



Effect of Preparatory Homework on Pupils Academic Performance in Basic Science

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ABSTRACT

This study investigated the effect of preparatory homework on pupils' academic performance in Basic Science in Ilorin West Local Government Area of Kwara State, Nigeria. A pretest–posttest quasi-experimental design with control and experimental groups was employed. Using simple random sampling, two private and two public schools were selected. Data were collected through the Basic Science Achievement Test (BSAT) and a Preparatory Homework Guide (PHG), with reliability established using Pearson Product-Moment Correlation. Data were analyzed using Analysis of Covariance (ANCOVA), percentages, means, and t-tests. Findings revealed no significant effect of preparatory homework on pupils' academic performance. Gender also had no significant effect on performance, and no interaction effect was found between homework practice and gender. Despite the non-significant findings, the study recommends that teachers use preparatory homework strategically and that educational authorities organize seminars and workshops to evaluate its instructional value.

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1. INTRODUCTION

Based on our previous studies (Sulyman, 2017; Sulyman & Daguduro, 2020; Sulyman, 2021; Sulyman, 2022a; Sulyman & Oladoye, 2022; Sulyman, 2022b; Sulyman *et al.*, 2022c; Suliman *et al.*, 2022d; Sulyman & Abioye, 2023; Sulyman & Babalola, 2023; Sulyman, 2023; Sulyman, 2024a; Sulyman, 2024b), education is widely regarded as the cornerstone of societal progress, and students' academic performance remains a key indicator of educational effectiveness. In recent years, increasing attention has been directed toward identifying instructional strategies that enhance academic achievement. One such strategy is preparatory homework, which involves assigning tasks to students before a lesson to introduce upcoming content or review prior knowledge. Preparatory homework encourages active engagement, reinforces understanding, and supports the development of problem-solving skills and independent learning habits.

Research suggests that students who complete preparatory homework are better prepared to participate in classroom discussions, ask informed questions, and apply knowledge during instructional activities. By previewing lesson content, students can identify areas of difficulty and seek clarification, thereby improving comprehension and retention (Corno, 2000). Furthermore, preparatory homework promotes self-regulation, time management, and responsibility for learning. However, its effectiveness depends on factors such as task quality, students' prior knowledge, and teacher support (Trautwein & Köller, 2003). Excessive homework may also negatively affect students' motivation and well-being (Cooper *et al.*, 2006).

Basic Science is a foundational subject in Nigeria's educational curriculum, designed to develop scientific knowledge and critical thinking skills. Despite its importance, concerns persist regarding pupils' low academic performance in Basic Science in Ilorin West Local Government Area of Kwara State. Although preparatory homework has theoretical benefits, limited empirical research has examined its impact specifically within this context.

Previous studies present mixed findings. Some papers (Brown & Dellinger, 2012; Johnson *et al.*, 2015) reported positive associations between homework completion and academic achievement. Conversely, some papers found that while homework generally correlates with achievement, the overall effect size is modest. Local research revealed a significant positive relationship between preparatory homework and performance in Mathematics and English within Nigerian schools (Ibrahim & Abdullahi, 2019).

Given these mixed findings, further investigation is needed to determine the specific effect of preparatory homework on pupils' academic performance in Basic Science in Ilorin West Local Government Area. Understanding this relationship can inform targeted interventions and policy decisions aimed at improving science education outcomes across public and private schools.

Homework is a widely utilized instructional strategy; its impact on academic performance in Basic Science among pupils in Ilorin West remains understudied. Therefore, there is a need to investigate the relationship between preparatory homework and pupils' academic performance in Basic Science in this specific geographical area. Despite the potential benefits of preparatory homework in enhancing students' learning outcomes, the extent to which it influences pupils' academic performance in Basic Science in Ilorin West Local Government Area remains unclear. The specific factors associated with preparatory homework, such as the nature of assignments, variation in school types, availability of resources, and teacher support, have not been extensively examined in this context. Therefore, there is a gap in the understanding of how preparatory homework impacts pupils' academic performance in Basic

Science, particularly in the specific context of Ilorin West Local Government Area. This study, therefore, examined the effect of preparatory homework on pupils' academic performance in basic science in Ilorin West Local Government Area of Kwara State.

The following null hypotheses were formulated for this study; the decision was taken at the 0.05 level of significance:

- (i) H01: There is no significant effect of Preparatory Homework on Pupils Academic Performance in Basic Science in Ilorin West Local Government Area of Kwara State.
- (ii) H02: There is no significant interaction effect of gender on pupils' Academic Performance in Literacy in Ilorin Metropolis of Kwara State.
- (iii) H03: There is no significant interaction effect of Preparatory Homework, gender, and school type on Pupils Academic Performance in Basic Science in Ilorin West Local Government Area of Kwara State.

2. METHODS

The study adopted a pretest–posttest control group quasi-experimental design. This design was considered appropriate because intact Primary Five classes were used in order to avoid disruption of regular classroom instruction. A $2 \times 2 \times 2$ factorial design was employed to test the null hypotheses. The first factor consisted of the treatment condition (experimental and control groups), the second factor was gender (male and female), and the third factor was school type (public and private).

