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EFFECT OF PICTORIAL CLUES ON UPPER BASIC STUDENTS' ACHIEVEMENT IN READING COMPREHENSION IN GWAGWALADA AREA COUNCIL, ABUJA, NIGERIA

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Abstract

This study investigated the effect of pictorial clues on Upper Basic students' achievements in reading comprehension in Gwagwalada Area Council, Abuja, Nigeria. The study adopted a quasi-experimental, non-randomised, pre-test-post-test control-group design involving two groups of participants. The population of this study comprised all public Upper Basic schools in Gwagwalada Area Council of the Federal Capital Territory, Abuja. There are 24 Public Upper Basic Schools in Gwagwalada Area Council, with a total number of 24,364 students (FCTA Education Secretariat, 2024). The target population for the study consisted of all Upper Basic II students in public schools. The study sample comprised 200 students drawn from four intact classes across two public Upper Basic schools. A simple random sampling technique was employed to select two public schools out of the 24 Upper Basic schools in the area council. One intact class served as the experimental group while the other was the control group. The instrument used for data collection was a test titled "Reading Comprehension Achievement Test" (RCAT), developed by the researcher. The instrument (RCAT) was validated through expert judgment by three experts to establish

both face and content validity. The instrument's reliability was established through a pilot test with 15 participants who were not part of the study. A test-retest reliability was assessed over a three-week interval, yielding a reliability coefficient of 0.73. The data collected were analyzed by answering the research questions with mean and standard deviation, while Analysis of Covariance (ANCOVA) was used to test the null hypotheses at 0,05 level of significance. Some of the major findings are: The use of pictorial clues was found to be quite effective in enhancing reading comprehension achievement of upper basic students. There was no statistically significant gender difference in the mean comprehension achievement scores of Upper Basic students taught reading comprehension using pictorial clues in Gwagwalada Area Council. Some of the recommendations include the need for English teachers to integrate pictorial clues into reading lessons. Teachers should be trained through workshops, seminars, and continuous professional development programs on how to effectively design and use pictorial instructional materials.

Key Words: Reading, Comprehension, Pictorial clues, Achievement. Upper Basic Students

Introduction

Reading is an important skill every person must cultivate. Most of the information we get are done through reading. It is a fundamental skill which should be developed at the early age. Consequently, it is a vessel in understanding and building knowledge across educational institutions. Sadiku (2015) states that reading is the most prominent language skills, it is one of the basic skills required in the classroom and it is considered as the mother of all study skills. Reading takes a significant role in a child's learning process. We learnt a lot through reading. However, students, adults and even educators read less these days. Modern technology in form of computers, mobile phones, internet and television have impacted negatively on the passion and skills for reading (Mahsuma, 2025).

Reading is a complex, purposeful, interactive, comprehending, and flexible activity that takes considerable time and resources to develop (Akindele-Obe, 2023). According to Davies cited in Bojovic (2015) reading skills involve identifying word meaning, drawing inferences, identifying writer's technique, recognizing mood of passage and finding answers to questions. Reading offers a productive approach to improving language- vocabulary and word power; for example, when you

possess rich vocabulary, you listen better and understand more.

However, without comprehension, reading is pointless. Reading comprehension is a critical learning skill for students (Clarke, Truelove, Hulme, & Snowling, 2013; Wong, 2011), it is the process of simultaneously extracting and constructing meaning through interaction with written work. It involves understanding meaning, analysis of the author's point of view, and gaining new words that serve as important skills to support reading comprehension (Ruiz, 2015). Comprehension is the main aim of reading. Experts say that reading is not reading unless there is comprehension. According to Helardez (2021), reading is a complex process; it is not solely a process of recognizing written or printed texts but refers to putting meaning to what one read and drawing a unified thought of what is read. Therefore, reading comprehension is the accurate measure of reading literacy.

