



Short Communication

Effect of PowerPoint Instructional Package on Secondary School Students' Academic Achievement in Social Studies in Njikoka LGA, Anambra State, Nigeria

Obiageli Ifeoma Ikwuka^{1*}, Robert Onimisi¹

¹Department of Educational Foundations, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

*Correspondence to: Obiageli Ifeoma Ikwuka, PhD, Associate Professor, Department of Educational Foundations, Nnamdi Azikiwe University, PMB 5025, Sir Emeka Offor Rd, Ifite-Awka, 420116, Anambra State, Nigeria; Email: oi.ikwuka@unizik.edu.ng

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Abstract

Objective: Over the years, there has been a decline in academic achievement in social studies among students, both in external and internal examinations. This decline may be attributed to the continued reliance of social studies teachers on conventional teaching methods. Therefore, this study aimed to investigate the impact of PowerPoint Instructional Package (PIP) on the academic achievement of secondary school students in social studies in Njikoka Local Government Area (LGA), Anambra State, Nigeria.

Methods: The study utilized a quasi-experimental design with a 2×2 factorial design. The sample consisted of 81 Junior Secondary School two students, including 42 males and 39 females, who were studying social studies in Njikoka LGA. A co-educational school was selected for the study, and intact classes were used. The data collection instrument, social studies Achievement Test, was validated by three experts, and its reliability coefficient was established as 0.78 using the Kuder-Richardson 20 method. Data analysis involved calculating means and conducting an Analysis of Covariance.

Results: The result revealed a significant difference on the mean achievement scores of students taught social studies using PIP and those taught using conventional teaching favoring PowerPoint (PPT) group. Gender had no significant effect in the achievement of students in social studies, indicating that the use of PPT is gender-friendly. Additionally, there was a significant interaction effect between teaching method and gender on students' achievement.

Conclusion: The use of PIP had a positive impact on students' achievement in social studies. As a recommendation, it is suggested that secondary school administrators organize seminars and workshops to train social studies teachers in the effective use of PIP for instructional delivery.

Keywords: PowerPoint instructional package, social studies, conventional teaching, achievement, students

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1 INTRODUCTION

Social studies is one of the compulsory subjects offered in junior secondary schools in Nigeria. Olayinka^[1] defined social studies as a study of various aspects of human life, aiming to enable individuals to lead fulfilling and accomplished lives. It equips students with the necessary knowledge, skills, and attitudes to establish positive interpersonal relationships within their environment. Moreover, it facilitates people's comprehension of their surroundings and how they are influenced by them. Ikwuka and Ezigbo^[2] regard effective teaching of social studies as a crucial determinant of whether a society will develop democratic attitudes, values, problem-solving and decision-making skills, which contribute to individuals' productivity and active participation. In this study, social studies is defined as a subject designed to imbue in individuals the essential knowledge, values, skills, belief and attitudes necessary for a comprehensive understanding of human problems within their environment and how to address these challenges as responsible and engaged citizens.

In Nigeria, there is a major concern about students' academic performance in social studies, as evidenced by their tests and examinations grades^[3]. Over the years, there has been a decline in expectations of academic achievement, primarily due to the poor educational outcomes of students in social studies, both in external and internal examinations, which reflect their performance. It is of great concern that most social studies teachers still rely heavily on the conventional method to impart knowledge^[4]. Some social studies teachers in Njikoka Local Government Area (LGA), Anambra State frequently employ the conventional teaching method, which involves using textbooks, chalk and chalkboards. Conventional teaching is a teacher-centered approach where the teacher assumes control of the classroom, delivering instruction and taking full responsibility for the learning environment. Dania^[4] added that this teaching method is theoretical and teacher-directed, lacking constructive or activity-based learning. The method is often perceived as dull, unclear, and reliant on rote memorization for instructional delivery. Ikwuka and Adigwe^[5] further pointed out that under this method, the teacher is viewed as the sole knowledge provider, heavily relying on textbooks as the sole instructional material, conveying facts and procedures to students, and rarely encouraging them to engage in practical and creative learning activities. The conventional method of teaching has been largely criticized for suppressing interest and creativity in students, thereby limiting academic achievement^[6,7]. For Ikwuka et al.^[8], this method tends to be authoritative, resulting in passive learners across various subjects, including social studies. To address this situation, there is need to explore innovative methods of teaching, such as the use of PowerPoint Instructional Package (PIP), to enhance teaching and learning processes.

