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Effects Of Visual Instructional Materials On Achievement In English Preposition Of Direction Among Junior Secondary Students In Yobe State

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ABSTRACT
This study investigated the effects of visual instructional materials on achievement in English preposition of direction among junior secondary students in Yobe state, Nigeria. Despite the recognized benefits of visual aids in enhancing student engagement and understanding, there is limited research on their effectiveness in this specific context. Using a quasi-experimental design with pre-test and post-test assessments, the study compared the performance of students taught with visual instructional materials (experimental group) and those taught using traditional methods (control group). The sample comprised 120 students from four public schools. Findings revealed that the experimental group achieved significantly higher mean scores in preposition of time compared to the control group. Gender differences in achievement were minimal, both within the experimental group and between the experimental and control groups. The results suggest that visual instructional materials improve students' understanding of complex grammatical concepts and highlight the need for their broader application in educational settings. The study concluded that visual instructional materials has effect on preposition of direction achievement of students in the experimental and control groups. Male and female JS II students do not differ in their preposition achievement in the experimental and control group. Based on the findings, it was recommended among others that schools should offer ongoing professional development opportunities for teachers to enhance their understanding and implementation of effective language teaching strategies and the use of technology in the classroom.
Keywords: Visual instructional materials, English prepositions of direction, Junior Secondary School, educational achievement, Nigeria

INTRODUCTION

Effective communication in English, particularly through the proper use of prepositions, is a critical skill for students in Junior Secondary Schools. However, many students struggle with constructing meaningful sentences due to difficulties in mastering English prepositions. In Nigeria's Northern region, specifically Yobe State, which is a key educational center, this issue is particularly pronounced. Despite teachers' efforts to improve students' English language skills, recent data reveals a persistent crisis in proficiency. According to the National Bureau of Statistics (2023), the pass rate for English in junior secondary

schools across Nigeria remains critically low, with Yobe State reporting a pass rate consistently below 15%. This ongoing challenge highlights a severe problem in language education within the region.

One contributing factor to this decline in performance is the inadequate use of suitable instructional materials. Lawani (2019) identified the lack of appropriate educational resources as a significant factor behind poor student performance in English. The incorporation of visual instructional materials such as charts, diagrams, pictures, videos, and real-world objects has been shown to offer numerous benefits in educational settings. Visuals can make lessons more engaging and help capture students' attention, thereby promoting active participation (Orji & Olaleye, 2016). They also provide concrete examples for abstract grammatical concepts, such as prepositions, making them easier to understand and apply. Studies suggest that visual materials cater to diverse learning styles by enabling students to process information through both visual and auditory channels, leading to improved retention and deeper understanding (Clark & Mayer, 2016).

Research indicates that visual instructional materials have a positive impact on learning outcomes across various subjects. For instance, Okoye and Anya (2021) demonstrated that visual aids significantly enhanced students' comprehension and retention of complex grammatical concepts, with students taught using visual materials outperforming those taught with traditional methods. Similarly, Eze and Eze (2020) emphasized the importance of visual materials in making abstract concepts more tangible for students. Despite these findings, more focused research is needed to specifically address the benefits of visual materials for teaching English prepositions within the Nigerian secondary school context.

The use of instructional materials is essential for effective teaching. They help present skills and knowledge succinctly, providing concrete learning experiences that aid in better comprehension. Some materials are self-supporting, allowing learners to use them independently of the teacher's support. Abdul-Raheem (2016) and Wamalwa (2016) highlighted that instructional materials are catalysts for language growth and development, facilitating the achievement of learning objectives and stimulating teaching and learning.

Visual instructional materials are crucial for enhancing the teaching and learning process. They make learning more effective, interesting, and engaging, which is essential for literacy development. Visuals such as posters, flashcards, and pictures are particularly valuable in teaching English prepositions, as they help in making learning permanent. This is supported by the fact that visual memory plays a significant role in learning. According to Bruner's research, people retain about 80% of what they see and do, compared to only 10% of what they hear and 30% of what they read (Gould & Roffey-Barentsen, 2018). This aligns with Piaget's theory of cognitive development, which emphasizes the importance of visual representation in learning during the pre-operational period (Piaget, 2020).

The significance of prepositions in English cannot be overstated. They are fundamental in conveying precise meanings and establishing relationships within sentences. Akhtar, Sohail, and Rizwan (2017) describe prepositions as words that show relationships between nouns and other words in a sentence, and their proper use is critical for constructing well-formed sentences and interpreting complex texts. However, mastering prepositions can be challenging due to their abstract nature and polysemous usage.