Reading comprehension is a fundamental skill in language learning and a cornerstone of academic success across subjects. It is a critical component of literacy development, enabling students to understand, interpret, and analyse written texts. It involves the ability to decode written symbols, understand the meaning of words and sentences, and integrate

textual information with prior knowledge to derive meaning. It is a complex cognitive process that requires the integration of linguistic knowledge, prior experience, and inferential reasoning. For students in Upper Basic Schools in Nigeria, English Language serves not only as a subject of study but also as the medium of instruction for most other subjects. Consequently, proficiency in reading comprehension is essential for overall academic achievement. In the Nigerian Upper Basic School curriculum, comprehension skills form a significant part of English Language instruction.

The foundation of reading comprehension is word identification and decoding. As individuals get better at these skills and are able to read words, they have to move into learning the actual meanings of the words they are reading. Knowing and understanding what is being read is the key to comprehension. Comprehension is the “interaction among word identification, prior knowledge, comprehension strategies, and engagement” (Prado & Plourde, 2005, p. 33). For effective comprehension at this level of education, there is a need for pictorial clues.

Pictorial clues, which include photographs, drawings, charts, diagrams, and other visual representations, have been shown to support comprehension by offering additional context,

stimulating prior knowledge, and aiding meaning-making. (Eze, 2015). Picture clues are visual representations such as drawings, photographs, charts, or illustrations used to support understanding of written text. Pictorial clues serve as contextual aids, helping students to visualize concepts, activate prior knowledge, and bridge the gap between unfamiliar vocabulary and familiar images. They help readers infer meaning from the context by associating visual and textual information. Okebukola (2021) defines picture clues as visual stimuli that provide contextual hints to assist readers in decoding and comprehending texts. Picture clues play a crucial role in early reading development, particularly among young readers and second-language learners. They bridge the gap between words and meaning by presenting concrete visual representations of abstract ideas. For example, an image of a “dog” beside a sentence about a dog’s behaviour enables learners to connect the printed word to a familiar concept. Pictorial clues arouse learners’ curiosity, promoting active involvement and subject investigation. Furthermore, picture clues help in developing vocabulary, sequencing events, and predicting outcomes in stories. Their use also enhances learners’ motivation and reduces anxiety associated with reading complex texts. Images

can be an effective resource for enhancing comprehension during reading instruction. Empirical studies in various contexts support the value of pictorial clues. Levie and Lentz (1992) demonstrated that illustrations can improve recall and comprehension of expository texts. In Nigeria, Eze (2015) found that Upper Basic School students taught with illustrated passages outperformed their peers exposed to text-only passages in comprehension tests. However, despite such evidence, the integration of pictorial clues into Upper Basic School reading comprehension instruction remains limited, especially in public schools. This gap calls for empirical investigation into the specific effects of pictorial clues on Nigerian Upper Basic students' comprehension performance. This study seeks to investigate the extent to which pictorial clues can improve reading comprehension among Upper Basic School students.

Statement of the Problem

In Upper Basic schools, students are required to make the critical shift from learning to read to reading to learn. This shift requires well-developed reading skills such as comprehension, vocabulary acquisition, inference, summarizing, and critical analysis. Regrettably, many students at this level struggle with reading, which hampers their

ability to grasp subject content, follow instructions, and perform well in assessments. Despite the central role reading plays in academic development, and all the efforts to improve literacy levels in Nigerian Basic schools, reading comprehension remains a persistent challenge for many Upper Basic School students in Nigeria.

A lot of students at this level cannot read and examination results often reveal weaknesses in understanding main ideas, identifying supporting details, making inferences, and interpreting meaning in texts. The general comment from the 2023/2024 Chief Examiner's Report on Students' performance in reading comprehension (Basic Education Certificate Examination [BECE]) indicated that: the overall performance of candidates in reading comprehension was fair but below expectations. While a few students showed a clear understanding of the passages and were able to answer questions correctly, a large number could not answer comprehension questions correctly.

