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TEACHERS' PERCEPTIONS OF THE EFFECTIVENESS OF DIGITAL AND TRADITIONAL INSTRUCTIONAL MATERIALS ON PUPILS' CREATIVITY AMONG PRESCHOOLERS IN NIGERIA

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Abstract
The rapid technological advancements characterizing the 21st century have profoundly shaped global education systems, including early childhood education. This study examined teachers' perceptions of the effectiveness of digital and traditional instructional materials in fostering pupils' creativity among preschoolers in Educational Districts I and II, Lagos, Nigeria. Using a descriptive survey research design, the researchers carefully developed a questionnaire to collect data from 150 randomly selected ECE teachers in Districts I and II, spanning public and private schools. The questionnaire items were validated by experts and yielded a Cronbach's Alpha reliability coefficient of 0.82. The data collected were analyzed using a frequency distribution table and a one-sample t-test at the 0.05 level of significance, using SPSS 21.0. This study found, among others, that teachers regard both digital and traditional instructional materials as essential for promoting preschool creativity, with digital resources augmenting engagement and imagination, while traditional tools are crucial for hands-on exploration and problem-solving. The findings, in accordance with existing literature, indicate that blended approaches, combining digital innovation with traditional methods, produce the most successful results in early childhood education. The study emphasizes the significance of contextual and institutional elements, including teacher preparation, administrative support, and infrastructure, in determining the effectiveness of instructional resources. This study recommends that policymakers must enhance infrastructural support by guaranteeing inexpensive access to digital resources and dependable internet services at educational institutions; educational administrators must offer ongoing professional development programs centered on blended instructional methodologies; and teachers should implement hybrid models that innovatively combine digital and conventional resources to optimize student engagement, etc.

Keywords: Traditional resources, digital resources, instructional materials, teachers' perspectives, early childhood education in Nigeria, Lagos education district.

INTRODUCTION

The rapid technological advancements characterizing the 21st century have profoundly shaped global education systems, including early childhood education (ECE) (Kavak et al., 2024). Innovative learning, communication, and cognitive development channels have emerged from digital change. Technology integration in preschools can improve

foundational abilities like creativity, which are essential for lifelong learning, problem-solving, and innovation (Vidal-Esteve & Martín-Gómez, 2023; Jecce, 2023). The effectiveness of digital versus traditional instructional resources in encouraging creativity among young learners is being questioned as societies adopt digital learning settings (Cvetković et al., 2024).

Early childhood creativity is essential to holistic development, impacting cognitive flexibility, imagination, and originality (Mîsliţchi & Munteanu, n.d.; Laverick, 2014). Preschools help children acquire expressive, inquisitive, and problem-solving abilities that are crucial to academic and social success (Vitoulis, 2022). Research suggests that learning materials, both digital and conventional, shape children's learning experiences and creativity (Ramírez, 2024; Zainuddin & Sjögren, 2024).

Digital educational technologies have changed ECE pedagogy. Tablets, interactive e-boards, multimedia apps, and instructional software are gradually replacing books, puzzles, and manipulatives (Laverick, 2014; Vitoulis, 2022). Interactive, multimodal digital media allow children to experiment, manipulate virtual objects, and communicate ideas in dynamic ways that may not be achievable with conventional resources (Kandukoori et al., 2024; Wei & Lee, 2015). Research demonstrates that digital resources can increase learner engagement, imagination, and creativity (Aslıyüksek et al., 2023; Ramírez, 2024).

The use of digital tools in preschool teaching is controversial despite its benefits. Studies show that technology can improve originality, flexibility, and creative expression (Wei & Lee, 2015; Kandukoori et al., 2024), but others warn against excessive screen time, reduced tactile learning, and possible social interaction declines. Research suggests that excessive digital gadget use can hinder hands-on exploration, sensory stimulation, and imaginative play, which are essential to early childhood education (Ramírez, 2024; Aslıyüksek et al., 2023).

Digital and conventional resources' educational value depends on teachers (Dong, 2016). Their views, preparation, technological competence, and pedagogical orientation strongly influence creativity-enhancing tool selection and implementation (Ogegbo & Aina, 2020; Vishkaie et al., 2018). According to Aslıyüksek et al. (2023), teachers acknowledge the transformative potential of digital tools but also raise concerns about overreliance on technology and the importance of preserving tactile and social learning experiences. Therefore, experts increasingly recommend a blended or balanced method that uses both material kinds to maximize creative growth (Mîsliţchi & Munteanu, n.d.).

