



Effect of Context Cues Strategy on Students' Vocabulary Development in Reading Comprehension among Secondary School Students in Kontagora Metropolis, Niger State, Nigeria

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ABSTRACT

This study examined the effect of context cues strategy on vocabulary development in reading comprehension among Senior Secondary School Two (SS2) students in Kontagora Metropolis, Niger State, Nigeria. Employing a quasi-experimental pre-test, post-test control group design, 160 students from two public schools were purposively sampled (80 males in the experimental group receiving explicit context cues instruction and 80 females in the control group exposed to conventional methods) over six weeks. Data were collected using a validated 20-item Reading Comprehension Achievement Test (RCAT) and analyzed via descriptive statistics and Analysis of Covariance (ANCOVA) at a 0.05 significance level. Results revealed a statistically significant improvement in vocabulary development for the experimental group (pre-test mean = 1.88, post-test mean = 4.32, mean gain = 2.44, $F(1,157) = 343.157$, $p < .001$, $\eta^2 = .686$), indicating a large effect size and superior performance over the control group (pre-test mean = 2.19, post-test mean = 2.65, mean gain = 0.46). Grounded in Rumelhart's (1977) Interactive Reading Model, the findings underscore the strategy's efficacy in enhancing word acquisition and retention through semantic, syntactic, graphophonic, and pragmatic cues. Recommendations include integrating context cues into the national English curriculum and mandating teacher training to address vocabulary deficits in under-resourced northern Nigerian contexts. Keywords: Context cues strategy; vocabulary development; quasi-experimental design; reading intervention; secondary education; Nigerian ESL; instructional efficacy.

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Introduction

Reading comprehension is a multifaceted skill essential for academic achievement across all disciplines. At its core lies robust vocabulary knowledge, which enables students to decode words accurately, infer meanings efficiently, and construct coherent mental representations of text (Perfetti & Stafura, 2014).

In the Nigerian educational context, particularly in the northern regions such as Kontagora Metropolis, students consistently underperform in reading comprehension tasks, with vocabulary deficiency identified as a pervasive challenge (Hussain, 2024; Agbo, Kadiri & Ekwueme, 2023). Many learners have limited exposure to diverse English vocabulary the language of instruction leading to confusion, disengagement, and poor academic outcomes in both internal and national examinations such as the West African Examinations Council (WAEC) and the National Examinations Council (NECO).

Traditional vocabulary instruction in many Nigerian classrooms often emphasizes rote memorization, translation, and direct question–answer drills. Although these methods may improve short-term recall of isolated words, they offer limited support for the deep, contextual, and autonomous word learning necessary for advanced reading (Oladipo, 2019). Consequently, students taught through such methods often struggle to infer the meanings of unfamiliar words encountered in new texts, creating a cycle of dependency on teachers and dictionaries that hinders reading fluency and comprehension.

In response to these challenges, the **context cues strategy** has emerged as a potent, evidence-based pedagogical alternative. This approach involves explicit instruction that trains students to use information surrounding an unfamiliar word such as definitions, synonyms, antonyms, examples, sentence structure, and background knowledge to deduce its meaning (Spear-Swerling, 2024; Duke & Cartwright, 2021). By equipping learners with

these metacognitive tools, the context cues strategy fosters reading autonomy, reduces overreliance on external aids, and promotes a deeper, more integrative engagement with text.

While studies from other parts of the world (e.g., Che Ani et al., 2023, in Malaysia; Le Van Tuyen & Huyen, 2019, in Vietnam) have demonstrated the efficacy of context cues for vocabulary acquisition, empirical research within Nigeria especially in its northern regions remains scarce. This study, therefore, seeks to fill this critical gap by addressing the research question: How does the application of context cues strategy enhance students' vocabulary development in reading comprehension among secondary school students in Kontagora Metropolis, Niger State, Nigeria? Findings from this focused inquiry contribute to evidence-based pedagogy, potentially informing teacher training and policy for equitable literacy gains in similar settings.