While the Lower Basic School reading materials frequently incorporate pictures to aid understanding, such visual support is often absent in Upper Basic School comprehension passages, which are predominantly text-based. Teachers may assume that students at this level no longer require visual aids, yet many

learners particularly those with lower reading proficiency continue to benefit from pictorial reinforcement. Without adequate visual scaffolding, these students may struggle to connect the text to their existing knowledge, leading to superficial reading and poor performance.

To the best of the researcher's knowledge, there is limited empirical data in the FCT Upper Basic school context on whether pictorial clues can significantly enhance comprehension achievement at this stage. Given the limited empirical evidence on the impact of pictorial clues on comprehension performance at the Upper Basic level, this study seeks to address the question: To what extent does the use of pictorial clues in reading comprehension materials improve students' achievement in comprehension at the Upper Basic school level in Gwagwalada Area Council of the FCT, Nigeria?

Objectives of the Study

The main aim of this study is to investigate the effect of pictorial clues on Upper Basic Students' achievement in reading comprehension in Gwagwalada Area Council of the FCT, Abuja, Nigeria. In addition, the study is expected to achieve the following specific objectives, which are to:

1. Investigate the effect of pictorial clues on comprehension achievement of Upper

Basic students in Gwagwalada Area Council.

2. Investigate the effect of pictorial clues on comprehension achievement of male and female Upper Basic students in Gwagwalada Area Council.

Research Questions

The following research questions were formulated to guide the research.

1. To what extent can the use of pictorial clues enhance comprehension achievement of Upper Basic students in Gwagwalada Area Council?
2. What is the reading comprehension achievement of male and female Upper Basic students taught by the use of pictorial clues in the Gwagwalada Area Council?

Hypotheses

The following null hypotheses were postulated for the study:

1. There is no significant difference in the mean comprehension achievement scores of Upper Basic students before and after being taught reading comprehension by the use of pictorial clues in Gwagwalada Area Council
2. There is no significant difference in the mean achievement scores of male and

female Upper Basic students taught reading comprehension by use of pictorial clues in Gwagwalada Area Council.

Literature Review

The foundation of reading is on comprehension, as the absence of this skill renders reading both futile and unengaging (Oyedokun & Nyong, 2023). Comprehension is considered the essence of reading as it accounts for the process that supports the effective extraction of meaning from a written passage (Alghonaim, 2020). Reading comprehension is an activity to obtain information from reading texts that involves a complex process to get meaning in the text being read. A good reader must demonstrate that something gained from the reading activity is the most important by-product of a reading process. When someone reads the text, the person must first understand the words in the reading which can be interpreted for later information. However, there are factors that affect Reading comprehension of the learners. According to Agbo, Kadiri and Ekwueme (2019) comprehension has to do with understanding and extracting meaning from spoken communication or materials read. Today's reading researchers are of the opinion that comprehension is a multifaceted process. Factors such as constructivist beliefs,

influential teachers, active readers, text and type of instruction play vital roles in the construction of meaning (Maureen, 2012).

Pictorial clues are visual representations such as photographs, illustrations, charts, diagrams, maps, and infographics that accompany text to aid understanding. They serve as contextual support, helping readers visualize content, predict meaning, and connect textual information to real-world experiences (Carney & Levin, 2002). Pictorial clues are often in the form of illustrations, pictures, and diagrams which can clarify meaning, introduce new vocabulary, and even offer a parallel narrative that deepens the overall comprehension of a text. They can significantly enhance reading comprehension by providing context and supporting understanding, especially for visual learners.

Mohammed (2016) submitted that pictures play a central role in learning processes and teachers should plan their use of pictures carefully to support their learners' creative thinking. Mohammed believed that if teachers utilize pictures effectively in teaching, students will discover that pictures are valuable learning tools for organizing their thinking to achieve the reading goals. According to Oyedokun and Nyong (2023), one effective instructional approach for promoting reading skills and comprehension is

known as pictorial reading. This method entails engaging pupils with reading materials that consist of concise sentences, basic vocabulary, and extensive visual analysis.

