefore recommended that; Teachers should create instructional resources using locally available materials like wood, stones, and clay for hands-on lessons. Also, School principals and teacher training institutions should train teachers to make teaching aids from inexpensive materials like cardboard and plastic for effective lesson delivery.

Keywords: Instructional Resources, Teachers, Quality, Service Delivery, Senior Secondary Schools, Rivers State.

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BACKGROUND TO THE STUDY

Education remains one of the most powerful tools for national development, influencing all aspects of societal growth from economic progress to social harmony. It forms the foundation upon which a nation's future is constructed. Through education, individuals gain the knowledge, skills, and competencies needed to engage productively in the workforce, drive innovation, and enhance communal well-being. Its influence extends across sectors such as health, governance, and infrastructure, underscoring the central role it plays in national progress. The strength of a country's educational system is directly connected to its capacity to respond to development demands. A knowledgeable population is better prepared to solve complex problems, embrace

innovation, and contribute meaningfully to long-term growth (Okogbaa, 2019). For any education system to function effectively, its core components particularly teachers and instructional materials must receive adequate support.

In Nigeria, education serves as a cornerstone in the national development agenda. The nation recognizes that sustainable progress and economic advancement depend heavily on a strong education sector. Within this framework, senior secondary education holds a particularly significant place, acting as a transitional phase between basic education and higher or vocational learning. At this level, students are expected to acquire academic knowledge, technical abilities, and analytical thinking skills that prepare them for modern labor markets (FRN, 2014). In Rivers State, which features a diverse cultural and economic setting, public senior secondary schools have the capacity to unlock the region's full human capital. However, this potential is often hindered by various systemic problems, including inadequate facilities, limited teaching resources, underqualified staff, and frequent teacher turnover.

Agi (2019) emphasized that these factors contribute to the overall decline in educational standards, which has a direct impact on student performance, graduation rates, and future opportunities. The scarcity of instructional resources such as textbooks, teaching aids, and technological tools exacerbates the problem, making it difficult for teachers to meet the diverse learning needs of students. This is particularly concerning, as instructional resources are essential to creating an engaging and effective learning environment that can help students reach their full potential. Improvising instructional resources in public senior secondary schools in Rivers State offers a feasible solution to this challenge. Instructional resources encompass a broad range of materials and tools that support the teaching and learning process. These resources can include textbooks, audiovisual aids, digital learning platforms, and other teaching materials that make lessons more engaging and accessible. However, the shortage of such resources in public schools, compounded with limited funding, has necessitated the need for teachers to develop creative and resourceful ways of delivering instruction. Improvisation allows teachers to make the most of the available resources, creating an interactive and stimulating learning environment even in resource-constrained settings (Ibara, 2018).

On the other hand, teachers' quality service delivery refers to the ability of educators to effectively deliver the curriculum and achieve the desired learning outcomes, guided by professional competence, adequate resources, and a conducive teaching environment (Baporikar, 2018). High-quality service delivery from teachers is essential for promoting student engagement, improving academic performance, and supporting holistic development. Several factors contribute to the quality of service that teachers provide, including their expertise, teaching strategies, motivation, and the resources available to them. In Rivers State, teachers in public senior secondary schools face the challenge of delivering effective lessons without sufficient access to instructional materials, which impacts their ability to meet the diverse needs of students. Improvising instructional resources is one of the most practical and effective solutions to address the challenge of resource scarcity in Rivers State's public senior secondary schools. Instructional resources, which include textbooks, teaching aids, digital tools, and other materials, are essential for facilitating effective learning. These resources not only help in presenting lessons more engagingly but also support diverse learning styles, enabling teachers to reach a broader range of students.

In many public schools in Rivers State, a lack of adequate funding for educational materials often leaves teachers with limited options for delivering lessons effectively. This situation makes improvisation a necessary skill for teachers, who are expected to adapt existing

resources or create new ones to meet the learning needs of their students. Okoro (2020) emphasized that when teachers are able to creatively improvise resources; their teaching becomes more effective, and students benefit from a richer, more interactive learning experience. Improvisation encourages teachers to be innovative and resourceful, which can lead to improved teaching outcomes even in resource-constrained environments (Obi & Akpan, 2021).

In the course of this study, three (3) key variables of improvising instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State were considered: local materials, low-cost materials, and recycled materials. Local materials as improvised instructional resources refer to resources that are readily available within the immediate environment of a school or community, which can be used to support the teaching and learning process. These materials are typically sourced from the surrounding natural, social, or cultural environment and are often inexpensive or free (Okogbaa, 2018). Local materials include items such as leaves, stones, sand, clay, wood, and even traditional craft materials, which can be creatively adapted for use in the classroom. In educational settings, local materials are especially valuable in regions with limited access to conventional instructional resources due to financial constraints. They provide teachers with the opportunity to design engaging lessons that are culturally relevant and contextually appropriate for students. These resources can be used for a wide variety of educational activities, including science experiments, art projects, and even language learning.

Nwachukwu (2020) emphasized the use of local materials has been found to enhance student engagement and promote active learning, as it connects classroom lessons to the students' immediate surroundings, making learning more tangible and relatable. In Rivers State, where many public schools are faced with inadequate access to modern teaching tools and technologies, local materials have proven to be an essential resource for maintaining teachers' ability to deliver quality education despite these constraints.

Low-cost materials as improvised instructional resources are instructional resources that are inexpensive or affordable for schools, especially those operating within limited budgets. These materials are typically not as costly as commercially produced teaching tools, yet they can be just as effective in enhancing the teaching and learning process. Low-cost materials can range from basic stationery items such as paper, pens, and pencils to more innovative resources like inexpensive plastic bottles, cardboard, or cloth. Adeyemo and Adeyinka (2017) highlighted that low-cost materials contribute to improving the quality of education through a low-budget yet high-impact alternative to more expensive resources.