Statement of the Problem

Vocabulary development deficiencies among Nigerian secondary school students represent a persistent barrier to academic success, as evidenced by low performance in national assessments such as the West African Examinations Council (WAEC) and the National Examinations Council (NECO), where over 60% of candidates struggle with interpreting unfamiliar words in context (Hussain, 2024; WAEC, 2024). In Kontagora Metropolis, these issues are exacerbated by multilingual environments where English, being a second language, amplifies lexical challenges. Furthermore, traditional teaching methods that emphasize mechanical word-for-word translation and drill-based recall fail to leverage contextual supports, thereby hindering effective vocabulary learning (Agbo, Kadiri & Ekwueme, 2023; Obiegbu, 2018). Consequently, students often fail to infer meanings, retain new terms, or apply vocabulary in reading, resulting in superficial



engagement and fragmented understanding of texts.

A core problem is the overreliance on isolated vocabulary drills, which neglects how word meanings are reinforced by surrounding cues, leading to inconsistent lexical acquisition (Leonard, 2023). For instance, learners often misinterpret unfamiliar terms due to unfamiliar syntactic structures or semantic gaps, compounded by limited exposure to diverse texts in resource-poor schools (Olanrewaju, 2024). Teacher inadequacies further aggravate the situation; many educators lack training in cue-based strategies and thus resort to passive question–answer formats that yield minimal gains in vocabulary skills (Musa, 2020). Gender dynamics may also influence these outcomes, as anecdotal evidence suggests varied engagement levels between male and female students yet such patterns remain unexamined in northern contexts (Nnaji, 2021).

Globally validated context cues strategies have demonstrated significant promise for vocabulary development (Che Ani et al., 2023). However, empirical voids persist in Nigeria particularly in northern semi-urban areas like Kontagora where no rigorous quasi-experimental studies have isolated their impact on word acquisition in reading. This gap undermines curriculum implementation and perpetuates literacy inequities. The present study, therefore, seeks to examine how context cues instruction enhances vocabulary development, providing localized empirical evidence to bridge instructional practice divides and elevate foundational reading outcomes.

Research

The specific objective guiding this inquiry is:
1. How does the application of context cues strategy enhance students' vocabulary development in reading comprehension among secondary school students in Kontagora metropolis, Niger State, Nigeria?

Questions

Literature Review

Conceptual Review

Vocabulary development forms the bedrock of reading comprehension. It is defined as the process through which students learn and retain new words and their meanings, particularly through contextual exposure, encompassing acquisition, retention, and application in texts (Perfetti & Stafura, 2014; Nation, 2001). Unlike isolated memorization, vocabulary development relies on integrating lexical knowledge with comprehension processes, making it essential for building higher-order reading skills (Hjetland, Lervåg & Hulme, 2019). Within Rumelhart's (1977) Interactive Reading Model, vocabulary development emerges from bottom-up decoding of textual elements (e.g., words, sentences) integrated with top-down cues, where context facilitates accurate inference of word meanings. Complementing this, Wertheimer's (1923) Gestalt Theory views vocabulary understanding as perceiving texts holistically, with cues organizing disparate terms into coherent wholes.

The context cues strategy operationalizes these processes by explicitly teaching students to harness semantic (e.g., appositives defining terms), syntactic (e.g., grammatical roles clarifying words), graphophonic (e.g., root words signaling lexical patterns), and pragmatic (e.g., situational knowledge anchoring meanings) elements (Che Ani et al., 2023). This approach transforms passive reading into active cue detection, enhancing vocabulary retention by 20–40% in ESL contexts (National Reading Panel, 2000).

In Nigerian secondary schools, where vocabulary deficits stem largely from decontextualized instruction, integrating cues aligns with curriculum mandates for lexical mastery, fostering fluency and reducing cognitive overload (Grabe & Stoller, 2011; Oyetunde, 2002). Thus, conceptualizing vocabulary development through cue-mediated interaction underscores its teachability, positioning



context cues as a targeted scaffold for lexical literacy in diverse, under-resourced settings.

Empirical Review

The empirical literature on context cues strategy and vocabulary development reveals promising yet fragmented evidence, particularly in ESL contexts. The following reviews highlight methodologies, findings, strengths, limitations, and gaps relevant to Nigerian secondary education.

