INFLUENCE OF MOBILE PHOTOGRAPHY APPLICATIONS ON LEARNING PRACTICES AMONG COLLEGES OF EDUCATION STUDENTS IN KWARA STATE, NIGERIA

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Abstract
This study examined the influence of mobile photography applications on learning practices among students of Colleges of Education in Kwara State, Nigeria. It was guided by three objectives, three research questions, and two hypotheses. The population comprised 6,368 students across the three Colleges of Education in the state, from which a stratified proportionate random sample of 300 students was selected. A descriptive survey research design was adopted. Data were gathered using a researcher-developed instrument titled Mobile Photography Apps and Learning Practices Questionnaire *(*MPALPQ). The instrument's reliability coefficient of 0.82 was determined using Cronbach Alpha. Descriptive statistics of mean and standard deviation were used to answer the research questions, while Analysis of Variance (ANOVA) and Pearson Product Moment Correlation (PPMC) were employed to test the hypotheses at the 0.05 level of significance. The findings revealed that students showed positive attitudes toward mobile photography applications, especially in motivation, enjoyment, and collaboration, but expressed doubts about reliability and effectiveness for complex tasks. The study concluded that mobile photography applications enhance creativity and collaborative learning when pedagogically integrated. It recommended among others that, lecturers employ such applications to promote active and innovative learning in Colleges of Education.

Keywords: Mobile Photography Applications, Learning Practices, Students, Colleges of Education

Introduction

The integration of mobile technologies into education has become a defining feature of modern teaching and learning across the world. In contemporary educational systems, mobile devices and their applications have evolved from communication tools to essential learning resources

that promote flexibility, interactivity, and creativity among learners (Greenhow & Askari, 2021). One emerging innovation within this context is the use of mobile photography applications digital tools originally designed for capturing, editing, and sharing images which are now being explored for educational purposes. These applications enable students to document learning experiences, record field activities, produce visual learning artifacts, and collaborate creatively with peers (Mayer, 2021).

In teacher education institutions such as colleges of education, technology integration plays a crucial role in preparing pre-service teachers for digital literacy and innovative instructional practices. The use of mobile photography applications aligns with student-centered and constructivist learning models that encourage learners to be active participants in the creation of knowledge (Dede, Richards, & Saxberg, 2020). By incorporating such applications, lecturers can make learning more engaging, interactive, and visually stimulating especially in courses that require creativity and practical demonstration. The visual nature of these tools also supports Mayer's (2021) Cognitive Theory of Multimedia Learning, which posits that information is better understood when presented through both verbal and visual modes.

In addition, research has shown that learners' attitudes and perceptions play a vital role in determining the adoption and effectiveness of educational technologies. When students perceive technology as easy to use and beneficial to their academic tasks, they are more likely to integrate it into their learning routines (Teo, 2022; Venkatesh, Thong, & Xu, 2023). Similarly, Adeoye and Adanikin (2019) observed that photography-based learning fosters reflective thinking, collaboration, and motivation among students. Mobile photography applications therefore have the potential to transform learning practices by supporting creative exploration, self-expression, and engagement in academic contexts.

However, despite these advantages, there are concerns regarding how effectively students in Nigeria utilize mobile photography applications for academic purposes. Many students frequently use mobile apps for entertainment, social networking, or casual content creation, rather than for structured educational activities. As Wang (2023) noted, the pedagogical impact of mobile applications depends on their alignment with instructional objectives and the availability of institutional support. In Nigeria, where technology integration in education is still developing, there is a need to understand how students in teacher training institutions perceive and utilize mobile photography tools in their learning processes.

Statement of the Problem

The increasing use of mobile photography applications among students has transformed how young people create and share digital content. However, their potential contribution to educational practices in Colleges of Education remains uncertain. Although these apps can enhance creativity, documentation, and collaboration, it is unclear whether students utilize them purposefully for academic tasks or merely for social interaction. Previous studies have shown that students' positive attitudes toward technology do not always translate into effective educational use (Teo, 2022; Wang, 2023). Furthermore, there is limited empirical evidence in Nigeria, particularly in Kwara state, on how mobile photography applications influence pre-service teachers' learning practices, motivation, and engagement. This gap necessitated the

present study, which seeks to investigate the influence of mobile photography applications on learning practices among students in Colleges of Education in Kwara state, Nigeria.