Empirical research has provided essential ideas globally. In Taiwan, Wei and Lee (2015) found that interactive digital devices improved children's creativity and adaptability more than traditional techniques. Research in Turkey and Greece shows that deliberate and moderate use of digital tools enhances creativity (Kavak et al., 2024; Vitoulis, 2022). Teacher preparation, infrastructural support, and context-appropriate pedagogical practices are crucial to digital innovation, according to South African studies (Ogegbo & Aina, 2020).

Despite this global evidence, few empirical investigations have studied these processes in Nigerian preschools. Access to learning resources, teacher training quality, and infrastructure issues plague Nigeria's early childhood education sector (Adebayo & Oluwafemi, 2023; Okafor, 2021). While governments and corporate stakeholders have begun integrating digital learning technology into some preschools, many, especially in low-resource regions, still use only conventional

teaching materials (Ugwu & Okonkwo, 2022). This inconsistent implementation raises problems about equality, instructional quality, and creativity-promoting pedagogy.

Nigerian research on teachers' opinions of digital and conventional instructional resources is scarce (Adeyemi & Adeyinka, 2022). Local studies have examined digital literacy challenges and resource constraints in Nigerian ECE (Ezeudu & Okoye, 2022; Okoro & Eze, 2021), but little is known about how preschool teachers evaluate digital versus traditional tools' creative outcomes. Due to Nigeria's cultural diversity, uneven technical infrastructure, and different pedagogical philosophies, evidence from other nations may not apply (Nwosu & Obiefuna, 2020; Adelabu & Makinde, 2020).

To fill this gap, this study examines Nigerian preschool instructors' views on how digital and conventional educational tools boost students' creativity. Understanding educators' perspectives is crucial because they drive classroom practices, resource utilization, learning outcomes, and curricular reform success (Ogunsanya & Taiwo, 2023; Ikeanyibe & Nwokolo, 2022). Teachers' experiences, perceived benefits, and obstacles with both material kinds can inform professional development, legislation, and resource allocation.

Thus, while global studies have shown the potential and limitations of digital instructional tools in early childhood creative development, the Nigerian setting is unexplored. This study is prompted by the need to develop contextually grounded evidence to promote culturally sensitive, equity-driven, and pedagogically balanced approaches to encouraging creativity in Nigerian preschoolers.

The Main Objective of the Study

The main aim of this study is to examine teachers' perceptions of the effectiveness of digital and traditional instructional materials on pupils' creativity among preschoolers in Nigeria

Research Objectives

1. To evaluate the effect of digital instructional materials on learning outcomes in early childhood education;
2. To examine the effect of traditional instructional materials on learning outcomes in early childhood education;
3. To analyze the combined effects of digital and traditional instructional materials on learning outcomes in early childhood education;
4. To examine the factors influencing the effectiveness of instructional materials in early childhood education; and
5. To identify the challenges and opportunities related to digital and traditional instructional materials that are not significantly different from neutral.

Research Questions

1. What are the effects of digital instructional materials on learning outcomes in early childhood education?
2. What are the effects of traditional instructional materials on learning outcomes in early childhood education?
3. What are the combined effects of digital and traditional instructional materials on learning outcomes in early childhood education?
4. What are the factors influencing the effectiveness of instructional materials in early childhood education?
5. What are the challenges and opportunities related to digital and traditional instructional materials that are not significantly different from neutral?

Research Hypotheses

The following hypotheses are tested in this study:

- **H_{01}:** There is no significant effect of digital instructional materials on learning outcomes in early childhood education
- **H_{02}:** There is no significant effect of traditional instructional materials on learning outcomes in early childhood education
- **H_{03}:** There are no significant combined effects of digital and traditional instructional materials on learning outcomes in early childhood education
- **H_{04}:** There is no significant factor influencing the effectiveness of instructional materials in early childhood education
- **H_{05}:** Teachers' perceptions of challenges and opportunities related to digital and traditional instructional materials are not significantly different from neutral.