Defining PIP can be challenging as different scholars have

provided varying definitions based on their perspectives. Daniel et al.^[9] described PowerPoint (PPT) package as a teaching technique or presentation predominantly used by instructors who use LCD projectors with a laptop to display lessons on a wall and supported by oral description and explanation. PPT PIP serves to assist teachers in presenting information, capture students' attention, enhance the success of lessons, and improve students' achievement^[10,11]. PPT Package therefore is seen as the use of Microsoft software in creation of visual slides or graphics that contain information on a lesson which arouse the attention of students during instruction. The researchers anticipate that appropriate application of PIP in teaching social studies could lead to improved student achievement.

Several studies have examined the impact of PIP on students' achievement. For example, Saini et al.^[12] carried out a study on the effect of PPT and conventional lecture on nursing students' achievement. The findings revealed that the use of conventional chalk and talk method for teaching had a more positive long-term impact on students' success in nursing compared to PIP. Similarly, Dahunsi^[13] conducted comparative study on PPT presentations and conventional lecture methods in material understandability effectiveness. The findings of the study revealed that the mean score for lecture method is higher than that for PPT in material understandability. In contrast, Nnamani and Oyibe^[14] carried out a study on the effectiveness of Microsoft PPT on the academic achievement of students in FCT, Nigeria. The findings of the study revealed that the experimental group significantly performed better than the control group due to their exposure to Microsoft PPT. However, it is worth noting that studies examining the effects of this PIP on students' achievement in social studies are limited and have not yielded consistent and conclusive positive results. Moreover, research investigating the impact of PIP on students' achievement based on gender has also produced inconsistent findings.

Gender differences in students' academic achievement have been extensively explored, resulting in numerous empirical studies. Oyibe and Nnamani^[15] found that females outperform males in social studies. Conversely, Olibie and Ezeoba^[3] indicated that there are some differences in the academic achievement between male and female students, while Ikwuka et al.^[10] and Dania^[4] did not find any significant difference between male and female students' academic achievement. Given the inconclusive results, regarding the effect of PIP on students' achievement in relation to gender, this study aims to determine the impact of PIP on academic achievement in social studies among Nigerian junior secondary students.

1.1 Research Questions

(1) What are the mean achievement scores of secondary students taught social studies using PIP and those taught using conventional teaching?

(2) What are the mean achievement scores of male and female students taught social studies using PIP and those taught using conventional teaching?

1.2 Hypotheses

(1) There is no significant difference between the mean achievement scores of secondary students taught social studies using PIP and those taught using conventional teaching.

(2) There is no significant difference between the mean achievement scores of male and female students taught social studies using PIP and those taught using conventional teaching.

(3) There is no significant interaction effect of gender and teaching methods on the mean achievement scores of secondary school students in social studies.

2 METHOD

2.1 Study Design

This study adopts a quasi-experimental design. Specifically, the non-randomized pre-test post-test control group design with a 2 by 2 factorial was employed. This design was adopted because variables were manipulated, and intact classes were used for the experiment.

2.2 Study Population

The population of this study comprised 955 students from all 11 public Junior Secondary School two (JSS 2) students in Njikoka LGA of Anambra State, Nigeria. JSS 2 students were used for the study as this is the grade level where the major concepts of social studies are taught.

2.3 Sample Size and Sampling Technique

The total sample size for the study was 81 JSS 2 students (42 males and 39 females) taking social studies. In selecting the schools that participated in the study, simple random sampling technique was used to select the two schools from the 11 public junior secondary schools. Each group (experimental and control) consisted of one intact class. The experimental group comprised 43 students (22 males and 21 females), while the control group comprised 38 students (20 males and 18 females).