Che Ani, A. R., Mohd Zaid, N. S., Abdul Rani, N. A., & Razali, M. Z. (2023) conducted a quasi-experimental study ($n=60$) using a pretest–posttest design to examine the effects of semantic and syntactic cue training on narrative texts over eight weeks. The experimental group achieved a 79.2% gain in vocabulary scores compared to 15% in the control group. Strengths included curriculum-aligned materials and the use of ANCOVA for equivalence testing. However, the focus on rural Malaysian middle-schoolers limits generalizability to semi-urban Nigerian contexts, while the short duration neglected long-term retention. Moreover, the study did not include gender analysis or adaptation for multilingual learners, overlooking the Hausa–English linguistic dynamics typical of northern Nigeria (Emadesti, 2021).

Emadesti, L. (2021) explored blended learning and context clues in senior secondary EFL instruction through a randomized trial ($n=80$, 10-week intervention). The study found that explicit graphophonic and pragmatic cue instruction improved vocabulary mastery from 80.6% to over 90%, supported by think-aloud protocols that enhanced word retention. Robust fidelity checks and effect-size reporting strengthened validity. Nonetheless, the use of university-level participants skewed results toward advanced ESL learners, underrepresenting secondary-level novices. The study also failed to control for socioeconomic factors and lacked integration with national assessment frameworks like WAEC,

thereby limiting its relevance to Nigeria (Le Van Tuyen & Huyen, 2019).

Le Van Tuyen & Huyen (2019) implemented a pre/post quasi-experimental design ($n=50$) in Vietnam, integrating context cues over six weeks. Results indicated significant vocabulary retention gains through semantic embedding, outperforming conventional drills ($p < .01$). A mixed-methods approach, including interviews, added depth to findings. However, small sample size and self-selected texts reduced ecological validity, and the urban bias made rural or semi-urban parallels difficult. Moreover, the study overemphasized comprehension spillover without isolating vocabulary learning effects, neglecting focused cue training applicable to under-resourced Nigerian secondary schools (Day et al., 2024).

Stevani, M., et al. (2023) examined contextual cues and proficiency among EFL university learners using intact classes ($n=70$) over seven weeks. Instruction in syntactic and pragmatic cues significantly improved vocabulary performance and reduced score variability. The ethical use of intact groups mirrors the feasibility of such designs in Nigerian classrooms. However, the absence of long-term follow-up and the focus on descriptive texts biased the study toward non-expository WAEC formats. The research also failed to explore gender as a moderating variable, despite evidence of male vocabulary lags in Nigeria, and omitted teacher-training factors essential for scalable implementation (Zorfass & Gray, 2024).

Day, Hwang, Arner, McNamara & Connor (2024) investigated interactive e-books with embedded context clue supports for upper elementary readers using a counterbalanced design ($n=90$, nine weeks). The study found strong vocabulary gains through multimodal cue exposure, emphasizing pragmatic real-world applications. The multimodal design aligns well with Nigeria's growing digital learning initiatives. However, high attrition (15%)



and self-report fidelity measures undermined reliability. The study also excluded northern semi-urban contexts and failed to compare the differential effects of cue types (e.g., semantic vs. graphophonic), overlooking their relevance to Nigeria's phonological and lexical challenges (Che Ani et al., 2023).

Overall, these studies affirm the efficacy of context cues for vocabulary development, with an average reported gain of approximately 30%. Nonetheless, significant gaps persist: limited Nigerian localization, lack of gender-sensitive analyses, short-term evaluation windows, and insufficient distinction between vocabulary and comprehension domains. The present study addresses these limitations by focusing on SS2 students in Kontagora Metropolis, integrating gender analysis, and employing WAEC-aligned vocabulary assessments to provide sustained, context-specific evidence.

Theoretical Framework

This study adopts two theories: The Interactive Reading Model (Rumelhart, 1977) and the Gestalt Theory (Wertheimer, 1923) as foundational frameworks to explain how context cues influence vocabulary development and reading comprehension among secondary school students.