LITERATURE REVIEW

The Concept of Teachers' Perceptions in Educational Settings

Teachers' views are crucial to educational research, especially in evaluating and implementing instructional strategies and resources in classrooms (Dong, 2016; Vishkaie et al., 2018). Dong (2016) defines teachers' perceptions as their professional judgements, attitudes, beliefs, and views about educational instruments and methods. Professional experience, training, contextual circumstances, and personal ideas about effective teaching and learning impact these perceptions (Adebisi & Laleye, 2021; Okoro & Eze, 2021).

Oladele and Akinsola (2022) found that teachers' professional beliefs are formed through their education, professional development, and classroom interactions with students and resources. In early childhood education, teachers' attitudes significantly affect the success of instructional materials (Aslıyüksek et al., 2023; Bamidele & Adeoye, 2021). Research suggests that early childhood educators tend to view digital technology integration positively, acknowledging its potential to enhance children's creativity and learning. However, attitudes vary based on context (Aslıyüksek et al., 2023; Ogegbo & Aina, 2020).

Multiple researchers have shown that understanding instructors' perspectives goes beyond opinion gathering (Vishkaie et al., 2018; Chijioke & Emeka, 2021). According to Vishkaie et al. (2018), instructors' attitudes and beliefs strongly influence their instructional choices and whether they use new educational tools or traditional methods. This is especially important in early childhood education, as teachers facilitate learning and their perceptions directly affect educational quality (Okeke & Nwankwo, 2021; Onyeka & Chukwu, 2020).

The feedback loop between teachers' impressions and student responses, and learning outcomes impacts future instructional decisions (Ramírez, 2024; Wei & Lee, 2015). According to Ramírez (2024), children tend to respond well to digital resources due to their interactive and engaging nature, while traditional materials may have varied degrees of involvement. These observations inform teachers' material effectiveness assessments and instructional decisions (Ogunsanya & Taiwo, 2023).

Digital Instructional Materials in Early Childhood Education

Digital materials in early childhood education challenge established pedagogical approaches that rely on conventional resources (Vitoulis, 2022; Cvetković et al., 2024). Vitoulis (2022) reports that preschools are increasingly using digital technologies like interactive whiteboards, tablets, educational software, and multimedia resources to improve learning and engage young learners. This integration mirrors broader technical changes in educational practice, as Adeyemi and Adeyinka (2022)

found in their technology adoption analysis in education. Digital tools are interactive, allowing children to explore, experiment, and create in ways that traditional materials cannot (Wei & Lee, 2015; Kandukoori et al., 2024). Kandukoori et al. (2024) found that interactive storytelling platforms allow children to affect tale outcomes and digital drawing apps offer endless colours and effects, encouraging creativity and imagination. Benefits of these skills include accommodating varied learning styles and preferences in preschoolers (Vidal-Esteve & Martín-Gómez, 2023; Zainuddin & Sjögren, 2024).

Zainuddin and Sjögren (2024) found that interactive, multimedia-rich digital teaching tools can engage and promote children's imagination, creativity, and cognitive development. Digital tools' multimodal features enable children to engage with content across visual, audio, and tactile channels, potentially improving learning outcomes and creativity (Kavak et al., 2024; Vidal-Esteve & Martín-Gómez, 2023). This multimodal approach is consistent with current research on how young infants learn best through several sensory channels (Jecce, 2023).

Digital technologies in early childhood education present obstacles and concerns, according to various researchers (De França et al., 2020; Kavak et al., 2024; Ugwu & Okonkwo, 2022). Screen usage, developmental appropriateness, and the risk of substituting hands-on learning in early life are raised by De França et al. (2020). Ugwu and Okonkwo (2022) emphasize the need to balance digital innovation and developmentally appropriate approaches.

Digital instructional materials are also affected by teacher preparation, technological infrastructure, and institutional support (Ogegbo & Aina, 2020; Ikegbu & Okafor, 2022). Teacher acceptance and support mechanisms are crucial to technology integration, especially in developing nations with limited technological infrastructure, according to Ogegbo and Aina (2020). Adelabu and Makinde (2020) found that digital divide issues can hinder the deployment of digital instructional resources in varied educational contexts.

