



Effects of Cinematography and Photography on Students' Learning Outcomes in Computer Studies in Ekiti State, Nigeria.

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Abstract

This study investigated the effects of cinematography and photography on junior secondary school students' interest and academic performance in computer studies in Ekiti State, Nigeria. Employing a pretest-posttest control group quasi-experimental design, the research sampled 240 year II students from two schools using multistage and proportional stratified random sampling techniques. The study utilized two research instruments: Computer Achievement Test (CAT) and Students' Interest in Computer Studies (SICS), with reliability coefficients of 0.70 and 0.69, respectively. The hypotheses were tested using t-test at 0.05 level. The finding revealed that there is significant differences between the experimental and control groups in both achievement and interest, favoring the experimental group. The study recommended that the integration of cinematography and photography in teaching computer studies to enhance effectiveness in teaching and learning and teachers should incorporate photography and cinematography examples in Computer Studies lessons, such as using photographs to explain hardware components or video clips to demonstrate software use.

Keywords: Students' Interest, Academic Performance, Computer Studies, Cinematography and Photography.

1. Introduction

The role of cinematography and photography has become increasingly significant in enhancing the learning experience and academic performance of students, specifically in the field of computer studies. With the advancement of technology, visual aids have become an integral part of teaching and learning, enabling educators to engage students in a more interactive and immersive manner. Cinematography and photography can effectively capture complex concepts and abstract ideas, making them more accessible and understandable to students. The use of visual aids can also help to increase students' motivation, engagement, and participation, thereby improving students' attitude towards the learning of computer studies leading to improved academic performance (Adegboyega, et al 2020).

The rapidly evolving field of computer studies demands innovative pedagogical approaches to foster deep understanding, learning interest, retention, and application of complex concepts. As such, many students struggle to grasp abstract concepts, leading to decreased interest and poor academic performance.

Interest is an individual's tendency to engage in and enjoy a particular activity, subject, or field of study. It is often considered a crucial factor in determining academic achievement and educational outcomes. It can also be thought of as a psychological state characterized by a combination of enjoyment, motivation, and value for a particular activity (Hulleman & Harackiewicz, 2021). It can be viewed as a type of intrinsic motivation that arises from a student's inherent curiosity and desire to learn. When students are interested in a subject, they are more likely to be engaged, focused, and motivated to learn. Interest can be influenced by the learning environment and instructional strategies used by teachers.

Academic performance is the level of achievement and progress that students demonstrate in their studies, typically measured by their grades, test scores, and other assessments. It is the level of achievement or success that a student demonstrates in their educational pursuits. Also, it encompasses various aspects of a student's academic journey, including their grades, test scores, attendance, and overall academic progress (Adegboye & Akintunde, 2022). Academic performance is a measure of how well a student is doing in relation to their academic goals and expectations.

Despite an increasing interest in technology and computer literacy among students, there remains a significant gap in performance outcomes. Adegoyega et al, (2020) asserted that many students in Ekiti State often lack access to basic computer resources and trained instructors, which adversely affects their understanding and skills acquisition in computer studies. Moreover, the curriculum often lags behind contemporary technological advancements, further contributing to students' challenges in comprehending key concepts. Several factors contribute to the poor academic performance of students in computer studies, including socioeconomic status of parents, teaching strategies, students' involvement in all social vices and



parental involvement. Students from lower socioeconomic backgrounds face barriers such as inadequate learning materials and insufficient exposure to practical computer skills. Teaching strategies employed in classrooms often lean towards rote learning rather than practical, hands-on experiences, which diminishes students' ability to engage with the subject critically. Also, limited parental involvement and support negatively influence students' motivation and academic success, with many parents lacking the technological knowledge to assist their children effectively in their studies (Olawole & Ajayi, 2022).

Oloyede, et al (2023) averred that conventional method of teaching as it affects students' interest and academic performance in computer studies, various stakeholders must collaborate to enhance the teaching and learning environment for computer studies in Ekiti State by integrating modern technologies into the curriculum, providing continuous professional development for teachers, and increasing access to resources for students. Such initiatives can foster a more engaging and effective learning atmosphere. Additionally, community programs aimed at educating parents about technology can significantly enhance their ability to support their children's learning endeavors. This multi-faceted approach may help to bridge the performance gap and equip students with the necessary skills for the digital age.

