International Journal of Innovative Education Research 12(4):261-267, Oct-Dec., 2024

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doi:10.5281/zenodo.14480012

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

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ABSTRACT

This study investigated the effect of visual instructional materials (VIMs) on the achievement of Junior Secondary Two (JS II) students in English prepositions of place in Yobe State, Nigeria. Utilizing a quasi-experimental design with pre-test and post-test nonequivalent control groups, the study involved 120 students from four selected schools, divided into experimental and control groups. The experimental group was exposed to VIMs, while the control group received traditional instruction. Data was collected using an adapted English Preposition Achievement Test (EPAT) and analyzed with t-test statistics. The findings reveal that students in the experimental group demonstrated significantly higher post-test scores in prepositions of place compared to those in the control group, indicating the efficacy of VIMs in enhancing academic achievement. Gender differences were not significant in either the experimental or control groups, suggesting that VIMs benefit all students equally regardless of gender. The results underscore the importance of incorporating visual aids into language instruction to improve student engagement and understanding of abstract grammatical concepts. The study concluded that visual instructional materials has effect on English preposition of place 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. Recommendation was made that educators should implement active learning strategies, such as collaborative activities, discussions, and hands-on exercises, to engage students and deepen their understanding of prepositions of place.

Keywords: Visual Instructional Materials, English Prepositions, Active Learning, Educational Achievement, Gender Differences

Research indicates that visual instructional materials positively affect student learning outcomes across various subjects, including language acquisition. These materials help clarify abstract concepts by providing concrete examples, making them easier to grasp and apply. In language education, visual aids have been shown to enhance vocabulary acquisition, comprehension of complex concepts, and the development of critical thinking skills (Clark & Mayer, 2016). The use of visual materials in teaching English prepositions is particularly promising, given that prepositions, though small, are crucial for conveying precise meanings and establishing relationships within sentences.

Prepositions in English express spatial, temporal, and logical connections, which are vital for constructing well-formed sentences and interpreting complex texts. For English language learners in Nigeria, where English is the official language, mastering prepositions is essential for academic success, professional development, and effective participation in a globalized world (Akhtar, Sohail, & Rizwan, 2017). However, the abstract nature and varied usage of prepositions in different contexts can pose challenges for learners. Jean Piaget's theory of cognitive development underscores the importance of visual learning, especially during the pre-operational stage, when children use images, words, and drawings to represent objects. Literature supports the notion that visual sense is critical for learning. For example, Bruner's research found that people remember only 10% of what they hear, 30% of what they read, but about 80% of what they see and do (Gould & Roffey-Barentsen, 2018). Thus, visual materials can significantly enhance the retention and recall of information, making them valuable tools in the teaching and learning process.

In the Nigerian context, particularly in Yobe State, the use of visual instructional materials in teaching English prepositions is of great relevance. Despite the acknowledged importance of these materials, there has been limited research focusing on their impact on junior secondary school students' achievement in English, specifically in Yobe State. Abdul-Raheem (2016) highlighted that instructional materials are essential for language development and achieving learning objectives. Visual materials offer concrete forms that enable learners to see, touch, and interact with content, fostering a more effective connection of ideas and experiences during lessons (Wamalwa, 2016).

Gender differences in learning and achievement remain a debated topic among educators and psychologists. Akinwumi (2017) suggested that anatomical differences between males and females might influence their learning outcomes. Gender is a socio-cultural construct that affects roles and responsibilities, which can impact educational performance. This study aims to explore whether incorporating visual instructional materials in teaching English prepositions can enhance academic achievement for Junior Secondary Two (JS2) students in Yobe State, regardless of gender. Despite the recognized importance of visual instructional materials, research on their use for teaching English prepositions in Nigerian junior secondary schools remains sparse. This study seeks to determine whether integrating visual instructional materials in teaching English prepositions to JS2 students in Yobe State can improve their academic performance 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 place in Yobe State, Nigeria?

Objectives of the Study

The objectives are to:

1. Determine the extent to which visual instructional materials will enhance JS two students' achievement in English preposition of place 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:

H_{01}: There is no significant difference in the post-test Preposition of place achievement mean scores of JS II students in the experimental and control group

H_{02}: There is no significant difference in the Post-test Preposition achievement mean scores of male and female JS II students in the experimental group.

