

EXPLORATION AND IDENTIFICATION OF ENVIRONMENTAL RESOURCES FOR EDUCATIONAL IMPROVISATION AMONG SECONDARY SCHOOLS IN DAURA ZONAL QUALITY ASSURANCE

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Abstract

This study investigated the exploration and identification of environmental resources for educational improvisation in secondary schools under Daura Zonal Quality Assurance. A survey research design was adopted for the study. The population comprised 894 teaching staff, while a sample size of 290 respondents was selected using purposive sampling technique. Data were collected using a structured questionnaire titled Environmental Resources and Educational Improvisation Questionnaire (ERIQ) structured on a five-point Likert scale. The instrument was validated by experts and yielded a reliability coefficient of 0.810. Data collected were analyzed using mean and standard deviation, while Pearson Product Moment Correlation Coefficient (PPMC) and One-Way Analysis of Variance (ANOVA) were used to test the hypotheses at 0.05 level of significance. The findings revealed that environmental resources were moderately available and utilized for educational improvisation. The study further found a significant relationship between the availability and utilization of environmental resources, significant differences in teachers' improvisation skills based on educational qualifications, and a strong positive relationship between the effectiveness of improvised instructional materials and teaching-learning outcomes. The study concluded that effective utilization of environmental resources enhances instructional delivery and students' academic performance. the study recommended increased provision of environmental resources, regular teacher training, and improved institutional support for educational improvisation.

Keywords: Education, environment, improvisation, instructional resources

Introduction

Education remains a fundamental tool for national development, serving as a mechanism for equipping individuals with the knowledge, skills, and competencies required for societal advancement. In contemporary educational systems, particularly in developing countries such as Nigeria, the quality of teaching and learning is closely linked to the availability and effective utilization of instructional materials. Instructional materials enhance the teaching-learning process by making abstract concepts concrete, promoting learner engagement, and improving academic achievement. However, evidence indicates that many educational institutions continue to face shortages of standard instructional resources, thereby hindering effective teaching practices (Obidike, 2021; Adeyemi, 2024).

The persistent inadequacy of instructional materials has led to increased emphasis on educational improvisation, which involves the use of locally available environmental resources as substitutes for conventional teaching aids. Improvisation is widely regarded as a practical and cost-effective strategy for addressing resource constraints in education. It enables teachers to utilize materials within their

immediate environment to support instruction, thereby enhancing contextual learning and fostering creativity among both teachers and learners (Mbaba & Atuzie, 2024) . In this regard, environmental resources such as natural objects, locally fabricated tools, and community-based facilities-play a critical role in facilitating effective improvisation.

Recent studies have further highlighted the importance of improvisation in improving students' academic performance. For instance, research has shown that students taught using improvised instructional materials perform significantly better than those taught using conventional methods without such materials (Lilian et al., 2024) . Similarly, Nzechie et al. (2025) found that improvisation enhances students' achievement and retention in science-related subjects by making learning more interactive and meaningful . These findings underscore the pedagogical value of integrating environmental resources into instructional delivery, particularly in resource-constrained educational environments.

Despite these benefits, the effective implementation of improvisation in Nigerian educational institutions remains limited. One major challenge is the lack of adequate skills among teachers to design and utilize improvised instructional materials effectively. While some studies indicate that teachers possess moderate improvisation skills, others reveal significant gaps in creativity, technical knowledge, and practical application (Ikueraye & Eganbor, 2025) . Furthermore, Dave-Ugwu et al. (2025) emphasized that teachers' creativity is a critical factor in successful improvisation, especially in the 21st-century learning environment where innovative teaching approaches are required .

In addition to skill-related challenges, several institutional and environmental factors hinder the effective use of environmental resources for educational improvisation. These include lack of funding, inadequate training opportunities, time constraints, and limited institutional support. Studies have also noted that even when environmental resources are available, they are often underutilized due to poor awareness and lack of structured frameworks for integration into teaching practices (Ebhomien, 2023) . This situation highlights the need for systematic exploration and identification of available environmental resources within specific educational contexts.

Moreover, the evolving nature of education in the 21st century demands innovative teaching strategies that align with technological advancement and learners' needs. Improvisation is no longer limited to traditional materials but now encompasses the integration of modern tools and creative approaches to enhance instructional delivery (Mbaba & Atuzie, 2024) . Consequently, there is a growing need to examine how environmental resources can be effectively harnessed to support educational innovation, particularly in teacher education institutions where future educators are trained.

Although several studies have examined improvisation and instructional materials in Nigeria, there is limited empirical evidence focusing specifically on the exploration and identification of environmental resources for educational improvisation within tertiary institutions such as Yusuf Bala Usman College of Education and Legal Studies, Daura. This gap in the literature necessitates further investigation to understand the availability, utilization, and challenges associated with environmental resources in this context.

