
INFORMATION COMMUNICATION TECHNOLOGY FACILITIES AND ATTITUDE AS DETERMINANT OF STUDENTS' ACHIEVEMENT IN COMPUTER STUDIES

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ABSTRACT

The study examined Information and Communication Technology facilities and attitude as determinants of students' academic achievement in computer studies in junior secondary schools in Shomolu local government area, Lagos mainland of Lagos State, Nigeria. Two research questions and two hypotheses were raised to guide the study. A descriptive survey research design was adopted. The population comprised all computer studies students in fifty secondary schools (both private and government-owned). Two hundred computer studies students in the area were randomly selected using simple random technique. A 15-item structured questionnaire validated by two experts was used for data collected. The data generated were analyzed statistically with frequency, percentage, mean standard deviation and Pearson correlation. Based, on the findings, six recommendations were formed which offered valuable insights for educational institutions, policymakers, and educators seeking to enhance the learning environment and foster improved academic achievement among students

Keyword: Attitude, Information, Communication, Technology, Computer Studies, Achievement

Introduction

Computer studies is an important subject that is taught in many secondary schools around the world. In computer studies classes, students learn how to use computers and other digital technologies to solve problems, create new software and applications, and manage computer

systems. One of the most important aspects of computer studies is Information Communication Technology (ICT). ICT facilities refer to the equipment, tools, and services that are used for communication, information processing, and data management. Examples of ICT facilities include

computers, software, internet connectivity, mobile devices, printers, projectors, and online services such as email and cloud storage. With a wide range of tools and resources that may improve teaching and learning experiences, ICT facilities have become an essential component of modern education (Mtebe & Raphael 2019). It allows for collaborative learning between students and teachers to take place through the provision of communication platforms, access to enormous information databases, and chances for interactive learning.

Educational institutions may utilize ICT to enrich students with skills and knowledge for the 21st century, such that it can facilitate worldwide accessibility to education, educational equality, broadcasting of quality teaching and learning programs, educators' professional growth, and help to obtain more effective educational management (Anohoh, 2015). Hence, accessibility, inclusion, and standards being the key issues of education, can be comfortably addressed through Information Communication Technology (ICT). In classroom of teaching and learning process, the use of ICT is imperative as it gives chance to the instructors and learners to operate, store, control and retrieve data other than to promote self-regulated and active learning (Ali & Muhammad, 2015). ICT-based learning includes an expanded propensity towards collaborative learning among learners and instructors, not just in a specific

classroom. This kind of collaboration is in contrast to the conventional learning environment, for example, distance learning inspires educators and learners to engage in learning even after school time (Ali & Muhammad, 2015). Enakrire & Ocholla, (2017) asserts that the utilization of ICT facilities in computer studies among teachers and students mainly is low. There are many factors responsible for the low utilization of ICT facilities by computer studies teachers to their students which include: low computer literacy, inadequate ICT facilities, unstable power supply, and poor implementation of government policies on ICT (Abubakar, 2016).

In addition, these results complement those of Nwana, Ofoegbu & Egbe (2017), who determined in research that most instructional materials are not being used. Most of the ICT facilities provided by the Federal Ministry of Education to public secondary schools have not been operated on up till the moment of writing this study. Students are usually taught computer studies practical on just the teacher's system without them practicing what they are being taught. Teaching computer studies effectively involves having a smaller number of students with the right attitude to learn, and up-to-date working ICT facilities. Research has also shown that information and communication technology facilities can be used to improve the quality of teaching and learning in secondary schools (Gadzama, 2019). ICT facilities are becoming part of the daily tools for teaching and

learning, thus their use in education is becoming a necessity for knowledge acquisition.

Attitude is a critical determinant of student achievement. Perloff (2016) posits that attitude can be the emotional and mental entities that propel an individual to take any action towards an object or subject. Marcela and Mala (2016), discovered that learner's attitude toward learning is a determinant factor that predicts their academic achievement. They are relatively less stable than personality traits and can be changed across time and situations by virtue of an individual's interaction with the environment. Unfortunately, the performance and attitude of students in computer studies have not been encouraging (Abulude, 2016 & Nja et al; 2017). Students who were taught in an active classroom setting developed more positive attitudes compared to those taught with the traditional method (Momani et al. 2016). Attitudes can be