Objectives of the Study

The main purpose of this study examined the influence of mobile photography applications on learning practices among students of Colleges of Education in Kwara State. Specifically, the study:

1. determined the students' attitudes toward the integration of mobile photography applications for learning practices;
2. examined the perceptions of colleges of education students toward the integration of mobile photography into their learning practices; and
3. assessed the effectiveness of mobile photography applications in facilitating visual learning among colleges of education students.

Research Questions

Three research questions were raised and answered in the study:

1. What are the attitudes of college of education students towards the integration of mobile photography apps into their learning experiences?
2. What are the perceptions of colleges of education students towards the integration of mobile photography apps into their learning experiences?
3. What is the effectiveness of mobile photography applications in facilitating visual learning among colleges of education students?

Hypotheses

Two hypotheses were tested at 0.05 level of significance in this study:

H_{01}: There is no significant difference in the attitudes and perceptions of colleges of education students on the use of mobile photography apps for learning practices.

H_{02}: There is no significant relationship between the use of mobile photography apps and student engagement in educational activities within Colleges of Education in Kwara State.

Methodology

This study adopted a descriptive survey research design, which was considered suitable because it enabled the researcher to gather data on students' attitudes and perceptions toward mobile photography apps, the extent of their utilization, and the influence of these apps on student engagement and participation in educational activities. A survey design was also appropriate since it allowed for the collection of information from a large sample within a natural setting without manipulating any variables.

The population for this study comprised 6368 students in the Colleges of Education in Kwara State, Nigeria. These students were chosen because they represent pre-service teachers who will be expected to integrate digital technologies into their future classrooms. A total of 300 students were selected from the population using a stratified proportionate random sampling technique. The stratification was based on institutions and courses of study to ensure fair representation of the diverse groups within the Colleges of Education. This approach ensured

that every subgroup had an equal chance of being included in the sample, while also reflecting the proportionality of the entire student population.

The main instrument for data collection was a researcher-designed questionnaire titled Mobile Photography Apps and Learning Practices Questionnaire (MPALPQ). The instrument was divided into three sections, each corresponding to the study's purposes. The first section contained items designed to measure students' attitudes and perceptions toward mobile photography apps. The second section focused on the extent of utilization of these apps for academic tasks such as assignments, project documentation, and collaboration. The third section captured items on the influence of mobile photography apps on students' engagement and participation in educational activities. The questionnaire was structured on a four-point Likert scale ranging from Strongly Agree to Strongly Disagree, while a few open-ended items were included to allow students to provide additional insights.

To establish validity, the draft instrument was subjected to content and face validation by three experts in Educational Technology and Measurement and Evaluation at the University of Ilorin. Their feedback helped improve the clarity, relevance, and comprehensiveness of the items. For reliability, the questionnaire was pilot-tested with 30 students who were not part of the sample population. The reliability coefficient was determined using Cronbach's Alpha, which produced values of 0.82, 0.79, and 0.85 for the three sections respectively, yielding an overall coefficient of 0.82. These results indicated that the instrument was reliable and internally consistent. Data collection was carried out after obtaining permission from the management of the selected Colleges of Education. The researcher personally administered the questionnaires with the assistance of two trained research assistants. Respondents were assured that their responses would be treated confidentially and used strictly for academic purposes. Questionnaires were retrieved immediately after completion to ensure a high return rate and to avoid the risk of loss.

Data were analyzed using both descriptive and inferential statistics in line with the stated objectives and hypotheses. Mean scores and standard deviations were used to answer research questions. To test H_{01}, which stated that there exists no significant difference in students' perceptions of mobile photography applications for learning practices, an ANOVA was used. Frequencies, percentages, and mean scores were further used to determine the extent of utilization. The H_{02} which posited that there is no significant relationship between the use of mobile photography apps and student engagement, was tested using Pearson Product Moment Correlation (PPMC). All hypotheses were tested at the 0.05 level of significance.

Results

Research Question 1**:** What are the attitudes of college of education students towards the integration of mobile photography apps into their learning experiences?