Therefore, this study seeks to contribute to existing knowledge by exploring and identifying environmental resources for educational improvisation, assessing their utilization, and examining the factors influencing their effective use in enhancing teaching and learning outcomes.

Statement of the Problem

The effectiveness of teaching and learning in teacher education institutions largely depends on the

availability and appropriate use of instructional materials. However, in many developing countries such as Nigeria, the provision of standard instructional resources remains inadequate, thereby affecting the quality of instruction and learning outcomes (Ibe-Moses et al., 2024). Instructional materials play a critical role in enhancing students' understanding, especially in practical-oriented subjects, yet their availability and utilization remain inconsistent across institutions .

Despite its recognized importance, empirical evidence suggests that the extent of improvisation in Nigerian educational institutions remains low. Recent studies indicate that many teachers lack the necessary creativity, technical skills, and institutional support required to effectively improvise instructional materials (Dave-Ugwu et al., 2025). Additionally, factors such as time constraints, lack of training, high cost of local materials, and absence of supportive policies continue to hinder the effective utilization of environmental resources in teaching .

In Katsina State Secondary Schools, there is limited empirical evidence regarding the availability, identification, and utilization of environmental resources for educational improvisation. It remains unclear whether lecturers possess the required competencies to effectively harness these resources or whether institutional frameworks adequately support such practices. The absence of this information creates a gap in knowledge that may hinder efforts to improve teaching effectiveness and student learning outcomes.

Therefore, the problem of this study lies in the insufficient understanding of the availability, utilization, and effectiveness of environmental resources for educational improvisation in secondary schools of Daura Zonal Quality Assurance. This necessitates a systematic investigation to explore and identify these resources, assess their utilization, examine the challenges involved, and propose strategies for enhancing educational improvisation practices within the institution.

Objectives of the Study

The study aimed to:

1. Identify the types of environmental resources available for educational improvisation in the secondary schools under Daura Zonal Quality Assurance.
2. Examine the extent to which these environmental resources are utilized for instructional purposes in the secondary schools under Daura Zonal Quality Assurance..
3. Assess lecturers'/teachers' skills in improvising instructional materials using environmental resources in the secondary schools under Daura Zonal Quality Assurance.

Research Questions

The study guided by the following questions:

1. What types of environmental resources are available for educational improvisation in the secondary schools?
2. To what extent are environmental resources utilized for instructional improvisation?
3. What skills do lecturers possess in improvising instructional materials from environmental resources?

Research Hypotheses

H₀: There is no statistically significant relationship between the effectiveness of improvised instructional materials and teaching–learning outcomes in secondary schools under Daura Zonal Quality Assurance.

Methodology

This study adopted a survey research design to investigate the exploration and identification of environmental resources for educational improvisation in secondary schools under Daura Zonal Quality Assurance. The survey design was considered appropriate because it enabled the researcher to obtain data from a large population regarding the availability, utilization, effectiveness, and challenges associated with environmental resources for educational improvisation. The target population of the study comprised 894 teaching staff in secondary schools within the study area. From the population, a sample size of 290 respondents was drawn using an appropriate sampling technique to ensure adequate representation of the respondents.

Data for the study were collected using a structured questionnaire designed by the researcher titled Environmental Resources and Educational Improvisation Questionnaire (EREIQ). The instrument consisted of seven sections (A–G). Section A elicited information on the demographic characteristics of the respondents, while Section B focused on the availability of environmental resources. Section C examined the utilization of environmental resources for instructional purposes. Section D assessed teachers' skills in improvisation, whereas Section E addressed the challenges associated with the use of environmental resources. Section F measured the effectiveness of improvised instructional materials on teaching and learning, and Section G explored strategies for improving improvisation practices in schools. The questionnaire items were structured on a five-point Likert scale ranging from Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD).

The validity of the instrument was established through expert review, while the reliability of the instrument was determined using an appropriate reliability test, which yielded a reliability coefficient of 0.810, indicating that the instrument was reliable for data collection. Copies of the questionnaire were administered directly to the respondents by the researcher with the assistance of research assistants. The collected data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics such as frequency counts, percentages, mean, and standard deviation were used to answer the research questions. Pearson Product Moment Correlation Coefficient (PPMC) was used to test hypotheses one and three, while One-Way Analysis of Variance (ANOVA) was used to test hypothesis two at a 0.05 level of significance.