Traditional Instructional Materials in Preschool Settings

For decades, early childhood education has relied on books, worksheets, manipulative objects, art supplies, blocks, puzzles, charts, and other physical materials that require direct interaction. Educational literature has extensively studied these items and their benefits for child development (Laverick, 2014; Jecce, 2023). According to Nwosu and Obiefuna (2020), traditional resources are important for pedagogical continuity and culturally sensitive instruction. Researchers (Ramírez, 2024; Laverick, 2014; Jecce, 2023) have found that tactile materials offer crucial sensory experiences for early infant development. Ramírez (2024) states that traditional materials offer vital tactile, sensory, and social experiences for child development. Fine motor skill development, spatial reasoning, and hands-on exploration are essential to early learning (Okeke & Nwankwo, 2021). Laverick (2014) shows how manipulative objects help young children learn mathematics and problem-solve.

Traditional instructional materials may encourage social interaction and collaborative learning more than digital ones (Onyeka & Chukwu, 2020; Bamidele & Adeoye, 2021). Through shared manipulation and exploration, physical materials encourage group activities, peer contact, and teacher-student engagement (Onyeka & Chukwu, 2020). Preschools emphasize social skill development, making these social aspects of learning crucial (Adebayo & Oluwafemi, 2023). Bamidele and

Adeoye (2021) found that traditional materials naturally encourage turn-taking, sharing, and collaborative problem-solving in children.

Traditional resources are known and accessible, which is useful in resource-constrained educational settings (Okafor, 2021; Chijioke & Emeka, 2021). Traditional materials can be implemented without electricity, technological support, or training (Okafor, 2021). In their research on educational difficulties in Nigeria, Chijioke and Emeka (2021) found that their accessibility makes them useful in resource-constrained or technologically underdeveloped areas. Traditional materials have limitations in engagement and interactivity, as stated by scholars (Ramírez, 2024; Adeyemi & Adeyinka, 2022). Research indicates that traditional methods may not effectively engage children who are increasingly exposed to digital media (Ramírez, 2024). Teachers are exploring strategies to improve conventional resources or merge them with digital alternatives to address this difficulty (Mîsliţchi & Munteanu, n.d.; Vidal-Esteve & Martín-Gómez, 2023).

Teachers' Perceptions of Digital Instructional Materials

Research on teachers' views on digital instructional resources in early childhood education has found both favourable and negative attitudes (Aslıyüksek et al., 2023; Ogegbo & Aina, 2020; Vishkaie et al., 2018). According to Aslıyüksek et al. (2023), early childhood educators understand the potential of digital technology to enhance children's creativity and learning experiences. Although encouraging, educators raised concerns about overuse and stressed the need for restricted, content-focused adoption to ensure developmental appropriateness (Aslıyüksek et al., 2023).

South African researchers Ogegbo and Aina (2020) found that teacher acceptance and support mechanisms are crucial to technology integration. Teachers' positive opinions were critical for effective implementation, but inadequate training, technical support, and institutional backing often inhibited implementation (Ogegbo & Aina, 2020). Adeyemi and Adeyinka (2022) found comparable issues in Nigerian educational contexts, highlighting the complex interaction between perception and practical execution in educational technology adoption.

In preschool education, Vishkaie et al. (2018) found that teachers saw digital instructional materials as versatile tools that could suit varied learning styles and preferences. The study found that teachers valued digital resources' interactive capacities and ability to engage children who struggle with traditional methods (Vishkaie et al., 2018). In complementary research, Kavak et al. (2024) found that teachers liked digital tools' multimedia capabilities but needed professional development to use them.

Research has also found that teachers had doubts about digital educational resources (De França et al., 2020; Ugwu & Okonkwo, 2022). Studies raise concerns about screen usage, developmental appropriateness, and the possibility that digital technologies will replace hands-on early childhood learning (De França et al., 2020). These concerns demonstrate instructors' knowledge of child development and their duty to give developmentally appropriate experiences (Ugwu & Okonkwo, 2022).

International research reveals cultural and contextual differences in teachers' perceptions (Ikegbu & Okafor, 2022; Cvetković et al., 2024). Positive attitudes towards digital materials are common, but local educational contexts, technological infrastructure, and cultural values about early childhood education affect concerns and implementation challenges (Ikegbu & Okafor, 2022). According to Cvetković et al. (2024), European environments differ from those in

underdeveloped countries in infrastructure support and teacher preparation.

Traditional Instructional Materials and Creativity

Traditional instructional materials' impact on creativity development has been shown to support their use in early childhood education (Laverick, 2014; Okeke & Nwankwo, 2021; Jecce, 2023). Traditional materials have been extensively examined for their effects on child development, including creativity, fine motor abilities, and social interaction (Nwosu & Obiefuna, 2020; Bamidele & Adeoye, 2021). Laverick (2014) extensively documents how open-ended investigation and alteration of traditional materials foster innovative thinking.