2.4 Instrument for Data Collection

The instrument for data collection was the social studies Achievement Test (SSAT). The SSAT consisted of 20 items obtained from Junior School Certificate Examination past questions from 2018-2021. These items covered four topics in the JSS 2 social studies curriculum, which were the focus of the study. A table of specifications was used to determine the lower and higher levels of Bloom's taxonomy measured in the pool of 20 multiple-choice objective test items used in the SSAT. The SSAT was validated by three experts from Nnamdi Azikiwe University, Awka. The reliability of the SSAT was determined using the Kuder-Richardson 20 (KR-20) formula. Since the items were

scored dichotomously (right or wrong), the KR-20 formula was deemed appropriate. The instrument was administered once to 20 respondents outside the study area to test the reliability coefficient, which was found to be 0.78.

2.5 Experimental Procedure

The two participating teachers (research assistants) from the sampled schools teaching social studies in JSS 2 class, received one week of training. The experimental group teacher was given PPT lesson plan, detailed explanations on how to use PPT for instruction, how to incorporate PPT techniques into the lesson and the general requirements of the research. The control group teacher was briefed on the general requirements of the research since they were instructed to use a conventional lesson plan. The topics covered in the study included Conditions for marriage, Effects of lack of readiness on marriage, Group behaviour, Characteristics and benefits of group behaviour. By the end of the training, a micro-teaching session was conducted to ensure that the participating teachers had mastered the expected instructional technique. Before the commencement of the experiment, the assignment of the two chosen schools to experimental and control groups was determined by flipping a coin.

The treatment lasted for 6 weeks and comprised four stages. The teaching session followed the regular school timetable, allocating one double period (80m) and one single period (40m) for social studies each week. These periods were used to teach the students over four weeks, with each topic lasting one week.

In the first week, both the control and experimental groups took a pre-test using the SSAT to assess their prior knowledge of the concepts covered in the study. From 2nd to 5th week, the experimental group were taught using PIP while the control group were taught using conventional teaching. This arrangement continued for four weeks. The 6th week was designated for the post-test, where the students were given the rearranged version of SSAT. Throughout the teaching period, regular supervision was provided by the researchers to the research assistants. The answer scripts were collected, marked, and scored. Each of the 20 questions on the SSAT was scored out of 5 marks, resulting in a total of 100 marks. Measures such as experimental bias, teacher variables, the Hawthorne effect, initial group differences, and the effect of the pre-test on the post-test were implemented to control extraneous variables that may influence the study.

The research questions were addressed using mean and standard deviation while Analysis of Covariance (ANCOVA) was used to test the null hypotheses at a significance level of 0.05. ANCOVA was to eliminate any initial differences in the entry abilities of the participants. The decision rule was as follows: if the p-value is less than

Table 1. Mean Achievement and Standard Deviation Scores of Students Taught Social Studies using PIP and Those Taught using Conventional Teaching

Teaching Approach	Pre-test			Post-test			Mean Gain Score
	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD	
PowerPoint	43	53.40	6.32	43	75.40	8.68	22.00
Conventional	38	54.55	6.70	38	66.18	8.76	11.63

Table 2. Mean Achievement and Standard Deviation Scores of Male and Female Students Taught Social Studies with PIP and Those Taught using Conventional Teaching

Teaching Approach	Gender	Pre-test			Post-test			Mean Gain Score
		<i>n</i>	Mean	SD	<i>n</i>	Mean	SD	
PowerPoint	Male	22	52.59	5.78	22	74.36	6.05	21.77
	Female	21	54.24	6.88	21	75.67	10.90	21.43
Conventional	Male	20	55.50	6.94	20	68.00	9.52	12.05
	Female	18	53.50	6.45	18	64.17	7.59	10.67