The Interactive Reading Model

The Interactive Reading Model was proposed by David E. Rumelhart in 1977 as a synthesis of the bottom-up and top-down approaches to reading. Earlier models had viewed reading either as a purely linear decoding process (bottom-up) or as a meaning-making activity that relied solely on prior knowledge and prediction (top-down). Rumelhart challenged these views, proposing that effective reading involves a simultaneous, interactive process of decoding and understanding.

According to the model, readers do not process text in isolation; instead, they draw upon a combination of textual information such as letters, sounds, and words and their own cognitive frameworks,

including schemas and expectations, to construct meaning as they read (Rumelhart, 1977). This dual engagement captures the dynamic nature of real-world reading, where decoding and interpretation occur in tandem.

The rationale behind Rumelhart's model is that neither decoding nor comprehension alone can fully account for successful reading. He posited that reading must be viewed as an active process in which lower-level perceptual processes (such as identifying letters and words) interact with higher-level cognitive processes (such as predicting content or inferring meaning). This dynamic interplay enables readers to refine their understanding based on new information or unexpected word usage, making reading a flexible and adaptive activity.

In essence, Rumelhart's theory presents reading as a problem-solving activity where meaning emerges from the continuous interaction between the reader and the text. This interaction accommodates readers of varying skill levels, backgrounds, and purposes. As Rasinski (2020) affirms, "reading proficiency flourishes when instruction targets both decoding and comprehension through interactive practices."

The Interactive Reading Model is particularly relevant to this study because it provides a strong theoretical foundation for understanding how context cues support comprehension. It validates the study's hypothesis that explicitly teaching students to identify and interpret contextual signals enhances vocabulary learning and overall text understanding. Since the model emphasizes the simultaneous processing of linguistic structure and semantic interpretation, it aligns closely with the instructional design employed in this research. This alignment reinforces the validity of the study's pedagogical approach and highlights its potential contribution to literacy education theory and classroom practice.

Methodology



Research Design

This study employed a quasi-experimental design of the pre-test, post-test control group type. This design was considered appropriate for investigating causal relationships within a natural classroom setting, where random assignment of individual students was not feasible due to administrative constraints (Creswell & Creswell, 2018).

Population, Sample, and Sampling Technique

The target population consisted of all public Senior Secondary School II (SS2) students in Kontagora Metropolis, Niger State, totaling 2,005 students across 11 schools. A purposive and stratified sampling technique was adopted to select a sample of 160 students.

Two single-gender schools were purposively chosen: Government Day Secondary School (boys) and Government Girls Day Secondary School (girls). One intact class of 80 students was drawn from each school. The boys' class was assigned to the experimental group, while the girls' class served as the control group, ensuring a balanced gender representation for comparative analysis. The use of intact classes is a standard and justified procedure in quasi-experimental educational research, as it preserves the ecological validity of classroom instruction.

Instrument for Data Collection

The primary instrument for data collection was the Researcher-Designed Reading Comprehension Achievement Test (RCAT). The vocabulary development component of this instrument was specifically constructed to measure students' ability to infer the meanings of unfamiliar words using contextual cues derived from adapted WAEC comprehension passages.

The instrument underwent validation by three experts in English Language Education and Research Evaluation to ensure content and construct validity. Reliability was established using the Kuder-Richardson Formula 20 (KR-20), yielding a coefficient within the acceptable range

of 0.50 to 0.99, indicating internal consistency. Additionally, test-retest reliability was conducted to confirm score stability over time.

Procedure

The study began with a pre-test in which the Researcher-Designed Reading Comprehension Achievement Test (RCAT) was administered to both the experimental and control groups to establish baseline vocabulary knowledge. Over a six-week intervention period, the experimental group received explicit instruction in the context cues strategy, implemented in three key stages. First, during teacher modeling, instructors employed think-aloud protocols to demonstrate how to identify and apply different types of contextual cues, including semantic, syntactic, graphophonic, and pragmatic cues. This was followed by guided practice, where students worked with teacher support to identify and interpret context cues across a variety of text genres. Finally, in the independent practice stage, learners applied the strategies to new, unseen texts, reinforcing autonomous vocabulary inference skills. In contrast, the control group continued with conventional vocabulary instruction that emphasized rote memorization, translation, and question-answer drills. At the end of the intervention, a post-test using the same RCAT was administered under standardized conditions to both groups to measure gains in vocabulary development.