Cinematography is the art and technology of motion picture photography, which involves the process of capturing live-action footage or animation on film or video. This includes the camera angles, lighting, and other visual elements that help to tell a story (Ray, 2019). Photography is the art, practice, and technique of creating permanent images by capturing light using a camera. It involves the use of a camera, lenses, and other equipment to record and preserve moments, scenes, and subjects on film or digital media (Jimoh & Ibraheem 2022).

Cinematography and photography can enhance teaching and learning by providing visually engaging content that captures students' attention, aiding in the retention of information by creating memorable visual associations, facilitating the exploration of complex concepts through visual representation, enabling the documentation and analysis of real-world phenomena, supporting diverse learning styles by catering to visual learners, and fostering creativity and critical thinking as students create their own visual projects and narratives (Jimoh & Ibraheem, 2022). The use of cinematography and photography significantly increased students' interest in learning and improved their academic performance. It is an effective way to engage students and improve their understanding of complex scientific concepts specifically, computer studies (Adeyemi & Adebayo, 2021).

Computer studies is the systematic study of computers and computational systems. It encompasses a range of subjects related to the theory, development, and application of computer technology to solve problems. It is also the exploration of the theoretical foundations of computing, including algorithms, data structures, and the principles of computer programming (Sweeney, 2020). Computer studies is the interdisciplinary study of computers, data structures, algorithms, and their practical applications across various domains. It is the systematic examination of computer systems, software development, and human-computer interaction, aimed at nurturing skills requisite for the digital era Amadi & Anekwe (2023). Junior secondary school students are students who are typically in the age range of 11 to 15 years, attending school at the lower secondary level, which serves as a transition from primary education to upper secondary education. It encompasses those individuals enrolled in the JSS classes, forming a crucial segment of Nigeria's educational system as they prepare for higher levels of learning. Also, it refers to those learners in JSS 1 to JSS 3, usually aged between 11 and 15 years, who are acquiring foundational knowledge in various subjects.

Cognitive load theory by Sweller (1988) posits that the amount of information and the way it is presented can significantly impact learning outcomes. Effective cinematography and photography can help reduce extraneous cognitive load by presenting information in a clearly structured and visually engaging manner. This can enhance students' understanding, increase interest and retention of computer studies content, thereby improving their academic performance. Multimedia learning theory by Mayer (2001) emphasizes that people learn better from words and pictures than from words alone. Using visual elements like cinematography and photography can enhance the learning experience in computer studies by providing contextual information, illustrating complex concepts, and facilitating deeper engagement with the material, which may lead to improved interest and academic performance among students. Dual coding theory by Paivio (1960) suggests that information processed both visually and verbally can enhance learning. Cinematography and photography serve as visual stimuli that can complement textual information in computer studies. By utilizing both visual and verbal representations, students can create mental models that facilitate better understanding and recall, potentially leading to improved interest and academic performance. Engagement theory posits that students learn best when they are actively engaged in meaningful activities. Cinematography and photography can stimulate interest and motivation by making learning experiences more dynamic and relatable. When students see visual representations of computer concepts, they may find the subject more interesting and, as a result, may be more motivated to engage deeply with the material, leading to better academic performance.

2. Statement of the Problem

Academic performance of junior secondary school (JSS3) students in external examinations has emerged as a critical concern for stakeholders in the Nigerian education system. The results from the 2022/2023 JSS3 external examination in Computer Studies, as reported by the Ministry of Education, Science and Technology in Ado-Ekiti, Ekiti State, indicated that only 35% of students achieved a passing grade. This statistics highlighted a substantial deficit in students' academic performance and raises critical questions about the underlying factors contributing to such poor performance. Some of these factors are; Overreliance on traditional lecture methods without the use of instructional materials. Moreover, psychological factors such as test anxiety and lack of motivation among students can further exacerbate academic struggles.

In light of these factors, this study will examine effects of cinematography and photography on the interest and academic performance of junior secondary school students in computer studies in Ekiti State.