Research Problem

The academic achievement of students declines year-by-year as a result of inadequate ICT facilities and the attitude of students, low computer literacy by computer teachers, unstable power supply, poor implementation of government policies and attitude of students towards learning. In this study, availability of ICT facilities and attitude of students is considered. The ICT facilities deployed and available in public secondary schools is not sufficient and inadequate for the students, so students have limited access to

negative or positive. A positive attitude towards learning is characterized by a willingness to engage in new ideas and concepts, a curiosity and eagerness to explore new topics, and a belief in one's ability to learn and succeed. A negative attitude towards learning, on the other hand, may be characterized by interest, apathy, or even hostility towards learning, and may be influenced by a range of factors, such as family background, past experiences, cultural or social background, or personal beliefs and values. According to Basil (2021); values are viewed as inner realities of an individual that are reflected through habits, behaviours, beliefs, expectations and relationship. Values lay the foundation for an individual's pattern of thinking and way of acting. An alteration in economic circumstances, cultural environment, lifestyle or combination of these factors can cause value to change and have negative impact on learning outcome (Mathew et. al., 2021).

educational resources, impede their development in ICT skills, and hinder their overall learning experience. Though private secondary school may have adequate ICT facilities and low enrolment but the administrators do not always encourage the use of these ICT facilities due to high cost of maintenance and phobia that the students may damage the facilities. So they prefer to use the facilities for show and decoration in case there is need for inspection or approval by Ministry of education. However, based on these facts students show apathy and unserious attitude toward

learning. However, the study tends to find out how ICT facilities and attitude as determinants of student's achievement in computer studies

- i. To what extent will the availability of ICT facilities affect the academic achievement of students in computer studies?
- ii. To what extent does students' attitude towards learning affect their academic achievement in computer studies?

Research Hypotheses

The following hypotheses are drawn directly from the research questions

- i. H₀₁: There is no significant relationship between the availability of ICT facilities and the academic achievement of students in computer studies.
- ii. H₀₂: There is no significant relationship between the attitude of students and academic achievement in computer studies.

Purpose of the Study

The aim of this study is to investigate the effect of ICT facilities and attitude on students' achievement in computer studies. In this study, the researcher states the following objectives:

- i. To analyze students' perception on the level to which the availability of ICT facilities affects the academic achievement of students in computer studies.
- ii. To evaluate students' perception on the extent to which attitude affects the academic achievement of students in computer studies.

Research Questions

The following research questions guided the study:

Methodology

A descriptive survey research design was adopted for this study. This seeks to provide a quantitative numeric description of trends, attitudes, or opinions of the population being studied by studying a sample of that population. Descriptive survey research design can be quantitative or qualitative. In this study, the quantitative method was used whereby numerical data were collected and analyzed using appropriate descriptive and inferential statistical tools.

Population, Sample, and Sampling Technique

The population for the study comprised all computer studies students in the entire fifty (50) junior secondary schools in Lagos Mainland and Shomolu Local Government Area in Lagos State. A sample of two hundred (200) computer studies students were randomly selected from both private-owned and government-owned secondary schools.

Research Instrument

A Questionnaire was used for collecting data for the study. It was best for collecting data from computer studies students about the availability of ICT facilities and attitudes of students in computer

studies. The research instrument is a structured questionnaire designed for students to assess their perceptions regarding the influence of ICT facilities and attitudes on students' academic achievement. The questionnaire comprises of fifteen (15) statements related to ICT facilities and students' attitude, and their perceived effects on students' academic achievement.

Reliability of the Instrument

The reliability of the questionnaire was estimated before being used for data collection for this study. This was done through a pilot test of thirty (30) copies of the validated draft on thirty (30) computer studies students selected from the same population but

not part of the sample for the main study. The data obtained was subjected to the split-half method and analyzed with Pearson's Product Moment Statistic. The instrument was accepted as reliable and good for the study as it gave a reliability coefficient of 0.73. This was an indication that the questionnaire is highly reliable, good, and useable for the study.

Method of Data Analysis

The data collected were analyzed with Statistical Package for Social Sciences (SPSS) with the use of frequency, percentage, mean, and standard deviation statistics and the hypotheses formulated were tested with Pearson correlation.

Results and Discussion of Findings

Presentation of Demographic Data

Table 1 Gender

Sex	Frequency	Percent (%)
Male	132	66
Female	68	34
Total	200	100

Research Question One

To what extent will the availability of ICT facilities affect the academic achievement of students in computer studies?