When teachers have access to low-cost materials, they can adapt these resources for various subject areas, from mathematics and science to arts and language. These materials can be used to create educational posters, charts, or models, supporting visual and hands-on learning, which is particularly effective in keeping students engaged and aiding their understanding of complex concepts. In a region like Rivers State, where financial constraints often limit access to state-of-the-art instructional tools, the use of low-cost materials supports educational quality despite limited funds. It is an accessible solution that empowers teachers to be resourceful and makes it possible for students to experience a wide variety of learning opportunities, contributing to a deeper understanding of the curriculum (Baporikar, 2018).

Recycled materials as improvised instructional resources refer to materials that have been used before and are repurposed to create new instructional resources. These materials, often discarded items like newspapers, bottles, cans, and boxes, can be creatively turned into teaching tools. They are widely available, cost-effective, and support sustainability in education by

teaching students the importance of reuse and repurposing (Adeyinka, 2020). Okoye (2019) emphasized the importance of recycled materials in enhancing the educational experience, noting that they provide an excellent opportunity for students to engage in hands-on, practical learning. Recycled materials are useful in science and environmental education, helping students learn about sustainability and waste management. Teachers can repurpose items to create models and displays, making lessons more practical and encouraging creativity and critical thinking. In Rivers State, where public schools often face financial constraints, recycling offers an innovative way to supplement instructional resources without additional costs.

Addressing the issue of instructional material scarcity through improvisation is an important step toward improving teacher performance and student achievement in public senior secondary schools in Rivers State. Against this background, the study examined improvising instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Statement of the Problem

The problem of improvising instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State is a significant challenge that severely impacts the overall quality of education in the state. Despite the growing demand for improved educational outcomes, many public senior secondary schools in Rivers State continue to face acute resource shortages, which hinder teachers' ability to provide high-quality education. Essential instructional materials such as textbooks, laboratory equipment, multimedia resources, and teaching aids are often inaccessible or insufficient. This scarcity of resources creates a substantial gap in the teaching and learning process, making it difficult for teachers to engage students effectively and address the diverse learning needs within their classrooms. The shortage of instructional resources, worsened by poor funding, weak infrastructure, and disorganized material distribution, forces teachers to manage overcrowded classes with limited tools. This hampers effective teaching, lowers instructional quality, discourages teachers, and negatively affects student engagement and performance.

Improvisation of instructional resources offers a way to address material shortages, but many teachers in Rivers State lack the training and skills to use local, low-cost, or recycled materials effectively, resulting in inconsistent improvisation. Against this background, the study examined improvising instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Aim and Objectives of the Study

The aim of this study was to investigate improvising instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. Specifically, the objectives of the study sought to:

- Investigate the extent local materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.
- Determine the extent low-cost materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

- Examine the extent recycled materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Research Questions

The following research questions were raise to guide the study:

- To what extent are local materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State?
- To what extent are low-cost materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State?
- To what extent are recycled materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State?

Hypotheses

The following null hypotheses were formulated to guide the study and tested at the 0.05 level of significance:

- There is no significant difference between the mean ratings of male and female teachers' on the extent local materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.
- There is no significant difference between the mean ratings of male and female teachers' on the extent low-cost materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.
- There is no significant difference between the mean ratings of male and female teachers' on the extent recycled materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

THEORETICAL FRAMEWORK

Constructivist Theory of Learning

The theory that supports this study was the Constructivist Theory of Learning. The origins of the Constructivist Theory can be traced back to the work of two influential figures in psychology and education, Jean Piaget (1896-1980) and Lev Vygotsky (1896-1934) cited in Adam (2020). The Constructivist Theory of Learning is a psychological and educational framework that emphasizes the active role of learners in constructing their own understanding and knowledge. This theory suggests that learners do not passively absorb information; instead, they actively build upon their prior knowledge and experiences as they encounter new information. As such, learning is seen as a dynamic process where individuals engage with their environment, interact with others, and reflect on their experiences to develop deeper understandings of the world around them. Constructivism posits that knowledge is not simply transmitted from teacher to student; rather, it is constructed by the learner through meaningful engagement with new ideas, challenges, and social interactions (Ololube, 2011).

One of the central tenets of constructivism is that learning is active, meaning that learners are not passive recipients of information, but active participants in their own learning process. According to constructivist principles, students construct knowledge by engaging with new information, reflecting on their prior knowledge, and adapting their understanding as they encounter new experiences. Learning, therefore, is seen as a process of discovery and problem-solving, where students apply their existing knowledge to make sense of new situations and challenges. This approach encourages inquiry-based learning, where students ask questions, investigate problems, and experiment with solutions, encouraging critical thinking and creativity (Ololube, 2009). In a constructivist classroom, students are encouraged to engage in collaborative learning. Vygotsky's emphasis on social interaction plays a significant role here, as students work together to share ideas, solve problems, and engage in discussions that promote deeper understanding. Collaborative learning encourages students to view learning as a social activity, where ideas are tested, refined, and expanded through interaction with others. Peer discussions and group projects provide opportunities for students to co-construct knowledge, helping them develop a deeper and more nuanced understanding of the material.

Another key concept in constructivist theory is the importance of contextualized learning. Learning is most effective when it is connected to real-life situations and personal experiences. Constructivism emphasizes that learning should be relevant to the learner's context and background, as it allows students to make meaningful connections between new knowledge and the world around them. This idea is supported by Vygotsky's emphasis on the cultural context of learning, suggesting that knowledge and understanding are deeply influenced by the learner's social and cultural environment (Ololube, 2006).