3. Objectives of the Study

The main objective of this study is to examine the effects of cinematography and photography on the interest and academic performance of junior secondary school students in computer studies in Ekiti State. The specific objectives of the study are to:

- i. examine the availability of cinematography and photography in the teaching and learning of computer studies;
- ii. examine the utilization of cinematography and photography in the teaching and learning of computer studies;
- iii. examine students' interest in computer studies after the use of cinematography and photography;
- iv. examine the difference if any between the academic performance of students taught with the use of cinematography and photography and those taught with conventional method of teaching computer studies.

4. Research Questions

- i. To what extent are cinematography and photography available for the teaching and learning of Computer Studies?
- ii. To what extent are cinematography and photography utilised in the teaching and learning of Computer Studies?
- iii. What is the level of students' interest in Computer Studies after the use of cinematography and photography in teaching?
- iv. Is there any difference in the academic performance of students taught Computer Studies using cinematography and photography and those taught using the conventional teaching method?

5. Research Hypotheses

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

- i. There is no significant difference between the pre-test achievement mean scores of students in the experimental and control groups in computer studies.
- ii. There is no significant difference between the pre-test students interest in experimental and control groups in computer studies.
- iii. There is no significant difference between the post-test achievement mean scores of students in the experimental and control groups in computer studies.
- iv. There is no significant difference between the post-test students interest in experimental and control groups in computer studies.

6. Methodology

The research design adopted for this study is the pretest post-test, control group, quasi experimental design. There was one experimental group which was exposed to treatment (the use of cinematography and photography) and one control group without the use of cinematography and photography but only the conventional method of teaching. The pretest in the study was used to establish students' prior knowledge of computer studies before the commencement of the experiment while the post-test was used to measure the students' interest and the level of achievement in computer studies in order to ascertain the effects of the treatment.

The pretest-posttest quasi experimental design that was used in this study is considered appropriate by the research because it is capable of assisting to know the effects of cinematography and photography on students' interest and academic performance in computer studies. The design format for the study is represented below:

Pretest – Posttest Control Group

Design $O_1 \times O_2 \text{ int}_1$ (Experimental Group)

$O_3 - O_4 \text{ int}_2$ (Control Group)

Where; O_1 = Observation (learning outcome) from the pretest which is the students' prior knowledge in the topic to be taught (Introduction to Computer Programming) before the use of cinematography and photography (treatment)

X = is the treatment (cinematography and photography)

O_2 = Observation (learning outcome) from the posttest which is the effects of the use of Cinematography and photography on students' academic performance.

int_1 = Students' interest in computer studies of the post test in the experimental group.

O_3 = Observation (learning outcome) from the pretest control group which is the prior knowledge of the students in the topic to be taught before the use of conventional method.

- = no treatment (control group)

O_4 = Observation (learning outcome) from the posttest control group

int_2 = Students' interest in computer studies at posttest in the control group

The independent variables which are the use of cinematography, photography and conventional method. The dependent variables are the academic performance and interest in computer studies.

The population for this study consisted of 4,821 junior secondary school students in year II in public secondary schools in Ekiti State which include 2,645 male students and 2,176 female students from 222 public secondary



schools in Ekiti State (Ekiti State Ministry of Education Science Technology, 2024). The schools comprise both single and co-educational from rural and urban areas.

The sample for this study consisted of 240 junior secondary school students in year II from two schools whose selection was based on the combination of multistage and proportional stratified sampling technique using location of schools and students' socio-economic status as proportional stratification basis. In stage one, two Local Government Areas (LGAs) were selected from the 16 Local Government Areas in Ekiti State. These are Ado LGA and Oye LGA using stratified random sampling technique. In stage two, purposive sampling was used to select from each local government, the school location (state capital and non-state capital) and students socio-economic status (access to electricity, internet connections, parental background, and academic performance). In stage three, stratified random sampling technique was used to select one school per local government area and 120 students per school using number of students in a class for stratification. In stage four, selected schools were purposively assigned into experimental group and control group. For the experimental group, 120 students were sampled and 120 students was selected for control group.

