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# INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING OF READING COMPREHENSION IN PRIMARY SCHOOLS IN ENUGU STATE, NIGERIA

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## ABSTRACT

*This study investigated the integration of Information and Communication Technology (ICT) in teaching reading comprehension in public primary schools in Enugu State, Nigeria. A descriptive survey design was employed, with a sample of 425 teachers drawn from a population of 21,165 via a multi-stage sampling procedure. Data were collected using a 48-item structured questionnaire, validated by experts and demonstrating high reliability (Cronbach's  $\alpha = 0.76$ ). Findings indicate that while a limited range of ICT tools (notably radios and projectors) are currently in use, teachers identified a broader potential for technologies such as televisions, computers, laptops, interactive whiteboards, and*

*PowerPoint presentations. Key strategies for integration include using multimedia to expose learners to native speakers, displaying passages digitally, and facilitating screen-based reading activities. The study concluded that integrating these ICT facilities holds significant potential for improving learner achievement in reading comprehension. Consequently, it is recommended that educational authorities and schools in Enugu State prioritize the provision and effective integration of ICT resources in primary education curricula.*

**Key Words:** Reading Comprehension, Integration, Information and Communication Technology, Primary School, Facilities

## INTRODUCTION

The English language occupies a pivotal position in Nigerian society, functioning as the primary language of law, commerce, administration, and education. As Nnamani (2017) posits, it serves as the universal alternative language when an individual's mother tongue is not applicable, thereby dismantling linguistic barriers between ethnic groups and fostering a spirit of national unity.

Acquisition of English is critical for academic success, as it is the medium of instruction for all school subjects except indigenous languages. In recognition of this importance, the Federal Government of Nigeria mandated English as a compulsory subject in the National Policy on Education (2013), with the objective of equipping every child with permanent literacy and proficient language skills. Within this framework, reading is

recognized as a fundamental component for literacy development.

Reading and comprehension are complementary skills, with comprehension being a primary objective of reading. This skill is foundational for academic success, exerting a significant influence on achievement not only in English but across all school subjects. It strengthens core linguistic abilities like speaking and writing and is considered vital for academic growth and societal participation, empowering individuals to engage with global information. Abdellah (2021) affirms it as the most important activity in any language class.

Despite its critical role, reading comprehension proficiency among Nigerian learners is alarmingly low. Statistics reveal a systemic challenge: The National Commission for Mass Literacy reports that 38% of Nigerians are non-literate, and a 2020 study found that four in ten primary school children cannot read for comprehension.

This deficiency is further evidenced in external examinations; reports from the Chief Examiner for the Basic Education Certificate Examination (BECE) in 2017 and 2019 noted that performance was far below expectations. A common issue was that candidates' answers were often completely unrelated to the passages, or they simply copied text without demonstrating understanding.

This situation is profoundly worrisome and demands urgent remedial action. The immediate

consequence is that affected learners are poorly equipped to perform well in internal assessments and crucial external examinations like the Senior School Certificate Examination (SSCE) administered by the West African Examination Council (WAEC). Without intervention, this deficiency threatens to undermine their overall academic achievement and future opportunities.

The pervasive reading comprehension crisis among Nigerian learners necessitates urgent intervention, particularly at the primary school level where foundational literacy is established. This crisis persists despite the recognized potential of Information and Communication Technology (ICT) as a pedagogical tool.

Several studies (such as Ashley, 2011; Nehad, 2013; Akabogu, 2019) have implicated ICT facilities as capable of enhancing achievement in various language skills. Furthermore, the National Policy on Education (NPE, 2013) explicitly recommends the integration of ICT into the teaching and learning process to foster national development goals.

It is against this backdrop of identified need and potential solution that this study investigated the integration of ICT facilities in the teaching of reading comprehension in primary schools within Enugu State, Nigeria.

Reading is a cornerstone of language acquisition and academic success. Its importance is twofold: it is both a source of information and a critical mechanism for consolidating and extending one's

knowledge of the language itself (Olaofe, 2013). Effective reading equips learners with extensive vocabulary, a stronger grasp of grammar, and improved writing skills (Oyetunde, 2009).