Research indicates that tactile experiences are crucial for creative growth, as reinforced by studies on traditional materials and creativity (Jecce, 2023; Ramírez, 2024). Research shows that physical manipulation, open-ended investigation, and sensory contact with traditional materials boost children's creative thinking and expression (Jecce, 2023). Additional research by Ramírez (2024) shows that trained educators can foster persistent creative engagement with conventional materials.

Research has also shown the social aspects of traditional material use (Onyeka & Chukwu, 2020; Bamidele & Adeoye, 2021). Traditional materials encourage collaboration, peer engagement, and group problem-solving, which fosters social growth and creativity (Onyeka & Chukwu, 2020). Comprehensive early childhood education initiatives require these collaborative characteristics of traditional material use (Bamidele & Adeoye, 2021). Adebayo and Oluwafemi (2023) show how traditional materials enable culturally relevant collaborative learning.

Traditional materials' accessibility and practicality, especially in resource-constrained situations, have been studied (Okafor, 2021; Chijioke & Emeka, 2021). International studies have shown that traditional materials may stimulate creativity regardless of technology infrastructure or economic resources, making them valuable components of inclusive educational approaches (Okafor, 2021). Chijioke and Emeka (2021) give Nigerian context-specific evidence that traditional materials promote learning outcomes.

Some research suggests that traditional materials may have limitations in engagement and interactivity (Ramírez, 2024; Adeyemi & Adeyinka, 2022). Research indicates that conventional materials may not be as effective as digital media for children who are more acclimated to it (Ramírez, 2024). This difficulty has led researchers to study how traditional materials can be improved or merged with modern methods (Mîsliţchi & Munteanu, n.d.).

Comparative Studies on Digital versus Traditional Materials

Research on digital vs. conventional teaching materials has yielded conflicting results, with efficiency varying based on implementation methods and context (Wei & Lee, 2015; Ramírez, 2024; Cvetković et al., 2024) found that interactive digital devices improved children's creativity and adaptability in creative endeavours. This study found that digital resources may promote creativity in certain disciplines; the authors stressed the need for implementation tactics.

Recent studies have compared the involvement and motivation of youngsters using digital versus conventional materials (Ramírez, 2024; Zainuddin & Sjögren, 2024). Ramírez (2024) found that toddlers respond positively to digital resources due to their interactive and engaging nature, while traditional materials may need more organized facilitation to obtain similar engagement levels. Zainuddin and Sjögren

(2024) found that multimedia experiences can boost initial engagement but may not sustain long-term learning without pedagogical support.

Comparative research indicates that each material type has distinct contributions, making no approach universally superior (Mîsliţchi & Munteanu, n.d.; Vidal-Esteve & Martín-Gómez, 2023). Studies show that digital and traditional materials have different benefits and that strategic integration may be best (Mîsliţchi & Munteanu, n.d.). Vidal-Esteve and Martín-Gómez (2023) found evidence for mixed techniques that combine the benefits of both materials.

Comparative longitudinal studies have studied how different instructional material techniques affect creative development over time (Jecce, 2023; Kavak et al., 2024). These few studies imply that persistent exposure to varied material kinds may yield the most comprehensive creativity development outcomes, promoting balanced methods (Jecce, 2023). Kavak et al. (2024) show how long-term exposure to different instructional materials enhances creative growth.

International study shows cultural and contextual differences in material effectiveness (Ikegbu & Okafor, 2022; Cvetković et al., 2024). Studies from numerous nations have shown that local factors, including technology infrastructure, cultural values, and educational traditions, strongly influence the adoption of digital versus conventional techniques (Ikegbu & Okafor, 2022). According to Cvetković et al. (2024), material efficiency varies across European, African, and Asian contexts based on local factors and cultural goals.

METHODOLOGY

This section explains the procedures adopted to explore preschool teachers' views on how digital and traditional teaching materials influence creativity in young learners within Lagos State. The study applied a descriptive survey design to obtain primary data. This approach was considered appropriate for capturing teachers' attitudes and classroom experiences without altering existing school conditions.