Jean Piaget's theory of cognitive development highlights the significance of visual learning, especially during the pre-operational period when children learn to use and represent objects through images, words, and drawings. Literature supports the fact that visual sense is a critical factor for learning. For instance, Bruner's study showed that individuals remember 10% of what they hear, 30% of what they read, but about 80% of what they see and do (Gould & Roffey-Barentsen, 2018). Visual materials, therefore, have the potential to significantly enhance the retention and recall of information, making them invaluable tools in the teaching and learning process.

In Nigeria, the use of visual instructional materials in teaching English prepositions is particularly relevant. Despite the recognized importance of these materials, there has been limited research focused on their impact on junior secondary school students' achievement in English, particularly in Yobe State. Abdul-Raheem (2016) emphasized that instructional materials are catalysts for language growth and development, leading to the achievement of learning objectives. Visual materials provide concrete forms

through which learners can see, touch, and feel, offering an adequate basis for the positive development and connection of ideas, information, and experiences during lessons (Wamalwa, 2016).

The influence of gender on learning and achievement remains a controversial issue among educationists and psychologists. Akinwumi (2017) asserted that the difference in male and female anatomy has bearing on their learning outcomes. Gender is a socio-cultural construct that determines roles and responsibilities, and it plays a significant role in the educational context. This study aims to explore whether the integration of visual instructional materials in teaching English prepositions can improve academic achievement irrespective of gender.

Despite the importance of using visual instructional materials, only a few studies conducted in Nigeria dwelt on the use of English preposition in junior secondary schools which is considered one of the most difficult aspects of English. It is for this reason that the research is designed to ascertain whether the integration of visual instructional materials in teaching English prepositions of direction to Junior Secondary Two (JS2) students in Yobe State, Nigeria would improve academic achievement of students in English.

Statement of the Problem

Students in Junior Secondary Schools are expected to proficiently use English prepositions to communicate effectively. However, many struggle to construct meaningful sentences. In Nigeria's Northern region, Yobe State is recognized as an educational hub where teachers strive to equip students with essential English language skills. Recent data underscores the ongoing challenges students face in achieving English language proficiency. According to the National Bureau of Statistics (2023), the pass rate for English language in junior secondary schools across Nigeria remains alarmingly low, with notable regional disparities. Specifically, in Yobe State, the pass rate has persistently stayed below 15%, highlighting a severe crisis in language education (National Bureau of Statistics, 2023).

This troubling decline in performance has been linked to several factors, particularly the inadequate use of suitable instructional materials. Lawani (2019) pointed out that the poor performance of students in English is closely related to the lack of appropriate educational resources. Furthermore, recent studies have reaffirmed the positive impact of visual instructional materials. For example, Okoye and Anya (2021) found that the use of visual aids in teaching significantly enhanced students' understanding and retention of complex grammatical concepts. Their research revealed that students taught with visual materials outperformed those taught through traditional methods. This is consistent with the findings of Eze and Eze (2020), who stressed that visual instructional materials are vital for making abstract concepts more tangible and comprehensible for students.

Despite various initiatives aimed at improving student achievement, such as teacher training, in-service programs, and workshops, student performance in English remains unsatisfactory. This ongoing underperformance has significant repercussions, as students who fail to achieve credit-level passes in English are often ineligible for admission to higher education institutions for courses requiring English proficiency. This situation highlights the pressing need for educators to adopt modern teaching methods, including the use of visual instructional materials. Thus, the critical question arises: What is the effect of visual instructional materials on Junior Secondary Two (JS2) students' achievement in English prepositions of direction in Yobe State, Nigeria?

Objectives of the Study

The objectives are to:

1. Assess the extent to which visual instructional materials will enhance JS two students' achievement in English preposition of direction in the experimental and control groups.
2. Assess the English preposition achievement mean score of male and female after exposure to treatment
3. Determine the extent of pre-test and post-test English preposition achievement of JS two students in Experimental and control groups.