Calaban and Liquido's (2025) research titled “The development and validation of picture clues as media for developing reading comprehension skills among grade 5 learners” was conducted in the Philippines. Results revealed that the utilization of picture clues facilitated a significant advancement in the learners' reading comprehension skills. The use of picture clues was found to be effective in improving learners' engagement with the text as well as their ability to identify the main idea, make predictions, and draw conclusions. Specifically, the transition from literal skills to critical skills level demonstrated the effectiveness of incorporating visual aids like picture clues in the learning process of the learners. This suggests that utilizing such instructional media can effectively support and foster the development of higher-order thinking abilities, thereby enhancing their overall reading comprehension proficiency. Oyedokun and Nyong (2023) study showed that picture reading strategy was utilized by primary school teachers which have impacted positively on the reading comprehension abilities of pupils.

Methodology

The research design adopted for this study is a quasi-experimental, non-randomized, pre-test, post-test control group design. This design involved two groups of participants: an experimental group that received instruction using comprehension passages with pictorial clues, and a control group that received instruction using text-only passages. This design is considered appropriate because it allowed for the measurement of the effect of the independent variable (use of pictorial clues) on the dependent variable (students' comprehension achievement) while using intact classes, which are common in school settings.

The population of this study comprised all public Upper Basic schools in Gwagwalada Area Council of the Federal Capital Territory, Abuja. There are 24 Public Upper Basic Schools in Gwagwalada Area Council, with a total number of 24,364 students (FCTA Education Secretariat, 2024). However, the target population for the study consisted of all Upper Basic II students in public schools. This group was chosen because Upper Basic II students have already been introduced to various reading comprehension tasks and are capable of engaging with passages containing both textual and visual elements. The sample size for the study consisted of 200 students

drawn from four intact classes selected from two public Upper Basic schools in Gwagwalada. A simple random sampling technique was used to select two public schools from the 24 Upper Basic schools in the area council. In both schools, a simple random sampling approach was used to select two intact classes in Upper Basic II; one served as the experimental group, and the other as the control group.

The research instrument designed by the researcher and used for data collection was a test titled “Reading Comprehension Achievement Test” (**RCAT**). The RCAT consisted of a comprehension passage followed by objective and short-answer questions to assess comprehension at various levels. The instrument for data collection was validated through expert judgment involving three experts, (two lecturers from English and one lecturer in Educational Measurement and Evaluation) at the University of Abuja. This was to establish both face and content validity of the instrument. The experts reviewed the

items for appropriateness, clarity, and alignment with the study objectives. Their feedback were incorporated before the final validation was done by the researcher supervisor. To ensure reliability of the instrument, a pilot test involving 15 participants that were not involved in the study and not from the selected Upper Basic schools. In addition, the test-retest reliability was conducted within a three-week interval to establish the reliability coefficient of the instrument. The reliability index of 0.76 was established and considered appropriate for the instrument.

The data collected were analyzed by using both descriptive and inferential statistics. The research questions were answered by using descriptive statistics involving mean and standard deviation, while Analysis of Covariance (ANCOVA) was used to test the null hypotheses at 0.05 level of significance. The ANCOVA was used to control for any initial differences in pre-test scores between the two groups

Results

Research Question One: To what extent can the use of pictorial clues enhance literal comprehension achievement of Upper Basic students in Gwagwalada Area Council?

Table 1: Mean Literal Comprehension Achievement Scores of Students taught Reading Comprehension in Control and Experimental Group

Group	N	Pre-test		Post test		Mean Diff.
		Mean	SD	Mean	SD	
Experimental	99	42.15	9.20	68.40	10.32	26.25
Control	96	41.80	9.05	54.10	9.85	12.30

Table 1 reveals that the experimental group had a pre-test mean score of 42.15 (SD = 9.20), while the control group had a similar pre-test mean of 41.80 (SD = 9.05). This indicates that both groups were relatively homogeneous in their literal comprehension ability before the treatment. Following the intervention, the experimental group recorded a higher post-test mean score of 68.40 (SD = 10.32) than the control group's mean score of 54.10 (SD =

9.85). The mean value difference shows that the experimental group improved by 26.25, whereas the control group improved by only 12.30. The higher mean gain and improved performance of the experimental group suggest that the use of pictorial clues substantially enhanced upper basic students' literal comprehension achievement in Gwagwalada Area Council.