Furthermore, constructivist theory highlights the significance of reflection in the learning process. In order for students to construct new knowledge, they must have the opportunity to reflect on their learning experiences. This reflection allows them to evaluate their understanding, recognize gaps in their knowledge, and make adjustments as necessary. Teachers in a constructivist classroom act as facilitators, guiding students in their reflective practices and providing support to help them address complex ideas and challenges (Ololube, 2006). The relevance of the Constructivist Theory of Learning to the study of improvising instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State lies in enhancing teachers' ability to create meaningful learning environments. Applying constructivist principles, teachers can utilize readily available materials and adapt resources to meet students' needs, encouraging critical thinking and problem-solving skills. This approach helps overcome resource limitations, encourages creativity, and improves the quality of teaching, leading to better educational outcomes in these schools.

CONCEPTUAL CLARIFICATIONS

Improvisation of Instructional Resources

Improvisation of instructional resources is an innovative approach in the educational sector, particularly in resource-constrained environments. It refers to the process of creating or adapting learning materials from locally available and low-cost resources to support teaching and enhance the learning experience. In the face of limited access to conventional teaching tools such as textbooks, multimedia devices, or laboratory equipment, teachers often resort to improvisation to meet the diverse educational needs of their students. This practice has gained considerable

attention over the years, as it not only addresses the scarcity of resources but also promotes creativity, adaptability, and resourcefulness in the teaching profession.

Akpan (2020) defined improvisation of instructional resources as using readily available materials to create teaching aids that align with the curriculum and learning objectives. This means that even in the absence of textbooks or expensive teaching aids, a teacher can still impart knowledge employing materials that are accessible within the community. For instance, objects like stones, sticks, paper, or even the environment itself can be transformed into useful instructional tools. Omotayo (2018) described improvisation of instructional resources as the adaptive use of low-cost, locally sourced materials to facilitate teaching and learning in schools, especially where traditional instructional resources are insufficient or unavailable. This definition underscores the role of teachers in exercising creativity and thinking in developing alternative instructional strategies. Improvised resources can range from simple visual aids like charts and posters to more complex models that demonstrate scientific or mathematical concepts. The idea is not only to fill the gaps left by scarce resources but also to make learning more hands-on, interactive, and contextually relevant to students' experiences.

Ojo (2019) viewed improvisation of instructional resources as an educational strategy that enhances the overall effectiveness of teaching and learning in situations where conventional resources are inaccessible. This strategy promotes student engagement, improves comprehension, and allows for a more personalized approach to instruction. Teachers who use improvisation can create a learning environment that encourages problem-solving and thinking, enhancing the educational experience and supporting a deeper understanding of the subject matter.

The importance of improvisation of instructional resources in educational settings has been extensively explored in research. Akinmoladun and Osasona (2017) found that teachers who utilized improvised instructional resources in their classrooms were able to better engage students and improve their learning outcomes. Similarly, Usman and Alabi (2021) demonstrated that improvised teaching aids significantly enhanced students' understanding of abstract concepts, particularly in subjects like physics and mathematics, where concrete representations are often necessary for effective learning. Improvisation of instructional resources plays a significant role in addressing the diverse learning needs of students. With varying levels of prior knowledge, learning styles, and cognitive abilities, improvising resources helps to bridge these differences offering tailored, contextualized, and hands-on learning experiences.

Iroegbu and Eze (2022) noted that students in classrooms where improvisation was actively used demonstrated improved retention of information and a more positive attitude towards learning. These findings suggest that improvisation not only supports academic achievement but also contributes to supporting a love for learning, making education more engaging and enjoyable for students. Improvisation of instructional resources emerges as an indispensable in educational settings, addressing the challenges posed by the scarcity of traditional teaching materials, particularly in resource-limited environments like public senior secondary schools in Rivers State. The creative adaptation of locally available materials not only compensates for the lack of conventional resources but also enhances the teaching and learning process. Through improvisation, teachers can create an interactive, student-centered environment that supports engagement, thinking, and a deeper understanding of the subject matter.

Teacher Quality Service Delivery

Teacher quality service delivery are fundamental components of effective education systems, influencing both student achievement and the overall functioning of schools. In educational settings, teacher quality service delivery refers to the attributes and professional competencies of educators that directly contribute to enhancing student learning and development. The idea of teacher quality service delivery has evolved over the years, with a growing emphasis on the need for teachers to not only possess strong subject knowledge but also exhibit pedagogical skills, emotional intelligence, and adaptability to diverse student needs (Darling-Hammond, 2021).

Hattie (2019) defined teacher quality service delivery to the intersection of teachers' personal qualities, professional skills, and pedagogical techniques that collectively enhance students' learning experiences and outcomes. This definition underscores that teaching effectiveness is not just about content knowledge or technical skills, but about the ability to apply those skills in ways that address the diverse needs of students and create an environment conducive to learning. Kothari and Gupta (2021) described teacher quality service delivery as the ability of educators to not only possess deep subject knowledge and instructional expertise but also to engage students in a way that promotes thinking, emotional development, and active participation. This perspective emphasizes that service delivery is an ongoing process that requires teachers to be dynamic and responsive to their students' learning needs. Teacher quality service delivery is thus a dynamic interaction of personal and professional attributes, continually shaped by context, experience, and collaboration.

Stewart et al. (2022) viewed teacher quality service delivery as the systematic process through which educators apply a range of instructional strategies, assessment techniques, and classroom management practices to support student learning, engagement, and overall development. This definition highlights the comprehensive nature of service delivery, acknowledging that effective teaching requires not only content expertise but also a deep understanding of how students learn, and the ability to create an inclusive environment where all students can succeed.