A simple random sampling technique was used to select the participating schools. Two schools were assigned to the experimental group, while two schools were assigned to the control group.

The instruments used for the study were the Basic Science Achievement Test (BSAT) and the Preparatory Homework Guide (PHG). The PHG served as the stimulus instrument and was validated by lecturers in the Department of Early Childhood and Primary Education. The BSAT, which served as the response instrument, was also subjected to validity and reliability testing. The test items were developed from the Primary Five Basic Science scheme of work and consisted of twenty (20) multiple-choice questions.

Data collected from the administered tests were analyzed using descriptive statistics (frequency counts, means, and percentages) and inferential statistics (Analysis of Covariance, ANCOVA). All hypotheses were tested at the 0.05 level of significance.

3. RESULTS AND DISCUSSION

3.1. Ho1

There is no significant effect of preparatory home on pupils' academic performance in Ilorin West Local Government, Kwara State. **Table 1** data shows the significant effect of preparatory homework on pupils' academic performance in Ilorin West Local Government, Kwara State. The finding revealed that there was no significant effect of preparatory homework on pupils' academic performance in Ilorin West Local Government, Kwara State ($F(1; 59) = 0.45, P > 0.05$). The hypothesis is therefore not rejected in light of the result since the significance value (0.832) is more than 0.05. This implies that preparatory homework has no significant effect on pupils' academic performance.

Table 1. Summary of Analysis of Covariance (ANCOVA) showing the significant effect of practice home on pupils' academic performance in Ilorin West Local Government, Kwara State.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	22.402a	4	5.601	1.332	0.270
Intercept	698.594	1	698.594	166.154	0.000
Pre_Test	0.998	1	0.998	0.237	0.628
Treatment	0.190	1	0.190	0.045	0.832
Gender	8.760	1	8.760	2.083	0.155
Treatment * Gender	15.778	1	15.778	3.753	0.058
Error	231.248	55	4.205		
Total	15903.000	60			
Corrected Total	253.650	59			

a. R Squared = .088 (Adjusted R Squared = .022)

3.2. Research Hypothesis Two

There is no significant effect of gender on the academic performance of underperforming pupils in Ilorin West Local Government, Kwara State. Data in **Table 1** revealed the effect of gender on pupils' academic performance in Ilorin West Local Government, Kwara State. The finding shows that there was no significant effect of gender on pupils' academic performance in Ilorin East Local Government, Kwara State ($F(1; 59) = 2.083$; $P > 0.05$). The hypothesis is therefore not rejected in light of the result since the significance value (0.155) is greater than 0.05. This implies that gender had no significant effect on pupils' academic performance.

3.3. Research Hypothesis Three

There is no significant effect of preparatory homework and gender on pupils' academic performance in Ilorin West Local Government, Kwara State. Data in **Table 1** revealed the effect of practice homework and gender on pupils' academic performance in Ilorin West Local Government, Kwara State. The finding shows that there was no significant effect of practice homework and gender on pupils' academic performance in Ilorin West Local Government, Kwara State ($F(1; 59) = 3.753$; $P > 0.05$). The hypothesis is therefore not rejected in light of the result since the significance value (0.058) is greater than 0.05. This implies that preparatory homework and gender had no significant effect on pupils' academic performance.

3.4. Discussion of findings

The study conducted in Ilorin West Local Government Area of Kwara State revealed no significant effects in several aspects of pupils' academic performance. Specifically, the findings showed that preparatory homework had no significant effect on pupils' academic achievement. This implies that assigning homework intended to prepare students for upcoming lessons did not produce a statistically significant improvement or decline in performance. This result contradicts the findings of some papers, who reported that students who consistently engage in preparatory homework tend to perform better academically. Similar positive findings with some papers.

The study also revealed no significant effect of gender on pupils' academic performance. This finding aligns with some papers, who reported no significant difference between boys and girls in performance on energy conservation tasks. However, it contradicts with some

papers, who found that girls performed better than boys in conservation-of-weight tasks. Furthermore, the interaction effect between preparatory homework and gender was not statistically significant. This indicates that the combined influence of homework practice and gender did not produce meaningful differences in academic outcomes.

4. CONCLUSION

The study concludes that preparatory homework and gender do not significantly influence pupils' academic performance in Ilorin West Local Government Area. These findings challenge common assumptions regarding the effectiveness of homework and gender-based performance differences within this context. Educational stakeholders should therefore consider adopting broader instructional strategies that address multiple factors influencing academic achievement. Further research is recommended to explore additional variables that may affect pupils' performance in Basic Science.

Based on the findings, the following recommendations are proposed:

- (i) Teachers should focus on the quality rather than the quantity of preparatory homework, ensuring that assignments are meaningful, engaging, and appropriate to pupils' needs and abilities.
- (ii) Curriculum designers and developers should integrate well-structured preparatory homework strategies that align with learning objectives.
- (iii) Homework tasks should be tailored to pupils' interests, needs, and academic levels to avoid unnecessary complexity.
- (iv) Teachers, curriculum developers, and supervisors should give greater attention to the strategic implementation of preparatory homework in instructional planning.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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