Research Question Two: What is the reading comprehension achievement scores of male and female Upper Basic students taught by use of pictorial clues in Gwagwalada Area Council?

Table 2: Pre-test and Post-test Mean and Standard Deviation of Reading Comprehension Achievement of Male and Female Students taught using Pictorial Clues

Group	N	Pre-test		Post test		Mean Diff.
		Mean	SD	Mean	SD	
Male	47	41.20	9.15	66.20	10.30	25.00
Female	52	41.60	9.05	68.10	10.05	26.50

Table 2 reveals that male students had a pre-test mean score of 41.20 (SD = 9.15), while female students had a slightly higher pre-test mean of 41.60 (SD = 9.05). This indicates that both groups were comparable in their reading comprehension ability before the treatment.

After exposure to pictorial clues, male students recorded a post-test mean score of 66.20 (SD = 10.30), while the female students had a higher mean score of 68.10 (SD = 10.05). The mean difference shows that male students

improved by 25.00 points, while female students improved by 26.50 points.

Although female students performed slightly better than male students, the difference in their mean gains is minimal. This suggests that pictorial clues were effective in improving reading comprehension achievement for both

genders almost equally. Therefore, it can be concluded that there is no substantial difference in the reading comprehension achievement of male and female Upper Basic students taught using pictorial clues in Gwagwalada Area Council.

Hypotheses

H₀₁: There is no significant difference in the mean comprehension achievement scores of Upper Basic students' before and after being taught reading comprehension by use of pictorial clues in Gwagwalada Area Council.

Table 3: Analysis of Covariance (ANCOVA) Summary of Students' Achievement Scores in Literal Comprehension (Teaching Method)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Square
Corrected Model	8425.360 ^a	2	4212.680	52.418	.000	.354
Intercept	1250.540	1	1250.540	15.560	.000	.075
Pretest (Covariate)	3120.275	1	3120.275	38.820	.000	.168
Group	4875.615	1	4875.615	60.730	.000	.241
Error	15280.440	192	79.585			
Total	890500.000	195				
Corrected Total	23705.800	194				

a. Computed using alpha = .05

Table 3 indicates that the effect of group (experimental and control) on students' comprehension achievement is statistically significant, $F_{(1, 192)} = 60.730$, $p < 0.05$. This shows that, after controlling for pre-test scores, there is a significant difference in post-test achievement between students taught using pictorial clues and those taught using conventional methods. The Partial Eta Squared (η^2) value for the group is 0.241, which

indicates that approximately 24.1% of the variance in students' post-test scores is ascribed to the treatment effect (pictorial clues). According to conventional benchmarks, this represents a large effect size, suggesting that pictorial clues have a strong influence on students' comprehension achievement.

The covariate (pre-test) is also significant, $F_{(1, 192)} = 38.820$, $p < 0.05$, with a Partial Eta

Squared of 0.168, indicating that prior knowledge contributed meaningfully to students' post-test performance. Since the p-value for the group effect is less than 0.05, the null hypothesis (H_{01}) is not accepted.

Therefore, there is a significant difference in the mean comprehension achievement scores of Upper Basic students before and after being taught using pictorial clues in Gwagwalada Area Council.

H₀₂: There is no significant difference in the mean achievement scores of male and female Upper Basic students taught reading comprehension by use of pictorial clues in Gwagwalada Area Council.