Table 3. Summary of ANCOVA of Students' Mean Achievement Scores in Social Studies by Teaching Method

Source	SS	Df	MS	F	P
Pre-test	858.89	1	858.89	13.02	0.00
Group	1,769.23	1	1,769.23	26.82	0.00
Error	5,144.82	78	65.95		
Total	414,332.00	81			

Table 4. Summary of ANCOVA of Students' Mean Achievement Scores in Social Studies by Gender

Source	SS	Df	MS	F	P
Pre-test	656.10	1	656.10	7.42	0.00
Gender	17.85	1	17.85	0.20	0.65
Error	6,896.20	78	88.41		
Total	414,332.00	81			

0.05, the null hypothesis is rejected, and if the p-value is greater than 0.05, the null hypothesis is not rejected.

3 RESULTS

The data in Table 1 show that students taught social studies with the PIP had pre-test and post-test mean scores of 53.40 and 75.40 with the mean gain score of 22.00. In comparison, students taught using conventional teaching had a mean pre-test score of 54.55, a mean post-test score of 66.18, and a mean gain score of 11.63. The mean post-test score and mean gain score of students taught with PIP were higher than those of students taught using conventional teaching.

The data in Table 2 show the pre-test and post-test mean achievement scores of male and female students taught social studies with PIP. The male students had pre-test and post-test mean scores of 52.59 and 74.36, while the female students had pre-test and post-test mean scores of 54.24 and 75.67. The mean gain scores for male and female students were 21.77 and 21.43, respectively. This indicates that male students taught social studies with PIP achieved higher post-test mean scores and had a greater mean gain score than their female counterparts.

The data in Table 3 show that there is a significant difference in mean achievement scores of students taught

social studies using PIP compared to those taught using conventional teaching Method ($F(1,78)=26.82, P<0.05$). The null hypothesis of no significant difference between the two groups was therefore rejected.

The data in Table 4 show that there is no significant difference in mean achievement scores of male and female students taught social studies using PIP ($F(1,78)=0.20, P>0.05$). The null hypothesis of no significant difference between the two groups was therefore not rejected.

The data in Table 5 show that there is no significant interaction between the mean achievement scores of male and female students taught social studies using PIP and those taught using conventional teaching method ($F(1,76)=0.83, P>0.05$). The null hypothesis was therefore not rejected. This interaction was depicted in Figure 1.

4 DISCUSSION

4.1 Effects of PIP and Conventional Teaching on Students' Achievement in Social Studies

The findings of the study revealed that students taught using PIP achieved significantly better than those taught using conventional teaching methods. The significant difference may be attributed to the visual representation provided by PIP, as opposed to the talk and chalkboard teaching in conventional methods. The use of graphics and

Table 5. Summary of ANCOVA of Students' Mean Achievement Scores in Social Studies by Gender and Teaching Methods

Source	SS	Df	MS	F	P
Pre-test	780.22	1	780.22	11.70	0.00
Gender	27.98	1	27.98	0.42	0.51
Teaching methods	1,789.95	1	1,789.95	26.85	0.00
Gender*Teaching methods	55.53	1	55.53	0.83	0.36
Error	5,066.03	76	66.65		
Total	414,332.00	81			