Beyond linguistic competence, reading is fundamental to developing the creative and critical thinking skills necessary to function effectively in society (Muodumogu, 2019). Success across various life domains is closely correlated with these abilities. Conversely, poor readers often exhibit uncritical thinking, low self-esteem, and face significant barriers to personal and professional growth.

Amadi (2019) argues that reading the world takes root from reading the word, positioning reading as the key to achievement in both education and the wider society. Those who experience reading poverty struggle to access information and opportunities, leaving them at a severe disadvantage. This underscores the central and indispensable role of reading in individual and societal development.

Reading and comprehension are fundamentally interwoven concepts, with each defined by its relationship to the other. While reading is the process of decoding text, comprehension is its ultimate objective—the active process of constructing meaning, ideas, and information from a written passage.

Without comprehension, reading is reduced to a mere mechanical exercise of tracking and sounding out words. As Eyisi (2005) contends,

true comprehension involves the ability to grasp the author's organized thought structure and actively contribute to it by interpreting, evaluating, and reflecting on the meanings for a specific purpose.

Mastery of reading comprehension is central to academic success and overall growth. It is a critical language skill that enhances speaking and writing abilities and is essential for career development and effective social engagement.

Despite its importance, the teaching of reading comprehension in Nigerian schools is profoundly inadequate. Instruction is often haphazard and not treated as a dedicated subject (Muodumogu, 2019). The prevalent pedagogical approach encourages learners to merely sift passages for answers to questions without fostering genuine understanding; a method that fails to engage learners actively (Ukoha, 2018). As Menakaya et al. (2022) observe, the inability to use adequate teaching approaches that promote active engagement adversely influences learner achievement.

In this context, Information and Communication Technology (ICT) presents a promising solution for fostering the essential engagement that is vital for learning. ICT facilities can improve learner performance by enhancing attention, motivation, and enthusiasm. Megwa (2013) supports this view, noting that technology is used to engage learners actively in realistic language acquisition,

thereby motivating them to acquire skills more effectively.

ICT encompasses the diverse array of technological tools and applications used to gather, store, process, and disseminate information (Nnamani, 2019). As an umbrella term, it includes devices such as radios, televisions, computers, networks, hardware, software, and satellite systems, along with their associated services (Olinya, 2012).

In an educational context, ICT serves as an invaluable resource that can transform teaching and learning. It offers features such as offline accessibility, interactive three-dimensional models (Mike, 2018), and multimedia content that create a flexible and immersive learning experience, making the acquisition of knowledge more permanent.

The benefits of ICT for literacy and comprehension are well-documented. Tools such as electronic books, which integrate animations, audio, and visual clips, have been shown to spice up reading activities and improve learner comprehension scores (Ashley, 2011).

Furthermore, ICT enables learners to express themselves more clearly and enhances their engagement within literacy subjects (Hanna & Shehu, 2020). By encouraging active learning, knowledge construction, and learner autonomy, ICT shifts the classroom dynamic from teacher-centered instruction to learner-centered exploration.

This paradigm shift is essential; as Akabogu (2019) contends, achieving modern educational goals requires a move away from traditional pedagogical methods toward ICT-based interaction. This approach provides teachers with varied instructional materials and methods, enhances learner interest and performance, and eliminates traditional barriers of time and space.

Recognizing this potential, the Nigerian National Policy on Education (NPE, 2013) recommends the provision of adequate infrastructure and capacity development for the effective integration of ICT to enhance basic education delivery. However, significant challenges in implementation persist.

Studies in Nigeria reveal a stark contrast between policy and practice. Research in Nsukka urban schools found only three ICT resources (desktop computers, PowerPoint, and printers) available for English language teaching, and these were underutilized due to a lack of teacher expertise (Nnamani, Ukoha, & Nwachukwu, 2019). Similarly, a study at the Federal College of Education, Eha-Amufu, found available ICT resources inadequate for teaching General Studies courses (Etesike, 2012).

Primary education serves as the foundational educational stage for most Nigerian children, particularly as many cannot afford nursery school, and the curriculum content often overlaps significantly between the two levels. The primary school years (ages 6-12) represent a critical period

for language acquisition, a time when children's neurological development makes them particularly adept at learning new languages.