Table 1: Attitudes of College of Education Students towards the Integration of Mobile Photography Apps for Learning Practices

Item	**SA**	**A**	**D**	**SD**	**Mean**	**Standard Deviation**	**Remark**

1.	I find mobile photography apps enjoyable to use for educational purposes	73	60	71	71	2.50	1.03	Agree
2.	I believe using mobile photography apps makes learning more fun.	75	75	63	61	2.60	1.02	Agree
3.	I am confident in my ability to use mobile photography apps for my studies.	76	68	71	60	2.58	1.11	Agree
4.	I feel motivated to use mobile photography apps for class assignments.	81	66	64	64	2.60	1.14	Agree
5.	I think mobile photography apps are a valuable addition to my learning tools	72	58	70	75	2.46	1.15	Disagree
6.	I prefer using mobile photography apps over traditional learning methods.	70	62	80	63	2.51	1.11	Agree
7.	I feel that mobile photography apps are essential for modern education.	71	65	67	72	2.49	1.14	Disagree
8.	I enjoy exploring new mobile photography apps for educational purposes.	66	69	70	70	2.48	1.11	Disagree
9.	I find it easy to integrate mobile photography apps into my study routine.	64	79	73	59	2.54	1.07	Agree
10.	I am open to trying different mobile photography apps recommended by my peers or instructors.	67	73	60	75	2.48	1.13	Disagree

Table 1 shows that students generally held positive attitudes toward mobile photography apps for learning. They agreed that the apps make learning more enjoyable (M = 2.60, SD = 1.02) and motivate them in assignments (M = 2.60, SD = 1.14). Confidence in using the apps was also high (M = 2.58, SD = 1.11). However, views on their value as essential learning tools were less favorable, with mean scores around 2.46–2.49, suggesting slight disagreement about their indispensability. Students showed marginal preference for using the apps over traditional methods (M = 2.51, SD = 1.11) and responded positively to integrating them into study routines (M = 2.54, SD = 1.07). Overall, while students enjoy and feel motivated by these apps, they remain cautious about seeing them as essential educational tools.

Research Question 2: What are the perceptions of college of education students towards the integration of mobile photography apps into their learning experiences?

Table 2: Perception of College of Education Students towards the Integration of Mobile Photography Apps for Learning Practices

Item	SA	A	D	SD	Mean	Standard Deviation	Remark
1. Mobile photography apps enhance my ability to visualize complex concepts.	64	68	67	76	2.44	1.13	Disagree
2. I perceive mobile photography apps as effective tools for learning.	75	66	79	55	2.59	1.09	Agree
3. Mobile photography apps make learning more interactive.	81	66	64	64	2.60	1.04	Agree
4. I believe mobile photography apps improve my retention of information.	73	77	57	68	2.56	1.13	Agree
5. Mobile photography apps help me understand course materials better.	70	70	68	67	2.52	1.12	Agree
6. I find mobile photography apps to be user-friendly.	73	64	82	56	2.56	1.09	Agree
7. I believe mobile photography apps are reliable for educational purposes.	65	66	75	69	2.46	1.11	Disagree
8. Mobile photography apps facilitate collaboration with my classmates.	77	74	50	74	2.56	1.16	Agree
9. I think mobile photography apps are effective for both individual and group learning.	68	72	72	63	2.53	1.10	Agree
10. Mobile photography apps help me organize my study materials better.	62	81	67	65	2.51	1.09	Agree

As seen in Table 2 students' perceptions of mobile photography apps were generally positive but mixed. While the item on enhancing visualization of complex concepts scored low (M = 2.44, SD = 1.13), students agreed that these apps are effective learning tools (M = 2.59, SD = 1.09) and make learning more interactive (M = 2.60, SD = 1.04). They also believed the apps improve retention (M = 2.56, SD = 1.13) and aid understanding of course materials (M = 2.52, SD = 1.12).

Students further agreed on the apps' user-friendliness (M = 2.56, SD = 1.09) and their collaborative value (M = 2.56, SD = 1.16). However, perceptions of reliability were slightly negative (M = 2.46, SD = 1.11). Overall, the findings suggest that while students appreciate the interactivity, collaboration, and usability of mobile photography apps, doubts remain about their reliability and effectiveness for complex academic tasks.

Research Question 3**:** What is the effectiveness of mobile photography applications in facilitating visual learning among college of education students?