Teacher quality service delivery, therefore, is not solely dependent on the availability of resources but on how effectively teachers can utilize those resources, whether plentiful or scarce. In Rivers State, where resource constraints are a reality for many public senior secondary schools, the ability of teachers to improvise teaching materials plays a role in maintaining the quality of education. Improvisation in this context is not simply about making do with what is available; it is about transforming limitations into opportunities for innovation and creative teaching. Ugwuanyi et al. (2022) affirmed that teacher quality service delivery in such settings relies heavily on the teacher's ability to adapt to the context, using both formal and informal resources to enhance the learning experience. The ability to improvise instructional materials not only supports student learning but also creates a more inclusive and engaging classroom environment, making it an essential component of high-quality service delivery in public senior secondary schools. Teacher quality service delivery in Rivers State's public senior secondary schools is a multifaceted concept that involves the teacher's expertise, resourcefulness, and emotional intelligence. The ability to deliver high-quality instruction, even in the face of resource limitations, is necessary for improving student outcomes. Through the effective use of instructional resources whether improvised or sourced from the community teachers can improve their teaching practices and create a dynamic learning environment that promotes student engagement and success.

Senior Secondary Schools

Senior secondary schools are a stage in the educational journey, providing students with the academic foundation to transition into higher education or the workforce. In Rivers State, Nigeria, public senior secondary schools play a role in shaping the academic and professional futures of young people. These institutions serve as the final segment of formal education before tertiary education or vocational training, preparing students for either further academic pursuits or entry into the labor market.

Senior secondary schools typically cater to students aged 15 to 18, offering them an opportunity to explore diverse fields of study, including sciences, humanities, and vocational subjects. The success of these schools in fulfilling their educational mandate is closely tied to the quality of instruction provided, which is largely determined by the availability and effectiveness of instructional resources. In this context, the need for improved instructional resources in public senior secondary schools in Rivers State is important for enhancing the overall teacher quality service delivery, enabling teachers to engage students and promote higher academic achievement. Sahlberg (2016) defined senior secondary schools as institutions that provide the final phase of compulsory education, focusing on preparing students for university, further training, or employment. This level of education is characterized by specialized curricula, where students are given the opportunity to select courses that align with their future aspirations, whether in academia or the workforce. In Nigeria, senior secondary schools are recognized as institutions that provide students with both academic and vocational knowledge, equipping them with the skills necessary for higher education or immediate employment. In the context of public senior secondary schools in Rivers State, the teacher quality service delivery is closely linked to the availability and effective use of instructional resources. Teachers in these schools are tasked with delivering lessons that are not only comprehensive but also engaging and relevant to students' future careers and educational pathways.

The availability of teaching materials, such as textbooks, digital tools, laboratory equipment, and other resources, significantly influences the ability of teachers to provide high-quality instruction. Bente (2023) underscored the importance of instructional resources in improving teacher effectiveness, noting that teachers who have access to adequate materials are better equipped to deliver lessons that are both informative and engaging for students. This is particularly important in senior secondary schools, where students are preparing for examinations and making decisions that will shape their futures. Senior secondary schools in Rivers State play a role in the educational and professional development of young people. As public institutions, they are tasked with preparing students for both academic advancement and vocational success. The teacher quality service delivery in these schools is significantly influenced by the availability and effective use of instructional resources.

Local Materials and Teachers' Quality Service Delivery

In public senior secondary schools in Rivers State, Nigeria, the use of local materials as improvised instructional resources has become a vital strategy for enhancing teacher quality service delivery. Public schools in the region often grapple with limited access to conventional teaching materials, such as textbooks, laboratory equipment, and multimedia resources, which can hinder the delivery of effective education. The importance of improvising local materials as instructional resources for teachers' quality service delivery is evident in a growing body of

research. Akinwumi and Omoniyi (2021) asserted that improvising local materials offers a powerful means of enhancing teaching effectiveness, especially in areas where schools are underfunded. The study underscored that teachers who incorporate local materials into their teaching strategies are better equipped to deliver lessons that are both engaging and contextually relevant to the students. In Rivers State, this is particularly, as schools often face challenges in acquiring modern teaching equipment.

Moreover, Kothari and Gupta (2020) emphasized the role of local material improvisation in developing thinking and problem-solving skills among students. The study emphasized the use of locally sourced materials not only helps in the delivery of the curriculum but also promotes active student participation and creativity. When teachers use everyday materials to explain complex concepts, students are encouraged to think beyond the theoretical and connect their learning to the real world. In Rivers State, where many students come from rural or economically disadvantaged backgrounds, this connection between learning and real-world applications is particularly valuable. It also allows students to appreciate the practical utility of the materials they encounter daily, creating a more holistic and practical learning experience.

The improvisation of local materials has been shown to improve student engagement and retention. Choi and Lee (2020) found that when teachers use locally sourced materials to create teaching aids, students are more likely to engage actively in lessons, thereby improving their comprehension and retention of the subject matter. In Rivers State, where public senior secondary schools often face large class sizes and varying student needs, the ability to create personalized, hands-on learning experiences through local materials can be a game-changer. The use of local materials as instructional resources enables teachers to address diverse learning styles, making it easier for students to grasp difficult concepts. Whether it is using clay to teach geometry or using plastic bottles to create models of human anatomy, improvising with local materials allows teachers to present lessons in innovative and exciting ways. The improvisation of local materials as instructional resources is a vital approach for teachers' quality service delivery in public senior secondary schools in Rivers State. Teachers who make effective use of local materials can overcome the challenges posed by limited resources, creating engaging and contextually relevant learning experiences that enhance student outcomes.