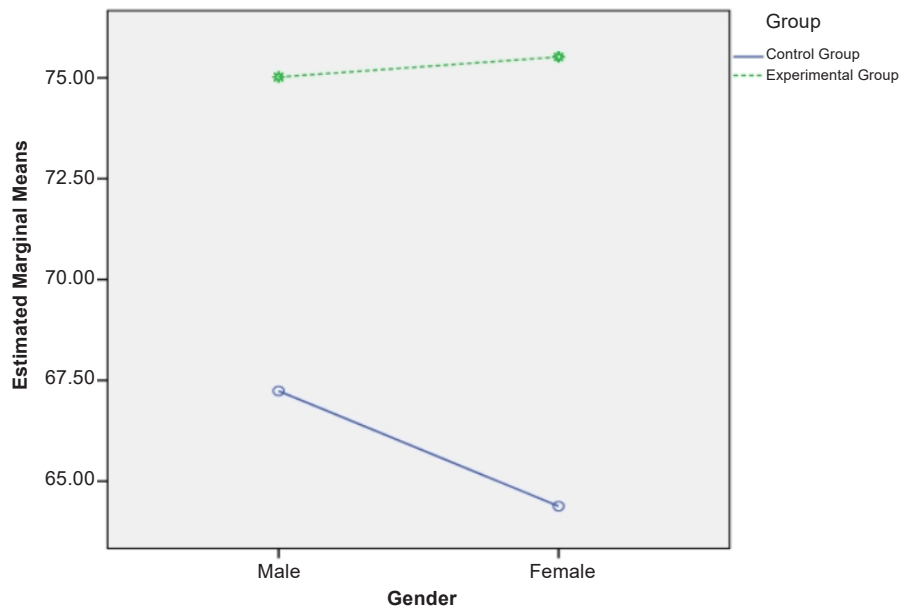


Figure 1. Interaction effect of gender and teaching method on achievement.

video in PIP may enhance students' learning experience and improve their achievement. The results of this study supported the previous findings of Dahunsi^[13] who reported that the experimental group significantly performed better than the control group when exposed to Microsoft PPT.

4.2 Effects of PIP on Students' Achievement Relative to Gender

The findings of this study indicated that male students taught using PIP achieved slightly higher than their female counterparts. This could be attributed to the more favorable disposition of male students towards the innovative nature of PIP compared to female students. However, no significant difference was found in the mean scores of male and female students taught social studies using PIP, indicating that both genders found the novel teaching method stimulating. Therefore, effective learning can be achieved across gender lines through exposure to PIP.

4.3 Interaction Effect of Mode of Instruction

The interaction between mode of instruction and

gender on students mean achievements scores in social studies was found to be significant. This is because, the male and female students taught with PIP achieved higher than the male and female students in conventional teaching. This may be because male and female students utilizing PIP tend to be more innovative, imaginative and socially inclined to societal principles and way of life. These findings align with the results reported by Oyibe and Nnamani^[15] who observed that the mean achievement score of female secondary school students taught by male teachers was higher, while the mean achievement scores of male students taught by female social studies teachers were also higher. However, this disagrees with the findings of Ikwuka et al.^[10] and Dania^[4] who opined that gender had no significant effect on students' achievement in CRS and social studies.

5 CONCLUSION

Given the significant mean gain recorded in students mean scores when PIP was used, the researchers concluded that the use of PIP significantly and positively enhanced

students' academic achievement in social studies. PIP therefore proved to be an effective alternative teaching approach for secondary school students. Additionally, gender was not a significant factor on the students' achievement in social studies using PIP.

6 RECOMMENDATIONS

(1) The following recommendations are made based on the findings: Secondary school administrators should organize seminars, workshops and conferences to train social studies teachers in the use of PIP for effective teaching and learning. This will improve students' academic achievement in the subject. (2) Secondary school administrators should make effort to provide adequate infrastructure such as computers and projectors in schools, enabling teachers to prepare necessary materials for effective PIP. This will enhance students' achievement in the subject. (3) The curriculum planning body of Anambra State Ministry of Education should restructure the secondary school curriculum to incorporate PIP as a medium of teaching. This will promote better understanding of the subject among students and enhance their academic achievement.

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Conflicts of Interest

The authors declared no conflict of interest.

Author Contribution

Ikwuka OI and Onimisi R designed the study. Ikwuka OI supervised the work. Onimisi R performed the data analysis. Onimisi R and Ikwuka OI drafted the manuscript, contributed to writing the article, read and approved its submission.

Abbreviation List

ANCOVA, Analysis of covariance
JSS 2, Junior secondary school 2
KR-20, Kuder-richardson 20
LGA, Local government area
PIP, PowerPoint instructional package
PPT, PowerPoint
SSAT, Social studies achievement test

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