Research supports that children and young people are more efficient language learners than adults due to their brains' natural, developmentally attuned ability to absorb new information (Lucia-Larissa & Simona, 2015).

This is further reinforced by Penfield and Roberts (1959), who argue that biological and neurological factors make early childhood the optimal time for second language instruction, advocating for early exposure during this sensitive period.

The inherent advantage of an early start can however be nullified by inadequate teaching methods and poor instructional materials (Moskovsky, 2011). This underscores the imperative that learners in this critical developmental stage must be exposed to effective pedagogical strategies and resources for optimal language acquisition.

The prevalent teaching methodology in Nigeria has been criticized as suffering from "narration sickness," over-relying on traditional "chalk and talk" methods (Ibeneme, 2015). Ibeneme suggests that the modern Nigerian child, who is already accustomed to engaging with technology like television, film, and digital media, would be more receptive to and benefit from the integration of these modern communication patterns into classroom instruction.

It is against this backdrop—the confluence of a neurologically optimal learning period, the limitations of current teaching methods, and the potential of technology to engage young learners—that this study examines the integration of Information and Communication Technology (ICT) in teaching reading comprehension in Nigerian primary schools.

### **THEORETICAL FRAMEWORK**

This study is anchored on Richard Mayer's (1999) Cognitive Theory of Multimedia Learning (CTML). The theory is built upon three core assumptions derived from cognitive science. The first is the Dual-Channel Assumption which states that humans process information through two separate channels—a visual/pictorial channel and an auditory/verbal channel.

The second is the limited capacity assumption which notes that each channel has a finite capacity for processing information at any given time. The third is the active processing assumption which states that meaningful learning occurs through active cognitive processes, including selecting relevant information, organizing it into coherent mental structures, and integrating it with prior knowledge.

A central tenet of this theory is that learners develop a deeper understanding when information is presented concurrently through both words (spoken or printed text) and pictures (illustrations, animations, video) rather than through words alone. This dual coding helps learners build

coherent mental representations, construct new knowledge, and transfer it to long-term memory.

ICT facilities are potent tools for applying this theory. They inherently provide dual-channel input, delivering content through integrated combinations of text, sound, graphics, and video. This multimedia approach directly supports the cognitive processes Mayer outlines: it aids learners in selecting key ideas, organizing information visually and verbally, and integrating new concepts with existing knowledge to construct meaning.

As Ukoha (2018) affirms, learners master reading comprehension more effectively when instruction engages these dual channels. ICT provides the essential avenue for building meaningful connections between textual and visual elements, thereby fostering a deeper understanding of comprehension passages.

### **PURPOSE OF STUDY**

The purpose of this study was to examine the integration of information and communication technology (ICT) in teaching reading comprehension in primary schools in Nigeria. Specifically, the study examined:

1. The ICT facilities that can be integrated to the teaching of reading comprehension
2. Ways of integrating ICT facilities to the teaching of reading comprehension
3. Which of the ICT facilities that are used in teaching reading comprehension

4. The implications of integrating ICT facilities in teaching reading comprehension.

### **RESEARCH QUESTIONS**

The study was guided by the following research questions:

1. What are the ICT facilities that can be integrated into teaching of Reading Comprehension in primary schools?
2. What are the ways of integrating available ICT facilities into the teaching of Reading Comprehension in primary schools?
3. Which of the ICT facilities are used for Reading Comprehension in primary schools?
4. What are implications of integrating ICT facilities into teaching of Reading Comprehension in primary schools?

### **HYPOTHESIS**

The study had one hypothesis.

H01. There is no statistical significant difference in the mean responses of male and female teachers on the ways of integrating available ICT facilities into teaching of Reading Comprehension.

### **METHODOLOGY**

The study was carried out in Enugu State, Nigeria, adopting a descriptive survey design. This design involves studying a large population by collecting and analyzing data from a sample to generalize the findings (Olaitan, Ali, Eyo & Sawande, 2000).

The population consisted of 21,165 primary school teachers in 465 public primary schools across the state's 17 Local Government Areas (LGAs) (Ministry of Education, Enugu State).