Low-Cost Materials and Teachers' Quality Service Delivery

The use of low-cost materials as improvised instructional resources has emerged as a strategy for enhancing teacher quality service delivery in public senior secondary schools, particularly in Rivers State, Nigeria. The growing challenges of inadequate funding, insufficient educational resources, and the increasing demand for high-quality teaching have necessitated the adoption of innovative methods to ensure that students receive an engaging and effective education. Given the context of public senior secondary schools in Rivers State, where financial constraints often limit the availability of textbooks, teaching aids, and modern technology, teachers have had to rely heavily on improvising instructional materials using low-cost or locally available resources. These materials, which can range from simple items such as paper, cardboard, and plastic bottles to more unconventional resources like fabric or recycled objects, provide an affordable yet effective way for teachers to make learning more interactive, accessible, and engaging.

The improvisation of low-cost materials as instructional resources not only enhances the delivery of lessons but also education remains relevant and inclusive, regardless of the financial

limitations faced by schools in the region. The impact of low-cost materials on the quality of teaching and learning has been studied extensively. Chijioke and Eze (2018) found that the use of low-cost materials in classrooms significantly improves student engagement and comprehension. The study indicated that when teachers use inexpensive resources to create visual aids or hands-on models, students tend to retain information more effectively and participate more actively in class activities. In Rivers State, where public senior secondary schools often face overcrowded classrooms and limited access to modern resources, the ability to improvise with low-cost materials provides a viable means of enhancing teaching and promoting student-centered learning.

Likewise, Akinwumi and Omoniyi (2021) further explored how the improvisation of low-cost materials in classrooms can lead to significant improvements in student performance. They argue that teachers who are skilled in using such materials can create engaging and visually appealing learning experiences that cater to different learning styles. In the context of Rivers State, where access to advanced technology and teaching resources is limited, low-cost materials serve as an essential tool for creating an inclusive learning environment. These materials allow teachers to cater to diverse student needs, ensuring that no student is left behind due to resource constraints. The active engagement of students with tangible, low-cost resources makes learning more hands-on, helping students to grasp difficult concepts and retain information more effectively.

In addition, Choi and Lee (2021) emphasized that the improvisation of low-cost materials can serve as a means of an environment where students become more involved in their learning process. The use of these materials allows for more collaborative, hands-on activities where students work together to solve problems and create learning tools. This form of active learning has been shown to increase student motivation and engagement, which are key factors in improving academic performance. In Rivers State's public senior secondary schools, where overcrowded classrooms and limited resources can often hinder individual attention, the use of low-cost materials offers a strategy for improving student-teacher interactions and promoting more personalized learning experiences. The improvisation of low-cost materials as instructional resources plays a role in enhancing teacher quality service delivery in Rivers State's public senior secondary schools. Creatively adapting every day, inexpensive materials into teaching aids, teachers are able to overcome resource limitations and deliver engaging, student-centered lessons that promote active learning.

Recycled Materials and Teachers' Quality Service Delivery

In the educational context of Rivers State, Nigeria, where public senior secondary schools often face financial constraints and inadequate access to modern instructional materials, the use of recycled materials as improvised teaching aids has emerged as a powerful and resourceful strategy for enhancing the quality of service delivery. Recycled materials, which include items such as old newspapers, plastic bottles, cardboard boxes, used fabrics, and metal scraps, are becoming increasingly popular as cost-effective, sustainable resources for teachers to create instructional aids that engage students and enhance learning. This improvisation not only helps teachers circumvent the challenge of limited resources but also promotes environmental consciousness among students, as they witness how discarded materials can be repurposed into functional educational tools.

The impact of recycled materials on the quality of teaching and learning has been studied extensively. Olajide and Bello (2020) found that recycled materials have the potential to significantly improve the interactivity and creativity of lessons. Their research shows that when teachers use recycled materials, they are able to create dynamic and flexible learning environments that encourage students to explore and experiment with new ideas. This flexibility is particularly important in Rivers State, where a significant number of schools face overcrowded classrooms, and the use of recycled materials can help accommodate the diverse learning needs of students. Wusu and Akinyemi (2019) suggested that the use of recycled materials also enhances students' problem-solving and thinking abilities. The study indicated that when students work with recycled materials, they are encouraged to think creatively about how to repurpose objects for educational purposes, which nurtures their ability to innovate and solve problems. In the context of Rivers State, where many students may lack access to supplementary educational resources at home, recycled materials allow for a more equitable learning experience. The findings underscore the importance of involving students in the process of improvising instructional materials, as this not only enhances their engagement but also contributes to their personal development. Teachers who incorporate recycled materials into their lessons are helping students develop skills that go beyond the traditional curriculum, preparing them for real-world challenges.

Recycled materials can be obtained at little or no cost, which is essential for schools with limited budgets. Jide (2021) emphasized the use of recycled materials reduces the financial burden on schools, enabling teachers to continue delivering quality education even when the school's resources are scarce. This is particularly important in Rivers State, where public schools often experience significant financial limitations and rely on government funding, which is frequently inadequate to meet the demands. The use of recycled materials as improvised instructional resources offers significant benefits for enhancing teacher quality service delivery in Rivers State's public senior secondary schools. Recycled materials allow teachers to create dynamic, engaging, and affordable learning environments that support diverse learning needs, creativity, and promote environmental sustainability. As teachers continue to resource challenges, the use of recycled materials provides a practical and effective means of students receive high-quality education, regardless of the financial constraints faced by schools. Through creativity, resourcefulness, and innovation, recycled materials have become an essential tool in improving the quality of education in Rivers State, helping to bridge the gap between resource limitations and the need for effective teaching and learning.