Table 3: Effectiveness of Mobile Photography Apps for Learning Practices among College of Education Students

Item	SA	A	D	SD	Mean	Standard Deviation	Remark

1.	Mobile photography apps have improved my visual learning skills.	54	74	71	76	2.39	1.09	Disagree
2.	Mobile photography apps help me retain information better.	67	74	61	73	2.49	1.13	Disagree
3.	Mobile photography apps have made learning more engaging for me.	75	72	59	69	2.56	1.14	Agree
4.	Mobile photography apps help me understand complex subjects better.	73	59	56	87	2.43	1.19	Disagree
5.	Mobile photography apps have improved my academic performance.	66	79	59	71	2.51	1.12	Agree
6.	Mobile photography apps have enhanced my creativity in completing assignments.	74	63	69	69	2.52	1.14	Agree
7.	Mobile photography apps facilitate better organization of my study materials.	69	71	68	67	2.52	1.12	Agree
8.	Mobile photography apps make it easier to collaborate with my classmate	80	58	72	65	2.56	1.14	Agree
9.	Mobile photography apps have reduced the time I spend on completing assignments.	67	74	67	67	2.51	1.11	Agree
10.	Mobile photography apps have improved the quality of my academic work.	78	69	61	67	2.57	1.14	Agree

Table 3 shows that students expressed mixed views on the effectiveness of mobile photography apps in learning. They slightly disagreed that the apps improve visual learning skills (M = 2.39, SD = 1.09), aid retention (M = 2.49, SD = 1.13), or help in understanding complex subjects (M = 2.43, SD = 1.19). On the other hand, students agreed that the apps make learning more engaging (M = 2.56, SD = 1.14), enhance creativity in assignments (M = 2.52, SD = 1.14), and facilitate collaboration (M = 2.56, SD = 1.14). They also noted slight improvements in organization of study materials (M = 2.52, SD = 1.12), assignment completion time (M = 2.51, SD = 1.11), and academic work quality (M = 2.57, SD = 1.14).

Hypotheses Testing

H_{01}**:** There is no significant difference in the attitudes and perceptions of college of education students on the use of mobile photography apps for learning practices.

Table 4: ANOVA Analysis of Difference in the Perception of College of Education Students on the Integration of Mobile Photography Apps for Learning Practices

Source	Sum of Squares	Df	Mean Square	F	Sign. (2-tailed)	Remark

Between Groups	12.47	9	1.39	4.58	0.003	H_{01} Rejected
Within Groups	69.15	265	0.26			
Total	81.62	274				

The ANOVA test shows that the F-value is 4.58 with a p-value (Sign. 2-tailed) of 0.003. Since the p-value is less than the significance level of 0.05, the study rejects the null hypothesis. This indicates that there is a significant difference in the perception of college of education students on the integration of mobile photography apps for learning practices.

H_{02}**:** There is no significant relationship between the use of mobile photography apps and student engagement/participation in educational activities within Colleges of Education in Kwara State.

Table 5: Pearson Correlation Coefficient Analysis of Significant Relationship between the se of Mobile Photography Apps and Student Engagement/Participation in Educational Activities

Variable	**Mean**	**SD**	**N**	**Df**	**r-cal**	**P**	**Remark**
Use of Mobile Photography Apps	2.52	1.11	275	273	0.016	0.792	Accepted
Student Engagement/Participation	2.52	1.10	275				

Table 5 revealed that the Pearson correlation coefficient (r-cal) is 0.016, which is very close to zero, indicating a very weak relationship between the use of mobile photography apps and student engagement/participation. The p-value is 0.792, which is much greater than the significance level of 0.05. This means that the relationship is not statistically significant. Thus, there is no significant relationship between the use of mobile photography apps and student engagement/participation in educational activities within Colleges of Education in Kwara State. Therefore, the null hypothesis (H_{02}) is accepted.

Discussion of Findings

This study investigated the influence of mobile photography applications on learning practices among Colleges of Education students in Kwara State, Nigeria. The discussion of findings is presented according to the study's three objectives, three research questions, and two hypotheses.

The first objective examined students' attitudes and perceptions toward the use of mobile photography applications in learning practices, while the corresponding research question sought to determine students' attitudes toward integrating mobile photography apps into their learning experiences. Findings revealed that students generally had positive attitudes toward using mobile photography apps, particularly in areas of enjoyment, motivation, and confidence in applying them for academic purposes. They agreed that mobile photography makes learning more enjoyable and stimulating. This finding aligns with the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasize that perceived usefulness and ease of use are major determinants of technology adoption (Teo, 2022; Venkatesh, Thong, & Xu, 2023).