The sample consisted of 425 teachers, selected using a multi-stage sampling technique. The 465 schools were first stratified by LGA. From each LGA, five schools were randomly selected, for a total of 85 schools. Subsequently, five teachers were randomly drawn from each of these schools.

Four research questions and one hypothesis guided the study. The data collection instrument was a 48-item structured questionnaire divided into four clusters. It was validated by three experts from the University of Nigeria, Nsukka, and its reliability, established using Cronbach's Alpha, yielded a coefficient of 0.76. Data analysis involved using mean and standard deviation for the research questions and testing the hypothesis at a 0.05 level of significance.

**RESULTS**

This study sought to answer four key questions regarding the integration of ICT in reading comprehension: (1) what facilities are suitable for integration, (2) what methods are effective for their integration, (3) what facilities are currently in use, and (4) what the broader implications of this integration are. Accordingly, the results section is organized by these research questions.

**Research Question 1:**

*What are the ICT facilities that can be integrated into teaching of Reading Comprehension in primary schools?*

The first question sought to find out the ICT facilities that could be integrated into teaching of reading comprehension in primary schools in Enugu State, Nigeria. The findings are presented in Table 1.

**Table 1**  
**Mean Scores of ICT Facilities for Reading Comprehension**

Item Statement	Mean	Std. Deviation	Decision
Television	3.65	.73	Agree
Computer set	3.45	.74	Agree
Laptop	3.65	.48	Agree
Radio set	3.55	.59	Agree
Interactive whiteboard	3.70	.46	Agree
PowerPoint	3.60	.49	Agree
Smartphones	3.50	.50	Agree
Zoom	3.50	.59	Agree
Projector	3.45	.67	Agree
Audio recording camera	3.20	.68	Agree
Internet	3.65	.57	Agree
Video recording camera	3.65	.48	Agree
<b>Overall Mean</b>	<b>3.54</b>	<b>.35</b>	<b>Agree</b>

Table 1 presents teachers' mean ratings of ICT facilities for integration into reading comprehension instruction. The overall mean (M = 3.45, SD = .35) exceeded the 2.50 criterion, indicating consensus that the listed facilities—including interactive whiteboards, computers, smartphones, and internet tools—are viable for integration.

**Research Question 2:**

*What are the ways of integrating available ICT facilities into the teaching of Reading Comprehension in primary schools?*

The second question sought to find out ways of integrating available ICT facilities into the teaching of reading comprehension in primary schools in Enugu State, Nigeria. The findings are presented in Table 2.

Table 2 presents primary school teachers' endorsed strategies for integrating ICT into

reading comprehension instruction. The analysis, with an overall mean rating ( $M = 3.26$ ,  $SD = .33$ ), indicates strong agreement on several methods.

These include having children watch and listen to native speakers on television, uploading reading passages onto computers, facilitating on-screen reading, incorporating radio programmes, and using laptops for reading lessons.

**Table 2**  
**Teacher-Recommended Strategies for Integrating ICT into Reading Comprehension**

Item Statement	Mean	Std. Deviation	Decision
Creating opportunities for the children to watch and listen to native speakers on television.	3.25	.50	Agree
Uploading Reading comprehension passages on computer sets.	3.35	.65	Agree
Making children read on screens.	3.25	.89	Agree
Organizing children to listen to radio programmes	3.18	.67	Agree
Engaging them in reading lessons using the Laptops.	3.50	.50	Agree
Making the children to read using smartphones.	3.30	.78	Agree
Providing opportunities for them to read and share their level of comprehension through the use of an interactive whiteboard.	3.20	.68	Agree
Organizing Zoom reading comprehension lessons for the children.	3.15	.65	Agree
Encouraging the children to read and share their comprehension in Zoom classes.	3.25	.62	Agree
Using computer-based assessment to test their comprehension skills.	3.20	.68	Agree
Engaging the children in virtual field trips.	2.90	.77	Agree
Exposing the children to online reading materials.	3.60	.74	Agree
<b>Overall Mean</b>	<b>3.26</b>	<b>.33</b>	<b>Agree</b>

**Research Question 3:**

*Which of the ICT facilities is used for Reading Comprehension in primary schools?*

The third question sought to find out which ICT facilities are used for reading comprehension in primary schools in Enugu State, Nigeria. The findings are presented in Table 3.