METHODS

The research design used in this study was descriptive survey research design. The population of the study comprised 5,833 teachers (male = 2,844 and female = 2,989) in public senior secondary schools across 320 public senior secondary schools in the twenty-three (23) local government areas of Rivers State (Source: Statistics Unit, Planning, Research, and Statistics Department of Rivers State Senior Secondary School Board, 2024). A sample of 583 teachers, representing 10% of the total population of the study in the 320 public senior secondary schools in Rivers State was used for the study. Stratified random sampling technique was used for this study. This technique was used in this study to ensure that different subgroup (Male and Female) teachers within the 320 public senior secondary schools in Rivers State were adequately represented.

The instrument that was used for collection of data for the study was a 15 items self-structured questionnaire titled Improvising Instructional Resources for Teachers' Quality Service Delivery Questionnaire (IIRTQSDQ). A 4point modified likert rating scale was used, in the form of; Very high extent (VHE)=4 points, High extent (HE)=3 points, Low extent (LE)=2 points and Very low extent (VLE)=1 point.

The instruments were validated, and reliability was determined using Pearson Product Moment Correlation (PPMC) reliability statistics. The reliability coefficient for the Improvising Instructional Resources for Teachers' Quality Service Delivery instrument was 0.82. Out of the 583 copies of the questionnaire administered, 560 were successfully retrieved and used for data analysis, and representing 96 percent return-rate. Mean and standard deviation statistics tools were used to answer the research questions while, independent t-test was used to test the null hypotheses at 0.05 level of significance, using version 20 of the Statistical Package for the Social Sciences (SPSS).

The decisional rule for interpretation of the mean scores was classified using real limits of numbers. Any value from 3.50-4.00 regarded as Very High Extent, any value from 2.50-3.49 regarded as High Extent, any value from 1.50-2.49 regarded as Low Extent, and any value from 0.50-1.49 regarded as Very Low Extent. In testing the hypotheses, the null hypotheses were accepted if the Sig. (2-tailed) is greater than (>) the p-value of 0.05 level of significance, and were rejected if the Sig. (2-tailed) is less than (<) the p-value of 0.05 level of significance.

RESULTS

Research Question One: To what extent are local materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State?

Table 1: Mean Ratings and Standard Deviation of the Respondents on the Extent are Local Materials Improvised as Instructional Resources for Teachers' Quality Service Delivery in Public Senior Secondary Schools in Rivers State

s/n	Item Statements	Male Teachers' N=260		Female Teachers' N=300		Mean Set		DEC
		\bar{X}_1	S.D ₁	\bar{X}_2	S.D ₂	$\frac{\bar{X}_1 + \bar{X}_2}{2}$	S.D	
1	Improvised local materials help to bridge the gap created by the lack of standard teaching resources in public schools.	3.28	.59	3.30	.56	3.29	.58	HE
2	Teachers who improvise with local materials are better able to accommodate diverse learning needs in the classroom.	3.13	.61	3.01	.69	3.07	.65	HE
3	Improvised local materials can enhance the quality of teaching and make learning more interactive.	3.33	.57	3.37	.48	3.35	.53	HE
4	Local materials help in making abstract concepts more concrete and understandable for students.	3.20	.58	3.19	.67	3.20	.63	HE
5	Teachers' effective use of local materials can increase student engagement and interest in the subject matter.	3.26	.55	3.38	.47	3.32	.51	HE
Grand Mean Set & Standard deviation		3.24	.58	3.25	.57	3.25	.58	HE

Table 1 presents the mean ratings and standard deviation of the respondents on the extent are local materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The analysis presented in the above table showed the following range perceptions for items 1-5: Improvised local materials help to bridge the gap created by the lack of standard teaching resources in public schools (Mean=3.29 and Std=.58), Teachers who improvise with local materials are better able to accommodate diverse learning needs in the classroom (Mean=3.07 and Std=.65), Improvised local materials can enhance the quality of teaching and make learning more interactive (Mean=3.35 and Std=.53), Local materials help in making abstract concepts more concrete and understandable for students (Mean=3.20 and Std=.63), and Teachers' effective use of local materials can increase student engagement and interest in the subject matter (Mean=3.32 and Std=.51). These indicated that the respondents' perceptions for items 1-5 showed a High Extent, as their mean ratings fall within the range of 2.50–3.49. Furthermore, the table showed a grand mean and standard deviation (Mean = 3.25 and Std = .58), which is above the criterion mean of 2.50, and the mean ratings fall within the range of 2.50–3.49. This further implies that, to a High Extent local materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Research Question Two: To what extent are low-cost materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State?

Table 2: Mean Ratings and Standard Deviation of the Respondents on the Extent are Low-Cost Materials Improvised as Instructional Resources for Teachers' Quality Service Delivery in Public Senior Secondary Schools in Rivers State

s/n	Item Statements	Male Teachers' N=260		Female Teachers' N=300		Mean Set		DEC
		\bar{X}_1	S.D ₁	\bar{X}_2	S.D ₂	$\frac{\bar{X}_1 + \bar{X}_2}{2}$	S.D	
6	Teachers who use low-cost materials can create more interactive and engaging learning experiences for students.	3.25	.62	3.31	.58	3.28	.60	HE
7	The use of low-cost materials helps teachers to deliver quality education despite budget constraints in public schools.	3.03	.53	3.27	.50	3.15	.52	HE
8	The improvisation of low-cost materials reduces reliance on external funding and enables teachers to work within limited resources.	3.32	.49	3.26	.61	3.29	.55	HE
9	The use of low-cost materials can help to make lessons more relatable to students, as they are often drawn from everyday life.	3.18	.69	3.30	.58	3.24	.64	HE
10	Low-cost materials can foster a hands-on approach to learning, which improves student understanding of complex concepts.	3.22	.51	3.29	.49	3.26	.50	HE
Grand Mean Set & Standard deviation		3.20	.57	3.29	.55	3.24	.56	HE