Table 2

S/N	ITEMS	SA	A	D	SD	Mean	Remark
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1.	ICT facilities (e.g., computers, internet access) are readily available for teaching.	72	48	46	34	2.79	Accepted
2	ICT facilities and resources are used regularly to teach computer studies.	60	52	50	38	2.67	Accepted
3	Students have access to ICT facilities in the school.	58	70	38	34	2.76	Accepted
4.	Students get engaged whenever ICT facilities are used to teach.	22	26	74	78	1.96	Rejected
5.	The regular usage of ICT facilities in class has decreased students' understanding of concepts in Computer Studies.	38	44	68	50	2.35	Rejected
6.	ICT facilities do not play a role in enhancing students' academic achievement in computer studies.	30	34	66	70	2.12	Rejected
7.	The presence of ICT facilities is indispensable for students to excel academically in computer studies.	70	66	38	26	2.90	Accepted
8.	ICT resources have little relevance to students' performance in computer studies.	20	16	88	76	1.90	Rejected

Table 2 above shows the responses of the respondents regarding the impact of ICT facilities on the academic achievement of students in computer studies revealing several key findings. Students generally acknowledge the availability of ICT facilities and their active utilization in teaching. Students agree that they have access to these resources, and a significant portion disagrees with the idea that students become disengaged

when ICT is not employed for teaching. Moreover, students view ICT resources positively, as they agree that such facilities play a role in enhancing their academic achievement, are indispensable for academic excellence, and do not hinder student understanding or engagement. These findings collectively suggest that ICT facilities are considered valuable assets in the education process, contributing

positively to students' academic achievements in computer studies.

Research Question Two

To what extent does students' attitude towards learning affect their academic achievement in computer studies?

Table 3

S/N	ITEMS	SA	A	D	SD	Mean	Remark
9.	Students' attitudes towards learning have relevance to their performance in computer studies.	66	50	54	30	2.76	Accepted
10.	Students derive substantial academic benefits from a positive attitude towards learning in computer studies.	50	84	46	20	2.82	Accepted
11.	Students' positive attitudes towards learning have a significant impact on their academic achievement.	60	62	44	34	2.74	Accepted
12.	Creating a positive and supportive classroom environment contributes to students' favorable attitude toward learning.	40	34	76	50	2.32	Rejected
13.	Student's attitude towards learning is negatively influenced by the availability of ICT facilities.	38	36	64	62	2.25	Rejected
14.	The integration of ICT resources in the classroom enhances students' creativity and innovation skills.	84	44	44	28	2.92	Accepted
15.	Students need to maintain a highly positive attitude towards learning to	68	66	34	32	2.85	Accepted

	excel academically in computer studies.						
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Table.3 shows the responses of the respondents to items regarding the relationship between students' attitudes toward learning and their academic achievement in computer studies revealing several key findings. Students generally acknowledge the relevance of attitudes to their performances and agree that a positive attitude is academically advantageous. They also perceive a significant impact of positive attitudes on their academic achievements and do not consider the

classroom environment as a contributor to unfavorable attitudes. The influence of ICT facilities on student attitudes is rejected, and the integration of ICT resources in the classroom is seen as beneficial for enhancing creativity and innovation skills. Moreover, students believe that they must maintain a highly positive attitude towards learning to excel academically in computer studies, emphasizing the importance of a positive mindset for success in this field.

Research Hypothesis One

H₀1: There is no significant relationship between the availability of ICT facilities and the academic achievement of students in computer studies.

Table 4.4: Correlation between Availability of ICT Facilities and Student Academic Achievement

Correlations			
		Availability of ICT Facilities	Achievement
Availability of ICT Facilities	Pearson correlation	1	0.582
	Sig. (2-tailed)		0.018
	N	100	100
Achievement	Pearson correlation	0.582	1
	Sig. (2-tailed)	0.018	
	N	100	100
* Correlation is significant at the 0.05 level (2-tailed)			

This analysis examines Research Hypothesis One, which proposes that there is no significant relationship

between the availability of ICT facilities and the academic achievement of students in computer

studies. The correlation findings reveal a significant positive correlation (Pearson correlation of 0.582) between the availability of ICT facilities and students' academic achievement. The positive correlation suggests that as the availability of ICT facilities increases, academic achievement also tends to increase, and vice versa. Moreover, the significance level (Sig.) of 0.018, which is less than the typical alpha

level of 0.05, indicates that this correlation is statistically significant. Therefore, the analysis contradicts the null hypothesis, suggesting that there is indeed a significant and positive relationship between the availability of ICT facilities and students' academic achievement in computer studies, with ICT availability positively impacting achievement levels.

Research Hypothesis Two

H₀2: There is no significant relationship between the attitude of students and academic achievement in computer studies.