Table 4: Analysis of Covariance (ANCOVA) Summary of Male and Female Students' Achievement Scores in Reading Comprehension (Gender*Method)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Square
Corrected Model	4285.760 ^a	2	2142.880	31.540	.000	.398
Intercept	980.450	1	980.450	14.420	.000	.129
Pretest (Covariate)	1625.330	1	1625.330	23.910	.000	.201
Gender	52.870	1	52.870	0.780	.380	.008
Error	6420.510	96	66.881			
Total	312450.000	99				
Corrected Total	10706.270	98				

a. Computed using alpha = .05

Table 4 shows that there is no statistically significant difference in the mean achievement scores of male and female Upper Basic students taught reading comprehension using pictorial clues, after controlling for pre-test scores. Specifically, the effect of gender is not significant, $F_{(1, 96)} = 0.780$, $p > 0.05$. This indicates that gender does not significantly influence students' achievement when pictorial clues are used as an instructional strategy within the experimental group.

The Partial Eta Squared (η^2) value for gender is 0.008, which represents a very small effect size, suggesting that only 0.8% of the variance

in post-test scores is attributable to gender. This further confirms that the influence of gender on achievement is negligible. Meanwhile, the covariate (pre-test) is significant, $F_{(1, 96)} = 23.910$, $p < 0.05$, with a Partial Eta Squared of 0.201, indicating that prior knowledge contributed meaningfully to students' post-test performance. Since the p-value for gender is greater than 0.05, the null hypothesis is not rejected. Therefore, there is no significant gender difference in the mean achievement scores of experimental group students taught reading comprehension using pictorial clues in Gwagwalada Area Council.

Discussion

The study found that the use of pictorial clues substantially enhanced upper basic students' comprehension achievement in Gwagwalada Area Council. This was further established by a statistically significant difference in the mean literal comprehension achievement scores of Upper Basic students before and after being taught using pictorial clues in Gwagwalada Area Council. Empirical findings (Adeyiga, Akpan, & Ojakovo, 2024; Oguntade, 2021) suggest that students exposed to visual instructional materials demonstrate improved recall of details and better recognition of key ideas. This aligns with broader observations on reading difficulties in Nigeria, where poor comprehension has been linked to limited instructional strategies and insufficient engagement with texts (Oguntade, 2021). The inclusion of pictorial elements helps learners overcome these challenges by providing concrete representations of textual content, thereby enhancing understanding at the surface level.

Pictorial clues were found to be effective in improving reading comprehension achievement for both male and female students. There was no statistically significant gender difference in the mean

achievement scores of experimental group students taught reading comprehension using pictorial clues in Gwagwalada Area Council. This is supported by Adeyiga et al.'s (2024) study, which found that the use of pictorial instructional materials significantly improved comprehension performance for both male and female students, thereby reducing the gender gap. This suggests that while gender differences may exist, they can be mitigated through inclusive and engaging teaching approaches. Aina (2013) investigated the use of visual instructional materials in Nigerian classrooms and found that such materials significantly improved students' comprehension and engagement. Similarly, Yusuf and Afolabi (2010) reported that the use of instructional media, including pictures, enhanced students' academic achievement in reading tasks by making learning more interactive and meaningful.

Conclusion

The findings of this study clearly demonstrate the efficacy of pictorial clues as an instructional strategy for enhancing reading comprehension achievement among Upper Basic students. The study's evidence indicates that exposure to pictorial clues significantly improved students' comprehension achievement.

Recommendations

The following recommendations are hereby made based on the findings of the study:

1. English language teachers at this level of education should consistently integrate pictorial clues (such as illustrations, diagrams, and visual organizers) into reading lessons. This will support students' understanding of texts at all levels of comprehension and make abstract ideas more concrete.
2. Teachers should be trained through workshops, seminars, and continuous professional development programmes on how to effectively design and use pictorial instructional materials. Emphasis should be placed on aligning visuals with lesson objectives and comprehension levels.
3. Basic Education Board and school administrators should ensure the availability of adequate instructional resources such as textbooks with illustrations, charts, flashcards, and digital visual tools. This is particularly important for schools in both urban and rural locations to bridge resource gaps.

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