Table 2 presents the mean ratings and standard deviation of the respondents on the extent are low-cost materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The analysis presented in the above table showed the following range perceptions for items 6-10: Teachers who use low-cost materials can create more interactive and engaging learning experiences for students (Mean=3.28 and Std=.60), The use of low-cost materials helps teachers to deliver quality education despite budget constraints in public schools (Mean=3.15 and Std=.52), The improvisation of low-cost materials reduces reliance on external funding and enables teachers to work within limited resources (Mean=3.29 and Std=.55), The use of low-cost materials can help to make lessons more relatable to students, as they are often drawn from everyday life (Mean=3.24 and Std=.64), and Low-cost materials can foster a hands-on approach to learning, which improves student understanding of complex concepts (Mean=3.26 and Std=.50). These indicated that the respondents' perceptions for items 6-10 showed a High Extent, as their mean ratings fall within the range of 2.50–3.49. Furthermore, the table showed a grand mean and standard deviation (Mean = 3.24 and Std = .56), which is above the criterion mean of 2.50, and the mean ratings fall within the range of 2.50–3.49. This further implies that, to a High Extent low-cost materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Research Question Three: To what extent are recycled materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State?

Table 3: Mean Ratings and Standard Deviation of the Respondents on the Extent are Recycled Materials Improvised as Instructional Resources for Teachers' Quality Service Delivery in Public Senior Secondary Schools in Rivers State

s/n	Item Statements	Male Teachers' N=260		Female Teachers' N=300		Mean Set		DEC
		\bar{X}_1	S.D ₁	\bar{X}_2	S.D ₂	$\frac{\bar{X}_1 + \bar{X}_2}{2}$	S.D	
11	Teachers can improvise recycled materials to create real-world, practical learning experiences for students.	3.28	.58	3.29	.56	3.29	.57	HE
12	Recycled materials provide an affordable way for teachers to enhance lesson plans without relying on expensive resources.	3.33	.48	3.17	.63	3.25	.55	HE
12	Teachers who use recycled materials help raise awareness about environmental issues among students.	3.28	.58	3.30	.46	3.29	.52	HE
14	The improvisation of recycled materials can help make abstract concepts more tangible and understandable for students.	3.37	.47	3.35	.51	3.36	.49	HE
15	The use of recycled materials makes learning more hands-on and engaging for students.	3.28	.57	3.30	.49	3.29	.53	HE
Grand Mean Set & Standard deviation		3.31	.54	3.28	.53	3.30	.53	HE

Table 3 presents the mean ratings and standard deviation of the respondents on the extent are recycled materials improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The analysis presented in the above table showed the following range perceptions for items 11-15: Teachers can improvise recycled materials to create real-world, practical learning experiences for students (Mean=3.29 and Std=.57), Recycled materials provide an affordable way for teachers to enhance lesson plans without relying on expensive resources (Mean=3.25 and Std=.55), Teachers who use recycled materials help raise awareness about environmental issues among students (Mean=3.29 and Std=.52), The improvisation of recycled materials can help make abstract concepts more tangible and understandable for students (Mean=3.36 and Std=.49), and The use of recycled materials makes learning more hands-on and engaging for students (Mean=3.29 and Std=.53). These indicated that the respondents' perceptions for items 11-15 showed a High Extent, as their mean ratings fall within the range of 2.50–3.49. Furthermore, the table showed a grand mean and standard deviation (Mean = 3.30 and Std = .53), which is above the criterion mean of 2.50, and the mean ratings fall within the range of 2.50–3.49. This further implies that to a High Extent recycled materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Test Hypotheses

H₀₁: There is no significant difference between the mean ratings of male and female teachers' on the extent local materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Table 4: Summary of t-test analysis result on the significant difference between the mean ratings of male and female teachers' on the extent local materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State

Respondents' Teachers'	N (560)	\bar{X}	Std	Df	t-value	p-value	Decision
Males	260	3.24	.58	558	-.368	.273	Not Significant
Females	300	3.25	.57				

Table 4 presents the summary of t-test analysis result on the significant difference between the mean ratings of ratings of male and female teachers' on the extent local materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The result of table above showed that the calculated t-value of -0.368, with a significance level (p-value) of 0.273 at a degree of freedom of 558. Since the p-value is greater than 0.05, the result is not statistically significant. Therefore, the null hypothesis was retained. This indicated that there was no significant difference between the mean ratings of ratings of male and female teachers' on the extent local materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

H₀₂: There is no significant difference between the mean ratings of male and female teachers' on the extent low-cost materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Table 5: Summary of t-test analysis result on the significant difference between the mean ratings of male and female teachers' on the extent low-cost materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State

Respondents' Teachers'	N (560)	\bar{X}	SD.	Df.	t-value	p-value	Decision
Males	260	3.20	.57	558	-.280	.328	Not Significant
Females	300	3.29	.55				

Table 5 presents the summary of t-test analysis result on the significant difference between the mean ratings of male and female teachers' on the extent low-cost materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The result of table above showed that the calculated t-value of -0.280, with a significance level (p-value) of 0.328 at a degree of freedom of 558. Since the p-value is greater than 0.05, the result is not statistically significant. Therefore, the null hypothesis was retained. This indicated that there was no significant difference between the mean ratings of male and female teachers' on the extent low-cost materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

H₀₃: There is no significant difference between the mean ratings of male and female teachers' on the extent recycled materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

Table 6: Summary of t-test analysis result on significant difference between the mean ratings of male and female teachers' on the extent recycled materials are improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State

Respondents' Teachers'	N (560)	\bar{X}	SD.	Df.	t-value	p-value	Decision
Males	260	3.31	.54	558	-.859	.225	Not Significant
Females	300	3.28	.53				

Table 6 presents the summary of t-test analysis result on the significant difference between the mean ratings of male and female teachers' on the extent recycled materials are improvised as instructional resources are utilized for teachers' quality service delivery in public senior secondary schools in Rivers State. The result of table above showed that the calculated t-value of -0.859, with a significance level (p-value) of 0.225 at a degree of freedom of 558. Since the p-value is greater than 0.05, the result is not statistically significant. Therefore, the null hypothesis was retained. This indicated that there was no significant difference between the mean ratings of male and female teachers' on the extent recycled materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State.