H_{03}: 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

Research Design

The study utilized a quasi-experimental research design, specifically the pre-test, post-test nonequivalent control group design. This design is chosen because intact classes will be used, as students cannot be randomly assigned due to existing school arrangements. Quasi-experimental designs do not require random assignment of subjects into experimental and control groups (Nworgu, 2015). Therefore, this design is deemed suitable for assessing the impact of visual instructional materials on Junior Secondary School II (JSS II) students' achievement in English prepositions. The design choice is influenced by the school authority's restriction against reorganizing classes, necessitating the use of pre-existing classes.

The study population includes 2,708 Junior Secondary Two (JS II) students from all sixteen public junior secondary schools in the Potiskum Educational Zone, Yobe State, Nigeria. The sample will comprise 120 students from four selected schools within this population. Simple random sampling will be employed to choose both the schools and the classes for the study. The schools will include Government Junior Secondary School Sabon Laye, Government Junior Secondary School Kara, Government Junior Secondary School Mamudo, and Government Junior Secondary School Badejo. Schools 1 and 2 will serve as the experimental groups, while Schools 3 and 4 will function as control groups. The selection of schools will be done using a hat-and-draw method.

The instrument for data collection was an adapted English Preposition Achievement Test (EPAT) with 50 multiple-choice items. This instrument has been validated by experts, and its reliability was assessed using a test-retest method. The test-retest reliability was determined through Pearson Product Moment Correlation Coefficient, yielding a reliability index of 0.75. The EPAT will be administered as a pre-test to both experimental and control groups to establish baseline data on students' proficiency in English prepositions before the experimental intervention.

The experiment was in three phases: pre-test, treatment, and post-test. During the treatment phase, the experimental group were taught English prepositions of place using visual instructional materials, while the control group receive the same content through traditional lecture methods. Following the

treatment, a post-test was administered to evaluate the students' achievement in English prepositions. The post-test, which was reshuffled version of the pre-test, was given on the final day of the experiment.

The collected data were analyzed using inferential statistics of t-test statistics, with a significance level set at P<0.05.

Hypotheses Testing

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

Table 1: Pre-Test and Post-Test Preposition of Place Achievement Mean Scores Between the Experimental and Control Groups

Group	I	N	x̄	SD	Mean gain	x̄-diff.
Experimental	Pre-test	21	9.33	3.05		
	Post test	21	26.90	6.34	17.57	
Control	Pret test	20	9.70	2.67		8.65
	Posttest	20	18.25	3.69	8.55	

Table 1 reveal that the experimental group had a pre-test mean scores of x̄9.33, SD= 3.05 and a post-test mean scores of x̄26.90, SD=6.34 with a mean gain between the pre-test and post-test of 17.57 while the control group had a pre-test mean scores of x̄9.70, SD = 2.67 and a post-test mean scores of x̄18.25, SD = 3.69 with mean gain of 8.65. The results indicate that the achievement of students improve after exposure to treatment but that of the experimental group is higher than that of the control group with post-test mean difference of x̄-diff 8.65. This implies that visual instructional materials improve students' achievement in preposition of location more than conventional method.

$H0_2$: There is no significant difference in the post-test preposition achievement mean scores of male and female JS II students in the experimental group.

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 place achievement mean scores of JS II students in 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 place achievement mean scores of students in the experimental and control groups in favour of the experimental group. Research consistently shows that active learning strategies improve language learning outcomes. Freeman et al. (2024) conducted a meta-analysis of 225 studies and found that active learning significantly increased student performance across various disciplines. This suggests that the experimental group likely benefitted from interactive and participatory teaching methods, leading to improved post-test scores. The use of technology in language instruction has been shown to enhance learning outcomes. A study by Lai and Kritsonis (2023) found that integrating technology into language education provided students with diverse and engaging learning experiences, resulting in higher achievement levels. If the experimental group used technology-enhanced tools, this could explain their superior performance in understanding prepositions of place.

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 (2014), 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 (2015) 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 place 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.

RECOMMENDATION

1. Educators should implement active learning strategies, such as collaborative activities, discussions, and hands-on exercises, to engage students and deepen their understanding of prepositions of place.

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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