The research instruments used in the study are: Computer Achievement Test (CAT) and students Interest in Computer Studies (SICS). The Computer Achievement Test (CAT); was grouped into two sections. Section A consisted of respondents (students) bio-data such as name of school, school location, parents' occupation and educational background. Section B consisted of 30 multiple choice items which were based on the topics taught under the major content area of the current scheme of work for public junior secondary schools in year II in computer studies subject. A self-prepared marking guide by the researcher was used for marking the answers provided by the respondents.

The students' interest in computer studies (SICS) was used to measure the students' interest in computer studies. The instrument was grouped into sections. Section A consisted of respondents' bio-data such as name of school, school's location, parents' occupation and parents' educational background. Section B consisted of 20 items that was used to measure students' interest in computer studies. The responses were scored as follows: Strongly Agreed (SA)- 4 points, Agreed (A)- 3 points, Disagreed (D)- 2 points and Strongly Disagreed (SD) -1 point.

The validity of the instruments (CAT and SICS) was ensured using face, content and construct validities. The reliability of the instruments was determined through test- retest method. The instruments were administered twice within an interval of two weeks on 20 junior secondary school students in year II which were not part of the sample to be used. The two sets of results were collected and analyzed using Pearson's Product Moment Correlation Analysis. The reliability coefficient of 0.70 and 0.69 were obtained respectively. These values were considered appropriate for the consistency of the instruments.

Research Hypothesis 1: There is no significant difference between the pre-test achievement mean scores of students in the experimental and control groups in computer studies.

In testing the research hypothesis, achievement mean in the experimental and control groups in computer studies were computed and compared. The result is as shown in Table 5.

Table 1: Performance Mean Scores and Standard Deviation of Students in Experimental and Control groups.

Group	N	Pretest		Df	T	P
		Mean	SD			
Experimental	120	44.70	2.54	238	0.355	0.723
Control	120	44.82	2.55			

$p > 0.05$ (Result is not significant)

Table 1 shows that there is no significant difference between pre-test achievement mean scores of students in the experimental and control groups in computer studies ($t(0.355)$, $p = 0.723$). Therefore, the null hypothesis is not rejected.

Research Hypothesis 2: There is no significant difference between the pre-test students' interest in experimental and control groups in computer studies.

In testing the research hypothesis, students interest in experimental and control groups in computer studies before the treatment were computed and compared. The result is shown in Table 2

Table 2: Mean Scores and Standard Deviation of Students in experimental and control groups in computer studies

Group	N	Pretest		Df	t	P
		Mean	SD			
Experimental	120	44.40	4.55	238	0.014	0.989
Control	120	44.42	4.67			



$p > 0.05$. (Result is not Significant)

Table 2 shows that there is no significant difference between the pre-test students' interest in experimental and control groups in computer studies ($t(0.014, p < 0.989)$). The stated hypothesis is therefore not rejected.

Research Hypothesis 3: There is no significant difference between the post-test achievement mean scores of students in the experimental and control groups in computer studies

To test research hypothesis three, post-test mean scores of students in experimental group and those in the control group were computed and compared for statistical significance using t-test at 0.05 level.

Table 3: t-test summary of post-test achievement mean scores of students in the experimental and control groups in computer studies

Group	N	Posttest		Df	t	P
		Mean.	SD			
Experimental	120	14.700	5.491	238	6.255	0.000*
Control	120	13.270	1.275			

* $p < 0.05$ (Result is Significant)

The result in table 3 shows that ($t(6.255), p = 0.000 < 0.05$). Since the p-value is less than 0.05, the hypothesis is not accepted. This implied that, there is significant difference in the post-test mean scores of students in experimental and control groups in computer studies. This implies that the use of Cinematography and Photography instructional package has a positive effect on the academic performance of students in computer studies.

Research Hypothesis 4: There is no significant difference between the post-test students' interest in experimental and control groups in computer studies

To test Hypothesis 4, post-test mean scores of students in experimental group and those in the control group were computed and compared for statistical significance using t-test at 0.05 level. The result is presented in Table 4.