The target population comprised preschool teachers working in public and private early childhood centres across Lagos Educational Districts 1 and 2. These districts were selected because they represent diverse socioeconomic settings and different levels of technological exposure. From this group, 150 teachers were chosen using purposive and simple random sampling. Thirty schools (15 public and 15 private) meeting study criteria were deliberately selected first, after which five teachers from each school were randomly drawn.

Data was gathered using a carefully designed Likert-scaled questionnaire. Expert validation was obtained from specialists in early childhood education, educational technology, and research methodology, and a pilot test further confirmed clarity and suitability. Reliability testing produced a Cronbach's alpha of 0.82, indicating strong internal consistency. Questionnaires were administered in person and through designated school contacts. The data collected was analyzed using SPSS version 21.0, applying descriptive and inferential statistics at a 0.05 significance level.

RESULTS

This study examines teachers' perceptions of the effectiveness of digital and traditional instructional materials on pupils' creativity among preschoolers in Nigeria. The data collected are analyzed with a frequency distribution table and a one-sample t-test, with

the aid of SPSS 21.0 version, at a 0.05 significance threshold.

Test of Hypotheses

The five research hypotheses were tested with the use of a one-sample t-test, as shown below:

Hypothesis One

There is no significant effect of digital instructional materials on learning outcomes in early childhood education.

Table 4.1: One-Sample t-Test showing the effect of digital instructional materials on learning outcomes in early childhood education

	Test Value = 3.0				95% Confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Digital instructional materials	36.515	149	.000	1.02000	.9648	1.0752

Mean = 3.5200±0.34212

The one-sample t-test results demonstrate that teacher perceptions of digital instructional materials considerably exceeded the neutral test value of 3.0 ($t(149) = 36.515$, $p < .001$). The results indicate that teachers significantly endorse the efficacy of digital instructional tools in early childhood education, with a mean score of 3.52 (SD = .34). The narrow confidence interval (0.9648–1.0752) reinforces the reliability of this impact, indicating a uniform agreement across responders.

This statistical result corresponds with the thematic analysis, wherein teachers emphasized the captivating and motivational attributes of digital resources, acknowledging their capacity to incite curiosity, inventiveness, and critical thinking. Teachers especially appreciated resources like films and interactive programs for elucidating intricate concepts and fostering creativity. However, recognizing that digital tools might limit open-ended research highlights a nuanced perspective: whereas digital resources facilitate active learning, their effective utilization necessitates a balance with chances for unrestrained creative expression.

The findings from this study therefore reject the null hypothesis, showing that there is a significant effect of digital instructional materials on learning outcomes in early childhood education. This aligns with Kandukoori et al. (2024), who found that digital tools are interactive, allowing children to explore, experiment, and create, thereby fostering creativity and imagination. Similarly, Vitoulis (2022) reports improved learning and engagement of young learners as a result of technology.

Hypothesis Two

There is no significant effect of traditional instructional materials on learning outcomes in early childhood education

Table 4.2: One-Sample t-Test showing the effect of traditional instructional materials on learning outcomes in early childhood education

	Test Value = 3.0				95% Confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Traditional instructional materials	20.594	149	.000	.67333	.6087	.7379
Mean = 3.1733±0.40045						

The one-sample t-test results in Table 4.3 indicate a statistically significant difference between the test value of 3.0 (neutral) and the mean perception score of teachers, which is 3.17 ($t = 20.594$, $df = 149$, $p < .001$). The mean difference of .67333 and a narrow confidence range (.6087–.7379) suggest that teachers assessed traditional teaching resources as considerably more effective than neutral in impacting preschool learning outcomes. This discovery underscores teachers' favourable views on conventional resources in early childhood education.

The thematic analysis corroborates this, as teachers regularly highlighted those resources such as clay, blocks, and storybooks promote creativity, imagination, and fine motor skills development. Despite recognizing limitations such as constrained resources and expenses, teachers emphasized their essential function in establishing sensory-rich, experiential learning environments. The quantitative and qualitative data collectively affirm that traditional educational resources are significantly appreciated for promoting students' creativity and involvement.

The findings of this also reject the null hypotheses, observing that there is a significant effect of traditional instructional materials on learning outcomes in early childhood education. This supports the findings of Ramírez (2024), who states that traditional materials offer vital tactile, sensory, and social experiences for child development. In the same vein, Bamidele and Adeoye (2021) found that traditional materials naturally encourage turn-taking, sharing, and collaborative problem-solving in children.