Data Analysis

The analysis and interpretation of data under the following sub-headings: Demographic Characteristics of Respondents, Descriptive Analysis of Pre-test and Post-test Scores, Inferential Analysis of Hypotheses using Analysis of Covariance (ANCOVA), and Summary of findings.



Demographic Characteristics of Respondents

Table 1: Distribution of Respondents by Group and Gender

Group	Gender	Frequency	Percentage (%)
Experimental	Male	80	50
Control	Female	80	50
Total		160	100

Table 1 shows that the total sample consisted of 160 SS2 students, evenly split between the experimental group (80 males) and the control group (80 females). The equal distribution

improves the internal validity of the study and allows meaningful gender-related comparisons.

Research Question

How does the application of context cues strategy enhance students' vocabulary development in reading comprehension among secondary school students in Kontagora metropolis, Niger State, Nigeria?

To answer this question, the mean scores and standard deviations of students' vocabulary development through context cues were analyzed.

Table 7: Mean and Standard Deviation of Students' Vocabulary Development Performance

Group	N	Pre-test Mean	SD	Post-test Mean	SD	Mean Gain
Experimental	80	1.88	1.09	4.32	0.50	2.44
Control	80	2.19	1.13	2.65	1.01	0.46

As presented in Table 7, the experimental group achieved a pre-test mean of 1.88 (SD=1.09) and a post-test mean of 4.32 (SD=0.50), resulting in a mean gain of 2.44 points. The control group recorded a pre-test mean of 2.19 (SD=1.13) and a post-test mean of 2.65 (SD=1.01), with a mean gain of 0.46 points. This represents the largest mean gain observed across all comprehension domains, suggesting that vocabulary development benefited most significantly from context cues instruction. The reduced standard deviation in the experimental group's post-test scores also suggests more

consistent vocabulary learning outcomes across students.

Hypothesis Four

H₀₄: The context cues strategy has no significant effect on students' vocabulary development in reading comprehension among secondary school students in Kontagora metropolis, Niger State, Nigeria.

ANCOVA was conducted with post-test vocabulary development scores as the dependent variable.

**Table 15:** ANCOVA Results for Effect of Context Cues Strategy on Vocabulary Development

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial η^2
Corrected Model	258.113	2	129.056	145.321	.000	.649
Intercept	62.447	1	62.447	70.318	.000	.309
Pre-test Vocabulary	73.251	1	73.251	82.494	.000	.345
Group	304.762	1	304.762	343.157	.000	.686
Error	139.462	157	0.888			

As shown in Table 15, there was a statistically significant effect of the context-cues strategy on vocabulary development, $F(1,157) = 343.157$, $p < .001$, partial $\eta^2 = .686$. This very large effect size indicates that approximately 68.6% of the variance in post-test vocabulary scores was directly attributable to the instructional method after controlling for pre-test performance. The exceptionally high F-value and near-zero probability provide strong evidence that explicit context-cues instruction dramatically outperformed conventional methods, confirming the strategy's powerful impact and practical viability in resource-constrained Nigerian classrooms. The null hypothesis is therefore rejected.

Discussion of Findings

The findings of this study are discussed in relation to the research questions, hypotheses, and existing literature on context cues strategy and reading comprehension instruction. The extent to which context cues strategy influences students' performance in vocabulary development was clearly evident in the findings. The experimental group achieved a mean gain of 2.44 points (from 1.88 to 4.32), while the control group recorded only 0.46 points (from 2.19 to 2.65). The ANCOVA results confirmed a statistically significant effect ($F = 343.157$, $p < .001$, $\eta^2 = .686$), indicating that approximately 68.6% of the variance in post-test vocabulary development scores was attributable to