DISCUSSION OF FINDINGS

The Extent Local Materials are Improvised as Instructional Resources for Teachers' Quality Service Delivery in Public Senior Secondary Schools in Rivers State

The findings presented in Tables 1 and 4 revealed that to a high extent local materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The findings also showed that there was no significant difference between the mean ratings of ratings of male and female teachers' on the extent local materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. This findings aligns with the study by Kothari and Gupta (2020) emphasized the role of local material improvisation in developing critical thinking and problem-solving skills among students. The study emphasized the use of locally sourced materials not only helps in the delivery of the curriculum but also promotes active student participation and creativity. When teachers use everyday materials to explain complex concepts, students are encouraged to think beyond the theoretical and connect their learning to the real world.

Moreover, the findings corroborate with the study by Choi and Lee (2020) found that when teachers use locally sourced materials to create teaching aids, students are more likely to engage actively in lessons, thereby improving their comprehension and retention of the subject matter. Lastly, the findings agree with the study by Akinwumi and Omoniyi (2021) found that improvising local materials offers a powerful means of enhancing teaching effectiveness, especially in areas where schools are underfunded. The study underscored that teachers who incorporate local materials into their teaching strategies are better equipped to deliver lessons that are both engaging and contextually relevant to the students.

The Extent Low-Cost Materials are Improvised as Instructional Resources for Teachers' Quality Service Delivery in Public Senior Secondary Schools in Rivers State

The findings presented in Tables 2 and 5 revealed that to a high extent low-cost materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The findings also showed that there was no significant difference between the mean ratings of male and female teachers' on the extent low-cost materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. This findings aligns with the study by Chijioke and Eze (2018) found that the use of low-cost materials in classrooms significantly improves student engagement and comprehension. The study indicated that when teachers use inexpensive resources to create visual aids or hands-on models, students tend to retain information more effectively and participate more actively in class activities.

Moreover, the findings corroborate with the study by Akinwumi and Omoniyi (2021) explore how the improvisation of low-cost materials in classrooms can lead to significant improvements in student performance. The study found that teachers who are skilled in using such materials can create engaging and visually appealing learning experiences that cater to different learning styles. Lastly, the findings agree with the study by Choi and Lee (2021) found that the improvisation of low-cost materials can serve as a means of fostering an environment where students become more involved in their learning process. The use of these materials

allows for more collaborative, hands-on activities where students work together to solve problems and create learning tools. This form of active learning has been shown to increase student motivation and engagement, which are key factors in improving academic performance.

The Extent Recycled Materials are Improvised as Instructional Resources for Teachers' Quality Service Delivery in Public Senior Secondary Schools in Rivers State

The findings presented in Tables 3 and 6 revealed that to a high extent recycled materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. The findings also showed that there was no significant difference between the mean ratings of male and female teachers' on the extent recycled materials were improvised as instructional resources for teachers' quality service delivery in public senior secondary schools in Rivers State. This findings aligns with the study by Olajide and Bello (2020) found that recycled materials have the potential to significantly improve the interactivity and creativity of lessons. The study shows that when teachers use recycled materials, they are able to create dynamic and flexible learning environments that encourage students to explore and experiment with new ideas.

Moreover, the findings corroborate with the study by Wusu and Akinyemi (2019) found that the use of recycled materials also enhances students' problem-solving and critical thinking abilities. The study indicated that when students work with recycled materials, they are encouraged to think creatively about how to repurpose objects for educational purposes, which nurtures their ability to innovate and solve problems. Lastly, the findings agree with the study by Jide (2021) emphasized the use of recycled materials reduces the financial burden on schools, enabling teachers to continue delivering quality education even when the school's resources are scarce.

CONCLUSION

Improvising instructional resources using local materials, low-cost materials, and recycled materials plays a vital role in enhancing teachers' quality service delivery in public senior secondary schools in Rivers State. The study demonstrates that by utilizing locally available and cost-effective materials, schools can overcome the challenges posed by limited funding and resource shortages. These improvised resources not only make teaching more practical and engaging but also enable teachers to creatively address the diverse learning needs of students. Local materials, such as natural objects and community-based resources, can enrich the learning environment, making lessons more relevant to students' everyday experiences. Low-cost materials, including affordable teaching aids and tools, ensure that quality education is accessible even in resource-constrained settings. Furthermore, recycled materials present an environmentally friendly and sustainable approach to resource utilization, fostering both creativity and ecological responsibility among students. Notably, the effective use of these improvised instructional resources can significantly improve the quality of education in Rivers State's public senior secondary schools, enhancing teaching practices, promoting student engagement, and fostering a more resourceful and sustainable educational system.

Recommendations

To enhance instructional quality in public senior secondary schools in Rivers State, it is essential to adopt innovative and cost-effective approaches to resource utilization. Below are key recommendations for improving the teaching and learning process through the use of locally available, low-cost, and recycled materials:

- Teachers should create instructional resources using locally available materials like wood, stones, and clay for hands-on lessons.
- School principals and teacher training institutions should train teachers to make teaching aids from inexpensive materials like cardboard and plastic for effective lesson delivery.
- School Heads and Parent-Teacher Associations should encouraged teachers to repurpose discarded items (e.g., newspapers, plastic bottles) as educational tools for diverse subjects.

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