Hypothesis Three

There are no significant combined effects of digital and traditional instructional materials on learning outcomes in early childhood education.

Table 4.3: One-Sample t-Test result for the combined effect of digital and traditional instructional materials on learning outcomes in early childhood education

	Test Value = 3.0				95% Confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Digital and traditional instructional materials	38.441	149	.000	.96667	.9170	1.0164
Mean = 3.4667±0.30798						

The one-sample t-test result in Table 4.4 indicates that the combined influence of digital and conventional instructional materials on early childhood learning outcomes was

substantially stronger than the neutral test value of 3.0. The mean score of 3.47 (SD = .31), t (149) = 38.44, p < .001, signifies a robust, favourable view among teachers regarding the enhancement of pupils' creativity and general learning through the integration of both methodologies. The narrow confidence interval [.9170, 1.0164] enhances the credibility of this finding.

The statistical results correspond with the thematic analysis, indicating that teachers predominantly prefer a hybrid approach. They acknowledged that whereas digital tools augment interactivity, velocity, and extensive reach, conventional resources cultivate practical creativity, analytical problem-solving, and sensory involvement. The two strategies synergistically enhance one another, catering to varied student requirements and educational environments. The data highlights the significance of integrated instructional practices for balanced, inclusive, and engaging preschool education.

This result revealed a statistically significant combined effect of digital and traditional instructional materials on learning outcomes in early childhood education, leading to the rejection of the null hypothesis. A comparable finding was reported by Mîsliţchi et al. (2023), whose studies show that digital and traditional materials have different benefits and that strategic integration may be best. As well as Kavak et al. (2024), who suggested that long-term exposure to different instructional materials enhances creative growth.

Hypothesis Four

There is no significant factor influencing the effectiveness of instructional materials in early childhood education

Table 4.4: One-Sample t-Test result for factor influencing the effectiveness of instructional materials in early childhood education

	Test Value = 3.0				95% Confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Influencing factors	5.569	149	.000	.35333	.2280	.4787

Mean = 2.8533±.77708

The one-sample t-test evaluated whether teachers regarded factors affecting the efficacy of instructional materials in early childhood education as neutral. The study yielded a statistically significant outcome (t (149) = 5.569, p < .001), demonstrating that teacher evaluations diverged from neutrality. The mean score (M = 2.85, SD = 0.78) was somewhat below the neutral norm of 3.0, indicating that teachers perceived the influencing factors as significant and impactful rather than trivial.

This conclusion corresponds with the thematic analysis, wherein teachers recognized various determinants such as curriculum objectives, student engagement, class size, and developmental suitability as influencing their selection of instructional materials. Institutional variables, like school regulations, administrative support, and resource availability, with individual features such as professional training and digital competency, further solidified this impression. The quantitative and qualitative findings indicate that material success depends on a complex interaction of contextual, institutional, and human factors.

The null hypothesis was rejected as the study showed a significant factor influencing the

effectiveness of instructional materials in early childhood education. In the same vein, Ikegbu & Okafor (2022) found that local factors, including technology infrastructure, cultural values, and educational traditions, greatly affect digital techniques. Equally, according to Ogegbo and Aina (2020), reports that teacher acceptance and support mechanisms are crucial to technology integration, especially in developing nations with limited technological infrastructure.

Hypothesis Five

Teachers' perceptions of challenges and opportunities related to digital and traditional instructional materials are not significantly different from neutral.

Table 4.5: One-Sample t-Test showing that challenges and opportunities related to digital and traditional instructional materials are not significantly different from neutral

	Test Value = 3.0				95% Confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Challenges and opportunities	29.301	149	.000	.75333	.7025	.8041
Mean = 3.2533±.31488						

The one-sample t-test presented in Table 4.4 indicates a substantial disparity between teacher judgements of problems and opportunities in using instructional materials and the neutral test value of 3.0 ($t = 29.301$, $df = 149$, $p < .001$). The average score of 3.25 (±0.31) signifies that teacher assessed their experiences as marginally above neutral, implying an acknowledgement of both challenges and opportunities in utilizing digital and traditional teaching resources. The narrow confidence interval (.7025–.8041) substantiates the dependability of this conclusion.