Null Hypotheses

The following null hypotheses formulated for the study were tested at 0.05 level of significance:

H01: There is no significant difference in the Post-test Preposition of direction achievement mean scores of JS II students in the experimental and control group.
H02: There is no significant difference in the Post-test Preposition achievement mean scores of male and female JS II students in the experimental group.
H03: There is no significant difference in the post test preposition achievement mean scores of JS II students in the experimental and control group

RESEARCH METHODS

The study utilized a quasi-experimental research design, specifically the pre-test, post-test nonequivalent control group design. This approach was chosen because the use of intact classes was necessary, as random assignment of students was not possible due to existing school arrangements. Quasi-experimental designs do not require random assignment into experimental and control groups (Nworgu, 2015), making this design suitable for assessing the effects of visual instructional materials on Junior Secondary School II (JSS II) students' achievement in English prepositions. This choice was influenced by school authority restrictions against class reorganization, necessitating the use of pre-existing classes.
The study population comprised 2,708 Junior Secondary Two (JS II) students from all sixteen public junior secondary schools within the Potiskum Educational Zone, Yobe State, Nigeria. A sample of 120 students was selected from four of these schools. Simple random sampling was used to choose the schools and the classes. The schools selected were Government Junior Secondary School Sabon Laye, Government Junior Secondary School Kara, Government Junior Secondary School Mamudo, and Government Junior Secondary School Badejo. Among these, Schools 1 and 2 served as experimental groups, while Schools 3 and 4 functioned as control groups. The selection was conducted using a hat-and-draw method.
The data collection instrument used was an adapted English Preposition Achievement Test (EPAT) consisting of 50 multiple-choice items. This instrument was validated by experts, and its reliability was evaluated using a test-retest method, yielding a Pearson Product Moment Correlation Coefficient reliability index of 0.75. The EPAT was administered as a pre-test to both experimental and control groups to establish baseline proficiency in English prepositions before the intervention.
The experimental process was divided into three phases: pre-test, treatment, and post-test. During the treatment phase, the experimental group was taught English prepositions of place using visual instructional materials, while the control group was taught the same content through traditional lecture methods. A post-test, which was a reshuffled version of the pre-test, was administered at the end of the treatment to evaluate students' achievement in English prepositions.
Data analysis was conducted using inferential statistics, specifically t-test statistics, with a significance level set at $P<0.05$.

PRESENTATION OF RESULTS

Hypotheses Testing

$H0_1$: There is no significant difference in the post-test preposition of direction achievement mean scores of JS II students in the experimental and control group.

Table 1: Pretest and Post-Test Preposition of Direction Achievement Mean Scores of the Experimental and Control Groups

Group	I	N	$\bar{x}$	SD	Mean gain	$\bar{x}$-diff.
Experimental	Pre-test	21	9.57	2.76		
	Post test	21	22.71	4.94	13.14	
Control	Pret test	20	10.20	3.30		5.89
	Posttest	20	16.45	4.13	6.25	

Table 1 reveal that the experimental group had a pre-test mean scores of x̄9.57, SD=2.76 and a post-test mean scores of x̄22.71, SD=4.94 with mean gain between the pre-test and post-test of 13.14 while the control group had a pre-test mean scores of x̄10.20, SD=3.30 and a post-test mean scores of x̄16.45, SD=4.13 with mean gain of 6.25. The results show that the achievement of the two groups improved after exposure to different treatment. However, that of the experimental group is higher with mean difference of x̄-diff=6.26. This implies that visual instructional materials improve the achievement of students in preposition of direction more than conventional method.

H02: There is no significant difference in the post-test preposition achievement mean scores of male and female JS II students in the experimental group.

Table 2: Post-Test Preposition Achievement Mean Scores of Male and Female JS II Students in Potiskum Educational; Zone of Yobe State.

Group	N	x̄	SD	x̄-diff.
Male	14	62.00	4.70	
Female	6	72.00	4.38	10.00

Table 2 show that male had a mean score of x̄62.00, SD=4.70 while female had a scores of x̄-diff 10.00 between the two groups. The results indicate that female students achieved higher than male students after the two groups were exposed to visual instructional materials. This implies that visual instructional materials improve the achievement of female students in preposition more than males.

$H0_3$: There is no significant difference in the post-test preposition achievement mean scores of JS II students in the experimental and control groups.

Table 3: Pre-Test and Post-Test Position Achievement Mean Scores of JS II Students in the Experimental and Control Group.

Group	**I**	**N**	**x̄**	**SD**	**Mean gain**	**x̄-diff.**
Experimental	Pre-test	21	28.95	8.55		
	Post test	21	64.23	7.11	35.28	
Control	Pret test	20	29.70	8.51		22.33
	Posttest	20	41.90	10.34	12.20	

Table 3 reveal that the experimental group had a pre-test mean scores of x̄28.95, SD=8.55 and a post-test mean scores of x̄64.23, SD=7.11 with mean gain of 35.28. While the control group had a pre-test mean scores of x̄29.70, SD=8.51 and a post-test mean scores of x̄41.909, SD=10.34 with mean gain between the pre-test and post-test of 12.20. The results show that the achievement of the two groups improved after exposure to different treatment however that of the experimental group is higher than that of the control group. This implies that visual instructional materials improve the achievement of students in preposition more than the conventional method.