As shown in Table 3, the analysis indicates that only television and radio are currently being used for reading comprehension instruction. With an

overall mean rating below the criterion ( $M = 2.04$ ,  $SD = .41$ ), the results demonstrate that other available ICT facilities—including computers, laptops, interactive whiteboards, projectors, smartphones, and video conferencing tools—are not being utilized.

**Research Question 4:**

*What are implications of integrating ICT facilities into teaching of Reading Comprehension in primary schools?*

**Table 3****ICT Facilities Used for Reading Comprehension: Teacher Reports**

Item Statement	Mean	Std. Deviation	Decision
Television	3.00	.95	Used
Computer set	1.35	.73	Not used
Laptop	1.15	1.07	Not Used
Radio set	3.70	.64	Used
Interactive whiteboard	1.55	.67	Not used
PowerPoint	2.15	.86	Not Used
Smartphones	2.40	.58	Not used
Zoom	2.15	.65	Not Used
Projector	2.45	.81	Not used
Audio recording camera	1.65	.57	Not Used
Internet	1.55	.74	Not used
Video recording camera	1.40	.66	Not Used
<b>Overall Mean</b>	<b>2.04</b>	<b>.41</b>	<b>Not used</b>

The fourth question sought to find out implications of integrating ICT facilities into the teaching of reading comprehension in primary schools in Enugu State, Nigeria. The findings are presented in Table 4. The analysis in Table 4, with an overall mean rating ( $M = 3.15$ ,  $SD = .33$ ), indicates that teachers perceive the integration of

ICT facilities as beneficial. Key implications include enhancing reading comprehension skills, improving reading efficiency, promoting learner interest, increasing concentration, facilitating remote learning, and allowing learners to progress at their own pace.

**Table 4****Perceived Implications of Integrating ICT into Reading Comprehension Instruction**

Item Statement	Mean	Std. Deviation	Decision
ICT enhances children's reading comprehension skills and abilities	3.35	.86	Agree
It improves their reading efficiency	3.55	8.92	Agree
It provides real context for authentic reading.	3.10	1.14	Agree
It promotes children's reading interest.	2.85	.86	Agree
It improves children's concentration on spoken words.	3.20	1.03	Agree
It makes them stay in the comfort of their homes and still learn	2.80	.93	Agree
It makes learners read at their own paces	3.10	1.10	Agree
ICT facilities keep learners very engaged while reading.	3.05	.98	Agree
ICT transport the readers to the native speakers' world and environment.	3.40	1.07	Agree
It promotes children's reading comprehension achievement.	3.10	1.05	Agree
It facilitates learners' engagement with the reading material	3.10	1.10	Agree
It offers different learning styles to the learners.	3.25	.83	Agree
<b>Overall mean</b>	<b>3.15</b>	<b>.33</b>	<b>Agree</b>

## Hypothesis Testing

**Ho:** There is no significant difference in the mean ratings of male and female teachers on the ways of integrating available ICT facilities into the teaching of Reading Comprehension in primary schools.

The researchers wanted to find out if there is a significant difference in the mean ratings of male and female teachers on the ways of integrating available ICT facilities into the teaching of Reading Comprehension in primary schools in Enugu State, Nigeria. The findings are presented in Table 5.

**Table 5.**  
**Gender Differences in Perceptions of ICT Integration for Reading Comprehension**

Gender	N	Mean	Std. Deviation	Df	T	P
Male	154	3.25	.13	423	1.253	.078
Female	271	3.27	.28			

As shown in Table 5, an independent samples t-test found no statistically significant difference between male and female teachers' perceptions of ICT integration strategies for reading comprehension,  $t(423) = 1.253$ ,  $p = .078$ . Since the p-value exceeds the .05 significance level, the null hypothesis of no difference between groups was retained. This indicates that male and female teachers share similar views on how to integrate ICT facilities into reading instruction.

## DISCUSSION OF RESULTS

The findings indicate that a range of ICT facilities—including televisions, computers,

laptops, radios, interactive whiteboards, PowerPoint, smartphones, Zoom, projectors, audio and video recording cameras, and internet resources—can be effectively integrated into the teaching of reading comprehension in primary schools. The application of these tools is expected to enhance both instructional delivery and learner learning of this essential language skill.