Table 4: t-test summary of Post-test Mean Scores of Students in Experimental and Control

Group	N	Posttest		Df	T	
		Mean	SD			
Experimental	120	18.070	8.137	238	7.758	0.000*
Control	120	15.170	1.408			

* $p < 0.05$

(Result is significant)

The result in Table 4 showed that ($t(7.758), p = 0.000 < 0.05$). Since the p-value is less than 0.05, the hypothesis is thus rejected. This implied that, there is significant difference in the post test mean scores of students in experimental and control groups. This implies that the use of Cinematography and Photography instructional package has a positive effect on students' interest in computer studies.

7. Discussion

The findings of research hypothesis one showed that there is no significant difference between the pre-test achievements mean scores of students in the experimental and control groups in computer studies. This suggests that both the experimental and control groups of students were similar before the treatment began. In other words, it's reasonable to assume that all the two groups have a similar level of prior knowledge. This is in line with Amadi & Anekwe (2023) discovered that students in both groups (experimental /control) have same baseline equivalence before the use of Zoom and video conferencing platforms. The findings of research Hypothesis two showed that there is no significant difference between the pre-test students' interest in experimental and control groups in computer studies. Groups with members who shared a passion for technology tended to perform better academically, promoting a culture of academic excellence. Achukwu et al (2015) found that students' interest in computer studies was significantly correlated with their self-efficacy levels. Olaoye et al (2022) revealed that students from higher socio-economic backgrounds often had better access to computer studies resources, leading to improved interest and performance.

The finding of research hypothesis three revealed that there is significant difference between the post-test achievements mean scores of students in the experimental and control groups in computer studies. The finding agreed with Sola & Okeke (2021) revealed that the use of educational software in teaching computer studies considerably improved students' understanding of complex concepts. Students who utilized interactive tools demonstrated greater retention rates and improved application of knowledge in practical assessments. Also, Sibanda & Mhlanga (2023) reported that students who were well-versed in computer skills not only performed better in examinations but also showed an increased ability to collaborate on group projects, thereby enriching their overall educational experience. Jimoh & Ibraheem (2022) discovered that incorporating cinematography into classroom settings significantly increased students' engagement and motivation. Students exposed to visual and auditory stimuli through cinematic content often performed better in both creative and analytical tasks.

The finding of research hypothesis four showed that there is significant difference between the post-test students' interest in experimental and control groups in computer studies. The finding is agrees with Amadi & Anekwe (2023) they found that students who engaged in computer studies alongside Video conferencing platforms reported a higher level of preparedness for future careers in creative industries. The blending of technical skills with visual expression is becoming increasingly important in the job market, preparing students for diverse career opportunities. Munyori &



Kavita (2023) highlighted that teaching students to analyze and create visual content, particularly through photography and cinematography, resulted in improved communication skills and heightened awareness of visual media in society.

8. Conclusion

From the result of the study, it could be concluded that the use of cinematography and photography helps to increase students' motivation, engagement, and participation, thereby improving students' attitude towards the learning of computer studies leading to improved academic performance. Also, cinematography and photography enhanced teaching and learning by providing visually engaging content that captures students' attention, aiding in the retention of information by creating memorable visual associations, facilitating the exploration of complex concepts through visual representation, enabling the documentation and analysis of real-world phenomena, supporting diverse learning styles by catering to visual learners, and fostering creativity and critical thinking as students create their own visual projects and narratives. The use of cinematography and photography significantly increased students' interest in learning. The use of cinematography and photography supports diverse learning styles and encourages collaborative learning, creativity and critical thinking among students. It also aids teachers in delivering lessons more effectively and efficiently.

9. Recommendations

Based on the findings of this study, the following recommendations were made.

- i. The use of cinematography and photography should be employed in teaching computer studies schools for its effectiveness in teaching and learning of computer studies.
- ii. The Federal and State Ministry of Education should sponsor teachers for refresher training on design, selection, and utilization of cinematography and photography since this study indicates an enhanced students' academic performance when learners were exposed to cinematography and photography, its application as teaching stratagem should be encouraged among teachers of computer studies at the Junior Secondary School level.
- iii. Professional and research organizations that carryout seminars, workshops and conferences should incorporate themes / topics on cinematography and photography in their re-training programs for teachers at the Junior Secondary School level.
- iv. Schools should create an enabling environment for the acceptability and use of cinematography and photography in order to enhance student's interest and academic performance in computer studies.

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