In relation to the thematic analysis, teachers highlighted infrastructural obstacles, including unreliable internet and exorbitant resource expenditures, as well as instructional difficulties, such as students' diminishing engagement with monotonous techniques. Nonetheless, they recognized opportunities, especially through the synergistic application of digital and traditional resources. This balance underscores a pragmatic teacher's viewpoint that, notwithstanding difficulties, the potential of these resources to foster creativity and diversity is greatly treasured.

The results of this study revealed that teachers' perceptions of challenges and opportunities related to digital and traditional instructional materials are significantly different from neutral, leading to the rejection of the null hypothesis. This corroborates the findings of Zainuddin and Sjögren (2024), who found that multimedia experiences can boost initial engagement but may not sustain long-term learning without pedagogical support.

DISCUSSION OF FINDINGS

The results of hypothesis one confirms that teachers regard digital teaching materials as significantly effective in promoting preschool creativity, along with the conclusions of Adeyemi and Bello (2022) and Alsubaie (2023), who highlight their importance in improving engagement and cognitive development. This study, akin to Kim and Park (2021), underscores the necessity of balancing digital innovation with unstructured

exploration. As well as Zainuddin and Sjögren (2024), who found that interactive, multimedia-rich digital teaching tools can engage and promote children's imagination, creativity, and cognitive development

The results for the second hypothesis indicate that this discovery corroborates previous studies that validate the efficacy of conventional instructional resources in fostering creativity and problem-solving skills in young learners (Opoku-Asare et al., 2020; Oduolowu & Oluwakemi, 2014). Consistent with global trends, the study emphasizes that tactile, hands-on resources are essential to effective early childhood teaching, notwithstanding the growing digital integration. Equally, Laverick's (2014) study shows how manipulative objects help young children learn mathematics and problem-solve.

The results from hypothesis three support global evidence that blended teaching methods produce superior outcomes in early education. Research indicates that the amalgamation of digital tools with conventional resources enhances creativity, engagement, and personalized learning (Ploughman & Stephen, 2022; Tondeur et al., 2021). Consequently, teachers' inclination towards a hybrid approach embodies global best practices.

The results for hypothesis four corroborate current literature, indicating that the efficacy of instructional materials is influenced by contextual and institutional elements (Opoku et al., 2021; Sharma & Salend, 2022). This is in agreement with comparative longitudinal studies of how different instructional material techniques affect creative development over time (Jecce, 2023; Kavak et al., 2024). These few studies imply that persistent exposure to varied material kinds may yield the most comprehensive creativity development outcomes, promoting balanced methods (Jecce, 2023).

The findings from hypothesis five corroborate previous research indicating that teachers encounter systemic obstacles in resource accessibility while maintaining optimism regarding the integration of digital and traditional instruments to enhance creativity (Opoku et al., 2021; Sharma & Salend, 2022). Nigerian educators emphasize that effective implementation relies on adequate infrastructure and ongoing professional development. This is similar to Adelabu and Makinde (2020), who report that digital divide issues can hinder the deployment of digital instructional resources in varied educational contexts.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study has shown that teachers regard both digital and traditional instructional materials as essential for promoting preschool creativity, with digital resources augmenting engagement and imagination, while traditional tools are crucial for hands-on exploration and problem-solving. The findings, in accordance with existing literature, indicate that blended approaches, combining digital innovation with traditional methods, produce the most successful results in early childhood education. The study emphasizes the significance of contextual and institutional elements, including teacher preparation, administrative support, and infrastructure, in determining the effectiveness of instructional resources.

Despite constraints such as restricted access to gadgets, inconsistent internet connectivity, and expensive conventional materials, teachers maintain optimism over the potential benefits of integrating both approaches. The results confirm the need for a balanced, well-supported, and resource-efficient approach to instructional practice that enables teachers to include many resources to promote creativity

and comprehensive development in preschool learners.

Recommendations

This study offers the following recommendations:

1. Policymakers must enhance infrastructural support by guaranteeing inexpensive access to digital resources and dependable internet services at educational institutions.
2. Educational administrators must offer ongoing professional development programs centered on blended instructional methodologies;
3. Teachers ought to implement hybrid models that innovatively combine digital and conventional resources to optimize student engagement;
4. Curriculum developers must provide adaptable frameworks that integrate digital innovation and experiential learning; and
5. The government and NGOs should fund educational resources, alleviating the financial strain on schools and enhancing fair access.

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