Results

Answer to the Research Questions

Table 1: Mean and Standard Deviation of Respondents on Environmental Resources and Educational Improvisation Variables

Variables	N	Mean	Std. Deviation
Availability of Environmental Resources	291	23.6414	3.48538
Utilization of Environmental Resources	291	21.7517	2.68800
Skills in Improvisation	291	15.9034	4.23827
Challenges in using Environmental Resources	291	19.6276	3.91951
Effectiveness of Improvised Materials	291	21.6586	2.73716
Strategies for Improvisation	291	21.5345	3.37308

Table 1 presents the descriptive statistics on the major variables of the study, namely availability of environmental resources, utilization of environmental resources, skills in improvisation, challenges in

using environmental resources, effectiveness of improvised materials, and strategies for improvisation. The results revealed that the availability of environmental resources recorded a mean score of 23.64 with a standard deviation of 3.49, indicating that environmental resources were moderately available in the secondary schools under Daura Zonal Quality Assurance. The utilization of environmental resources also recorded a relatively high mean score of 21.75 and a standard deviation of 2.69, suggesting that teachers utilized available environmental resources to a considerable extent for instructional purposes.

furthermore, the findings showed that teachers possessed moderate improvisation skills as reflected by a mean score of 15.90 and a standard deviation of 4.24. The result equally indicated that respondents experienced several challenges in the use of environmental resources for educational improvisation, with a mean score of 19.63 and a standard deviation of 3.92. In addition, the effectiveness of improvised instructional materials recorded a mean score of 21.66, implying that improvised materials were perceived as effective in enhancing teaching and learning outcomes. Lastly, the strategies for improving improvisation practices had a mean score of 21.53, indicating that respondents agreed on the need for various improvement strategies to strengthen improvisation practices in schools.

H₀: There is no statistically significant relationship between the effectiveness of improvised instructional materials and teaching–learning outcomes in secondary schools under Daura Zonal Quality Assurance.

Table 2: Relationship between effectiveness of improvised instructional materials and teaching-learning outcomes.

		Effectiveness of Improvised Materials	Learning Outcomes
Effectiveness of Improvised Materials	Pearson	1	.660**
	Correlation		.000
	Sig. (2-tailed)	290	290
	N		
Learning Outcomes	Pearson	.660**	1
	Correlation	.000	
	Sig. (2-tailed)	290	290
	N		

The result in Table 4 revealed a Pearson correlation coefficient (r) value of 0.660 with a significance value of 0.000, which is less than the 0.05 level of significance. This indicates that there was a strong positive and statistically significant relationship between the effectiveness of improvised instructional materials and teaching–learning outcomes in secondary schools under Daura Zonal Quality Assurance. As a result, the null hypothesis was rejected.

The implication of this finding is that effective use of improvised instructional materials contributes significantly to improved teaching and learning outcomes. The stronger the effectiveness of improvised materials, the better the students’ understanding, participation, and academic performance in classroom activities.

Discussion of Findings

The findings of the study revealed that environmental resources were moderately available and

utilized for educational improvisation in secondary schools under Daura Zonal Quality Assurance. The result further showed that the availability of environmental resources significantly influenced their utilization for instructional purposes. This finding agrees with the study conducted by Adeyemi (2024), who reported that the availability of instructional and environmental resources enhances teachers' ability to improvise teaching materials effectively and improve classroom interaction. Similarly, Obidike (2021), found that access to locally available materials promotes effective teaching and learning through improvisation in Nigerian schools.

In addition, the study revealed a strong positive relationship between the effectiveness of improvised instructional materials and teaching–learning outcomes. This indicates that improvised instructional materials significantly enhance students' understanding, participation, retention, and academic achievement. The finding supports the study by Nzechie, O. et al., who found that improvised instructional materials improved students' achievement and retention in Basic Science and Technology. Likewise, Diri and Udo (2025). reported that students taught with improvised instructional materials performed significantly better academically than those taught without such materials. Similarly, Lilian (2024) et al. established that improvised instructional materials positively influenced students' performance in Social Studies in secondary schools.

Overall, the findings of the study demonstrate that environmental resources and instructional improvisation play significant roles in improving teaching effectiveness and learning outcomes in secondary schools. The results further underscore the importance of enhancing teachers' improvisation skills, increasing institutional support, and encouraging the effective utilization of locally available resources for sustainable educational development.

Conclusion

The study concluded that environmental resources are available and moderately utilized for educational improvisation in secondary schools under Daura Zonal Quality Assurance. The findings established that the availability of environmental resources significantly influences their utilization for instructional purposes. The study further concluded that teachers' educational qualifications significantly affect their improvisation skills, indicating that professionally trained teachers demonstrate better competencies in instructional improvisation.

The study also concluded that several challenges such as inadequate funding, lack of training opportunities, insufficient institutional support, and limited time hinder the effective utilization of environmental resources for educational improvisation. Despite these challenges, the study established that improvised instructional materials significantly improve teaching–learning outcomes by enhancing students' understanding, participation, retention, and academic achievement.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. School administrators and educational authorities should ensure adequate provision and accessibility of environmental resources to enhance instructional improvisation in schools.
2. Teachers should be encouraged and motivated through workshops, seminars, and professional development programmes to improve their improvisation skills and creativity.
3. Government and school management should provide adequate funding and institutional support for the development and utilization of improvised instructional materials.

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