Table 4.5: Correlation between Students' Attitude and Achievement

Correlations			
		Students' Attitude	Achievement
Students' Attitude	Correlation Coefficient	1	0.554
	Sig. (2-tailed)	.	0
On	N	100	100
Achievement	Correlation Coefficient	0.554	1
	Sig. (2-tailed)	0	
	N	100	100
* Correlation is significant at the 0.05 level (2-tailed)			

This analysis investigates Research Hypothesis Two, which posits that there is no significant relationship between the attitude of students and academic achievement in computer studies. The correlation findings reveal a significant positive correlation (Correlation Coefficient of 0.554)

between students' attitude and their academic achievement. This positive correlation implies that as students' attitudes toward learning in computer studies become more positive, their academic achievement tends to increase, and vice versa. Moreover, the significance level (Sig.) of 0, which is

less than the typical alpha level of 0.05, indicates that this correlation is statistically significant. Consequently, the analysis contradicts the null hypothesis, suggesting that there is indeed a significant and positive

Discussion of Findings

The study aimed to assess the extent to which the availability of ICT facilities affects the academic achievement of students in computer studies. The analysis unveiled a significant negative correlation between ICT availability and academic achievement. True to the theories of Enakrire & Ocholla, (2017), which assert that the utilization of ICT facilities in computer studies among teachers and students mainly is low. Especially in public secondary schools, whereby it is a serious problem facing the school, its teachers, and students. Surprisingly, as the availability of ICT facilities increased, students' academic performance tended to decrease. This unexpected finding suggests that while ICT facilities are valuable resources, an overreliance on them may have adverse effects on students' academic outcomes. One possible interpretation is that when students have easy access to technology, they may rely on it exclusively, potentially neglecting fundamental problem-solving and critical thinking skills that are essential in computer studies. Additionally, a surplus of technology may lead to distractions, reducing students' focus on the subject matter. These findings

relationship between students' attitude and their academic achievement in computer studies, with a positive attitude potentially fostering higher achievement levels.

challenge the conventional wisdom that increased access to technology inherently leads to academic improvement and point to the need for a more balanced approach to utilizing ICT resources.

Regarding the use of technology, students who use it more are more motivated to do it and have better grades (Higgins, Huscroft-D'Angelo & Crawford, 2019), and students who are motivated by attaining better grades tend to use e-learning more (Dunn & Kennedy, 2019). The implications of this analysis are significant for teachers and institutions in the field of computer studies. It underscores the necessity of striking a balance between traditional teaching methods and technology integration. While ICT facilities are undoubtedly valuable tools, educators should be cautious not to overshadow the development of students' core knowledge and problem-solving abilities. The findings also highlight the need for digital literacy education, where students learn not only how to use technology but also when and why to use it in their academic pursuits. Moreover, educators should consider implementing strategies to maintain students' focus and minimize distractions when technology is

accessible. Overall, the study suggests that a nuanced and thoughtful approach to ICT resource integration is essential to maximize the academic benefits of technology in computer studies.

The analysis of research hypothesis one, examining the relationship between the availability of ICT facilities and the academic achievement of students in computer studies, reveals a significant positive correlation coefficient (0.582). This surprising finding indicates that as ICT facilities become more readily available, students' academic achievement tends to increase. This finding supports the study of Chai, Koh & Tsai (2015) which posits that it develops students' new understanding in their areas of learning and provides more creative solutions to different types of learning inquiries. The results challenge the null hypothesis that proposed no significant relationship. This implies that, contrary to conventional assumptions, increased access to ICT resources can positively impact students' academic performance in computer studies. The implications are profound, suggesting that educational institutions and educators should prioritize the integration of ICT facilities in computer studies to enhance students' academic achievements. Moreover, educators should guide students in effectively utilizing these resources to bolster their learning experiences, emphasizing the role of technology as

a valuable tool in improving academic outcomes in this field.

Research hypotheses two sought to examine the extent to which students' attitudes toward learning affect their academic achievement in computer studies. The analysis revealed a significant positive correlation between students' attitudes and academic achievement. This means that students with more positive attitudes tend to perform better academically. This finding correlates with the theory of Schreiber (2016), which asserts that students who have a positive attitude towards Computer studies have a better performance in the subject. These findings emphasize the critical role of students' motivation, engagement, and enthusiasm in influencing their academic success. A positive attitude is associated with better academic outcomes, which aligns with the broader educational research on the importance of students' mindsets and self-belief. The rejection of the null hypothesis underscores the significance of fostering a positive learning environment and cultivating students' enthusiasm for computer studies. To enhance academic achievement in computer studies, educators and institutions should focus on strategies to improve students' attitudes, such as enhancing the relevance of the curriculum, promoting self-efficacy, and encouraging a growth mindset.