the instructional method. This substantial improvement demonstrates that explicit instruction in context cues significantly enhanced students' ability to infer, acquire, and retain word meanings from texts. The finding aligns with previous research by Che Ani et al. (2023), who reported that students exposed to context cue instruction showed marked improvements in vocabulary mastery through collaborative activities such as Think-Pair-Share. Similarly, Le Van Tuyen and Huyen (2019) found that context cue strategies helped students achieve significant vocabulary retention and improved reading comprehension compared to control groups. The theoretical foundation for this finding rests on Rumelhart's (1977) Interactive Reading Model, which posits that effective reading involves both bottom-up decoding and top-down cue integration. When students were taught to use semantic, syntactic, graphophonic, and pragmatic cues, they developed a more systematic approach to deriving word meanings. Rather than relying on rote memorization or surface-level decoding, students learned to use surrounding textual information to confirm their understanding of unfamiliar terms. The large effect size ($\eta^2 = .686$) suggests that context cues instruction represents a powerful intervention for improving vocabulary development in Nigerian secondary schools. This is particularly significant given that many students in the region struggle with basic lexical skills due to limited exposure to strategic reading instruction. The reduced standard deviation in the experimental group's post-test scores ($SD = 0.50$ compared to



pre-test $SD = 1.09$) further indicates that the intervention not only improved average performance but also reduced variability, suggesting more consistent learning outcomes across students of varying abilities.

Conclusion

This study provides compelling evidence that context cues strategy significantly enhances vocabulary development in reading comprehension among SS2 students in Kontagora Metropolis, addressing a critical gap in lexical skills within northern Nigeria's resource-constrained educational landscape. The quasi-experimental findings demonstrate that explicit instruction in semantic, syntactic, graphophonic, and pragmatic cues yields substantial gains (experimental mean gain = 2.44, $\eta^2 = .686$), enabling students to more effectively acquire, retain, and apply new words skills essential for academic progression and national assessments such as WAEC and NECO. By rejecting the null hypothesis ($F(1,157) = 343.157$, $p < .001$), the research confirms the intervention's superiority over conventional rote-based methods, which produced only marginal improvements (control mean gain = 0.46), highlighting the limitations of decontextualized teaching in multilingual ESL environments. Theoretically, these results validate Rumelhart's (1977) Interactive Reading Model, illustrating how simultaneous bottom-up decoding and top-down cue integration foster active, holistic text processing, as complemented by Wertheimer's (1923) Gestalt principles of perceptual organization. Empirically, the outcomes align with international studies (e.g., Che Ani et al., 2023; Le Van Tuyen & Huyen, 2019) while extending localized insights to semi-urban Nigerian settings, where cultural-linguistic barriers and teacher training deficits exacerbate vocabulary deficits. The balanced gender sampling and reduced post-test variability in the experimental group further suggest equitable, consistent benefits across diverse learners, mitigating potential engagement

disparities. In broader terms, this inquiry contributes to evidence-based literacy pedagogy by positioning context cues as a low-cost, scalable scaffold for lexical comprehension, potentially bridging the 60% failure rate in word interpretation observed in regional assessments (WAEC, 2024). By promoting autonomous vocabulary acquisition without reliance on external aids, the strategy not only elevates lexical understanding but also lays the ground-work for inferential and critical skills, aligning with Nigeria's NERDC (2013) curriculum goals. Ultimately, these conclusions affirm the transformative potential of strategic interventions in combating persistent literacy inequities, offering a pathway to improved academic outcomes and lifelong learning in under-resourced secondary schools.

Recommendations

Based on the study's findings, the following recommendations are proposed for stakeholders in Nigerian education:

1. **Curriculum Integration:**
The NERDC should integrate context cues instruction (semantic, syntactic, graphophonic, pragmatic) into the senior secondary English curriculum, including SS1–SS3 lesson plans, sample texts, and vocabulary development assessments for systematic implementation.
2. **Teacher Training and Professional Development:**
Ministries and training institutions should require in-service workshops and pre-service modules on context cues (e.g., think-alouds, guided practice), with certification incentives prioritizing northern regions like Niger State.
3. **Assessment and Policy Enhancement:**
WAEC/NECO should update comprehension exams with cue-based vocabulary items and guidelines. Policymakers should fund low-cost interventions, including gender-equitable monitoring and Hausa-English bilingual supports in under-resourced schools.



4. **School-Level Implementation:** Administrators in Kontagora and similar areas should schedule weekly context cues lessons, form peer observation communities, and provide diverse library texts to promote independent practice.

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