These results align with Ukoha (2017), who found that computerized texts positively impact learners' reading comprehension achievement. Furthermore, this study is consistent with Ossai, Uloh-Bethels, and Uzoegwu (2022), which identified smartphones, projectors, interactive whiteboards, computers, internet resources, and other digital tools as valuable for integrating technology into English language pedagogy, even at higher education levels.

The findings further revealed strong consensus among respondents regarding specific strategies for integrating ICT into reading comprehension instruction. These strategies include: having learners watch and listen to native speakers via television; uploading comprehension passages onto computers for screen-based reading; utilizing radio programs and laptops for reading lessons; incorporating smartphones and interactive whiteboards to facilitate reading practice and comprehension sharing; organizing Zoom lessons for interactive instruction and discussion; implementing computer-based assessments; engaging learners in virtual field trips; and providing access to online reading materials.

The adoption of these methods is likely to significantly enhance the teaching of reading comprehension.

This finding aligns with Emelogu (2022), who demonstrated that uploading textual materials for learners to access—whether before or during class—enables flexible learning and encourages timely participation. Similarly, the results support Nnamani, Amadi, and Maor (2022), who identified electronic books as an effective tool for developing reading comprehension skills in young learners. The results of the study indicate a low level of ICT utilization in the teaching of reading comprehension in primary schools, with only two out of twelve identified ICT facilities being used. This suggests that reading comprehension may not be taught effectively in Nigerian public primary schools.

This finding is consistent with Nnamani (2017), who reported inadequate provision of ICT facilities for English language teaching and learning in schools. It also aligns with Adedeji (2015), whose study revealed low utilization of ICT resources in colleges of education in South-Western Nigeria. However, these results contrast with Omotosho, Lateef, Amusa, and Bello (2015), who found high levels of ICT adoption and use among learners in a Nigerian university distance learning program.

The findings addressing the fourth research question revealed several significant implications of integrating ICT facilities into reading

comprehension instruction. Results indicated that such integration enhances children's reading comprehension skills and efficiency, provides authentic reading contexts, increases interest, and improves concentration. Furthermore, ICT integration facilitates learning from home, allows learners to read at their own pace, sustains engagement, and offers immersive exposure to native speaker environments. It also promotes comprehension achievement, facilitates deeper interaction with texts, and accommodates diverse learning styles.

These findings are supported by previous research. Martin (2010) observed that interactive whiteboards improve learner interactions, thereby enhancing language acquisition. Ossai et al. (2022) confirmed the positive effects of modern technologies on English language pedagogy, while Nnamani et al. (2022) reported higher post-test scores among learners taught with electronic resources compared to traditional methods. Similarly, Amanda et al. (2013) found that learners using e-textbooks demonstrated higher perceived psychomotor and affective learning outcomes than those using print materials.

The results for the hypothesis indicate no significant difference between male and female teachers' perceptions regarding methods for integrating ICT facilities into reading comprehension instruction. This finding suggests a consensus among teachers, regardless of gender, that the use of available ICT resources can

enhance both the teaching and learning of reading comprehension.

## CONCLUSION

Given the critical importance of reading comprehension to the overall education of Nigerian children—and in light of documented underachievement in this area, as noted in the literature—it is imperative to treat reading comprehension with renewed urgency within the education sector. This study underscores the need to integrate ICT facilities into the teaching of reading in primary schools, as these tools facilitate learning and align with the language-sensitive developmental stage of young learners. The study has identified relevant ICT tools, practical integration strategies, and the educational benefits of their use, providing a foundation for meaningful pedagogical innovation.

## RECOMMENDATIONS

Based on the findings of this study, it is recommended that the Nigerian government prioritize the provision of ICT facilities to primary schools to support the teaching of reading comprehension and address the ongoing reading crisis among learners. Furthermore, the Federal and State Ministries of Education, the Enugu State Universal Basic Education Board (ENSUBEB), the Universal Basic Education Commission (UBEC), and local government education authorities should organize conferences, seminars, and workshops to raise awareness and train teachers on the necessity and methods of

integrating ICT tools into reading comprehension instruction.

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