The implications of this analysis are twofold. First, it underscores the importance of creating a supportive and engaging learning environment that fosters positive attitudes among students. Educators should seek to establish classroom environments that promote intrinsic motivation, self-efficacy, and a growth mindset. This might involve tailoring teaching methods to students' learning styles and needs, incorporating real-world applications of computer studies, and encouraging a sense of autonomy and mastery. Secondly, the findings have implications for curriculum design and teaching strategies. Educational institutions should consider reevaluating the way computer studies are taught to ensure that students find the subject matter relevant and engaging. Incorporating practical, hands-on experiences, real-world problem-solving, and opportunities for creativity and innovation can help foster and maintain positive attitudes in students, ultimately leading to improved academic achievement in computer studies.

The analysis of Research hypothesis two, which explores the relationship between students' attitudes toward learning and their academic achievement in computer studies, reveals a significant positive correlation coefficient (0.554). This finding signifies that students with more positive attitudes toward learning tend to perform better academically in computer studies, emphasizing the vital role of students'

motivation, engagement, and enthusiasm in influencing their academic success. The finding agrees with the theory of Lee et al., (2019) which posits that learners who are more engaged and motivated use more technology for their learning purposes, most likely for individual learning than for collaborative tasks. These results challenge the null hypothesis that posited no significant relationship between attitudes and academic achievement. The implications of this analysis are twofold: first, it underscores the significance of creating a supportive and engaging learning environment that fosters positive attitudes among students. Educators should focus on establishing classroom settings that promote intrinsic motivation, self-efficacy, and a growth mindset. Secondly, the findings highlight the importance of curriculum design and teaching strategies, urging educational institutions to reevaluate how computer studies are taught to ensure that students find the subject matter relevant and engaging. This goes with the findings of Gibson et al., (2014) that students with access to a computer are more involved and interested in their classwork. Incorporating practical, hands-on experiences, real-world problem-solving, and opportunities for creativity and innovation can help foster and maintain positive attitudes in students, ultimately leading to improved academic achievement in computer studies.

Conclusion

The comprehensive analysis of the relationships between ICT facilities, students' attitudes, and academic achievement in computer studies provides a multifaceted view of the factors influencing educational outcomes in this dynamic field. While the availability of ICT facilities showed a surprising positive correlation with academic achievement, suggesting the potential benefits of technology integration, the study cautions against an overreliance on these resources. It underscores the need for a balanced approach to ensure that students maintain essential problem-solving skills while harnessing the power of technology to enhance their learning experiences.

Furthermore, the positive correlation between students' attitudes and academic achievement underscores the significance of fostering a positive learning environment and cultivating students' motivation and engagement. This implies the need for a curriculum that not only imparts technical knowledge but also instills a sense of relevance and enthusiasm among students, ultimately contributing to their academic success. The study also suggests that the classroom environment, as well as the availability of ICT facilities, has limited influence on students' attitudes, indicating that other factors, such as

teaching methods and curriculum design, play a more pivotal role in shaping students' mindsets. Finally, the integration of ICT resources was found to enhance creativity and innovation skills, highlighting the positive impact of technology on these critical aspects of computer studies.

These collective findings offer valuable insights for educators and institutions in the field of computer studies. They underscore the importance of a balanced approach to technology integration, the need to prioritize students' attitudes and engagement, and the significance of fostering an environment that nurtures creativity and innovation. This comprehensive analysis encourages a holistic approach to education in computer studies, where technology and positive attitudes synergize to optimize academic outcomes and prepare students for success in this ever-evolving field.

Recommendations

1. Adopt a balanced approach to the integration of ICT facilities in computer studies, ensuring that technology does not overshadow the development of fundamental problem-solving skills.
2. Create a supportive and engaging learning environment that fosters positive attitudes among students, promoting intrinsic motivation, self-efficacy, and a growth mindset.

3. Prioritize the relevance and engagement of computer studies in the curriculum, integrating practical, hands-on experiences, real-world problem-solving, and opportunities for creativity and innovation.
4. Provide students with education in digital literacy, emphasizing not only how to use technology but also when and why to use it in their academic pursuits.
5. Implement strategies to maintain students' focus and minimize distractions when technology is accessible, including establishing guidelines for appropriate technology use.
6. Leverage the integration of ICT resources in the classroom to enhance students' creativity and innovation skills, using technology to stimulate creative thinking and problem-solving.

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