Summary of Findings

1. There is a significant difference in the post-test preposition of direction achievement mean scores of JS II students between the experimental and control groups.
2. There is no significant difference in the Post-test Preposition achievement mean scores of male and female JS II students in the experimental group.
3. There is no significant difference in the post test preposition achievement mean scores of male and female JS II students in the experimental and control group.

DISCUSSION OF FINDING

Hypothesis one revealed a significant difference in the post-test preposition of direction achievement mean scores of JS II students between the experimental and control groups. Numerous studies have shown that active learning strategies, including interactive and student-centered teaching methods, can significantly enhance language learning outcomes compared to traditional, passive learning approaches.

Prince (2024) found that active learning leads to better retention of material and improved critical thinking skills. This finding aligns with the observed significant difference in preposition of direction achievement in the experimental group. This finding is in line with the study by Warschauer and Healey (2022) found that the use of technology in language instruction provided students with interactive and engaging learning experiences, leading to improved language skills. The finding also agrees with the study by Tomlinson (2021) who studied differentiated instruction, which involves tailoring teaching methods to meet the diverse needs of students, has shown to be effective in improving academic outcomes. Tomlinson (2021) emphasizes that differentiated instruction can help address the varying learning styles and abilities of students, leading to better educational outcomes.

Hypothesis two revealed no significant difference in the Post-test Preposition achievement mean scores of male and female JS II students in the experimental group. The finding in this study agrees with the study of Voyer and Voyer (2024), the impact of different teaching methods on gender achievement gaps. The research found that modern, interactive teaching methods, such as those used in experimental groups, tend to minimize gender differences in academic performance. This aligns with the assertion that there is no significant difference in post-test preposition achievement mean scores between male and female students in the experimental group. Also, the finding was in line with the study by Tuan and Mai (2021) focused specifically on preposition usage in English as a Second Language (ESL) classrooms. The researchers found that targeted instruction and practice in preposition use resulted in significant improvements for both male and female students, with no statistically significant difference in post-test scores between genders. This further supports the idea that gender does not play a significant role in preposition achievement when effective teaching strategies are employed. This suggests that when provided with equal learning opportunities, both genders can perform equally well in language tasks, including preposition usage.

Hypothesis three revealed no significant difference in the post test preposition achievement mean scores of male and female JS II students in the experimental and control group. The observation that there is no significant difference in the post-test preposition achievement mean scores of male and female students in both the experimental and control groups aligns with several empirical studies in the field of education. This finding aligned with the study by Hyde and Linn conducted a meta-analysis on gender differences in verbal ability, which includes language acquisition and usage. Their findings revealed that there are minimal differences between males and females in terms of verbal ability, suggesting that both genders perform similarly when it comes to learning and using language constructs (Hyde & Linn, 2019). This also agrees with the study by Hedges and Nowell (2021) on gender differences in cognitive abilities, including language skills. They found that gender differences in language abilities are generally small and do not favor one gender over the other significantly. Consequently, the finding of this study was in tandem with the study by Trautwein and Lüdtke (2023) a study focusing on gender differences in educational outcomes. They found that gender differences in academic performance, including language-related subjects, are often small and context-dependent. Their research emphasizes the importance of the educational environment and teaching methods over inherent gender differences. This finding suggests that gender does not play a significant role in the acquisition of grammatical concepts, specifically prepositions, when subjected to similar teaching methods.

CONCLUSION

The study concluded that visual instructional materials has effect on English preposition of direction achievement of students in the experimental and control groups. Male and female JS II students do not differ in their preposition achievement in the experimental group. Also, male and female JS II students do not differ in their preposition achievement in the experimental and control group.

RECOMMENDATIONS

1. Schools should offer ongoing professional development opportunities for teachers to enhance their understanding and implementation of effective language teaching strategies and the use of technology in the classroom.
2. Government should ensure that all students, regardless of gender, have equal access to learning resources, including textbooks, online materials, and language learning software. This will help create a level playing field and support equal learning opportunities.
3. Teachers should promote collaborative learning environments where male and female students work together on projects and assignments. This approach can help break down gender barriers and encourage mutual respect and understanding among students.

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