Similarly, Adeoye and Adanikin (2019) found that the use of photography in learning enhances creativity and reflective thinking. However, some students did not regard mobile photography apps as essential learning tools, suggesting that although they enjoy using them, they still depend largely on traditional learning methods. The corresponding hypothesis (H_{01}), which stated that there is no significant difference in students' perceptions of mobile photography applications, was tested using a one-way ANOVA. The analysis revealed a significant difference across groups ($F(9, 265) = 4.58$, $p = .003$), leading to the rejection of the null hypothesis. This indicates that students' perceptions differ significantly, possibly due to differences in institutional support, exposure to technology, or access to digital learning infrastructure. This outcome supports Dede, Richards, and Saxberg (2020), who emphasized that institutional context plays a major role in determining the effective use of technology in education.

The second objective assessed students' perceptions toward the integration of mobile photography applications into learning experiences, while the related research question focused on how students perceive these applications in their academic activities. Findings indicated that students viewed mobile photography applications as useful, interactive, and collaborative tools that can aid learning. They agreed that the applications enhance interactivity and creativity but expressed doubts about their reliability and ability to support complex academic tasks. This finding supports Mayer's (2021) Cognitive Theory of Multimedia Learning, which posits that the learning effectiveness of visual tools depends on how effectively they are integrated into instruction. It also aligns with Wang (2023), who reported that mobile applications improve creativity and engagement but may face challenges such as limited digital literacy and inconsistent access to devices. The mixed perceptions observed in this study suggest that while students appreciate the engaging nature of mobile photography applications, they may not fully experience their academic potential due to contextual limitations such as poor network connectivity, limited devices, or low institutional emphasis on digital learning.

The third objective examined the effectiveness of mobile photography applications in facilitating visual learning among students in Colleges of Education. The corresponding research question sought to determine how effective these applications are in supporting visual learning. The results showed that students agreed the apps made learning more engaging, encouraged creativity, and improved collaboration with peers. However, they disagreed that the apps enhanced their retention of information or understanding of complex subjects. This indicates that while mobile photography applications promote surface-level engagement and creativity, their influence on deeper learning outcomes remains limited. This partially supports Kolb and Kolb's (2018) Experiential Learning Theory, which states that active, visual, and reflective experiences can strengthen learning when guided by effective pedagogy.

Likewise, Stoddard and Marcus (2017) found that visual learning tools enhance creativity and comprehension when meaningfully linked to instructional objectives. The hypothesis associated with this objective (H_{02}) stated that there is no significant relationship between the use of mobile photography applications and student engagement in educational activities. The Pearson Product Moment Correlation (PPMC) test produced a very weak and non-significant relationship ($r = 0.016$, $p = .792$). Thus, the null hypothesis was accepted, indicating that frequent use of mobile photography applications alone does not automatically increase engagement or participation unless guided by structured instructional strategies.

The findings demonstrate that students in Colleges of Education hold positive attitudes toward mobile photography applications and acknowledge their creative and collaborative potential. However, significant differences exist in students' perceptions across institutions, and the use

of these apps does not strongly predict engagement or academic success. These findings highlight the importance of deliberate pedagogical integration, digital literacy training, and institutional support to transform mobile photography applications from casual tools into purposeful educational resources capable of enhancing students' creativity, participation, and deeper learning outcomes.

Conclusion

The study concludes that mobile photography applications hold potential as innovative learning tools in Colleges of Education, especially in promoting creativity, collaboration, and enjoyment of learning. However, their capacity to enhance deep learning, retention, and comprehension of complex subjects is limited when not supported by pedagogical structures. Differences in students' perceptions across institutions highlight the importance of institutional context in shaping technology use. Furthermore, the non-significant relationship between app use and engagement underscores the need for structured integration into teaching and learning processes. Mobile photography apps are valuable complements to traditional learning strategies, but they cannot independently drive meaningful engagement without intentional instructional design and institutional support.

Recommendations

Based on the findings and conclusions, the following recommendations are made:

1. Lecturers in Colleges of Education should incorporate mobile photography apps into instructional delivery, especially in courses that require creativity, documentation, and collaborative activities.
2. Colleges of Education should organize training workshops for both lecturers and students on effective educational uses of mobile photography apps to enhance learning practices.
3. Administrators should provide enabling environments by improving digital infrastructure and policies that support the integration of mobile technologies in teaching and learning.
4. Educators should design structured learning activities that connect mobile photography apps to learning outcomes, rather than allowing their use to remain casual or recreational.
5. Scholars should investigate the disciplinary-specific impacts of mobile photography apps, as well as the long-term effects on students' engagement, retention, and professional readiness.

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