PERCEPTIONS OF STUDENTS ON THE EFFECT OF COMPUTER STUDIES ON THEIR ACADEMIC PERFORMANCE IN TERTIARY INSTITUTIONS IN KWARA STATE

ADESUYI, Folashade Euchariah
Department of Science Education and Technical Education, Faculty of Education, Adekunle Ajasin University Akungba Akoko,Ondo State, Nigeria
adesuyiabimbola@gmail.com
https://orcid.org/0009-0002-5811-0061

Abstract

The study examined the perception of students on the effect of computer studies on their academic performance in a tertiary institution in Kwara State. One research question was formulated while three were postulated to guide the study. The descriptive survey was adopted for the study. The target population comprised all college students in Kwara State. A sample size of 100 participants was randomly selected from five Colleges of Education in the area. An anonymous questionnaire was used to collect information from respondents. It has two sections: section A depicts the socio-demographical data of the respondents, while section B measures the impact of computer studies on academic performance and computer literacy of students in the colleges. The data collected were analyzed using the t-test and ANOVA. The finding showed that Computer Studies was well integrated into the school curriculum of most colleges. This has increased the computer literacy and academic performance of about 75% of respondents via exposure to word and data processing and graphics design, internet exploration, and the documentation process used for reading/studying, doing assignments, preparing for examinations and vocational practices. There was no significant difference between perception and gender, while there were significant on age and level. The study recommends that the government, colleges' management, and stakeholders in education should make provisions for more funds for computers and computer infrastructure in the colleges to boost academic performance and vocational development of students.

Keywords: Computer studies, College of Education, Stakeholders, higher institutions

Introduction

The relevance of computer education in the education development of students cannot be over-overemphasized. It is relevance to the students, the society, and the nation at large. The foundation upon which each country's growth and prosperity rests is education. It follows that no country can succeed beyond the calibre of its educational system (Donald, 2021). An education system without sound computer education in the present century is incomplete (Davidson, 2020). The finest legacy a country can leave its people is education, especially high-quality education, which cannot be disputed (Igbunu, 2022). Keeping the aforementioned facts in mind, neither parents nor government at all levels have put up enough effort to realize the advantages of computer education for students in educational institutions, given its role in contemporary communities and international economies. However, the majority of stakeholders are pretentiously crying over the allegedly declining grade of education and computer education in the nation while passing the buck to one another. Without the needed coordinated efforts by relevant parties to rectify the inconsistencies in this crucial sector, the blame game continues. Unless the leaders urgently revitalize technology education in all parts

of the educational system, the country cannot accomplish the much sought-after economic development (Iginnu, 2021)

The computer system formed the basis of Information Communication and Technology. ICT has long been an advantageous tool in the sphere of education. In the 1920s, Sidney L. Presses created an automatic testing machine, which marked the beginning of technology's application in evaluation (Alruwais et al., 2018). This tends to establish a basis for students' interaction with computers as a study, to manipulate a high dexterity in the usage of computers in a tertiary institution (Aboderin 2025).

In conclusion, computer education is essential for students in today's digital age. It provides students with essential digital skills, improves academic performance, and increases job opportunities. However, challenges such as limited access to computers, outdated curriculum, and lack of teacher training need to be addressed to ensure that computer education is effective and beneficial to students.

As time passed by, efforts have been made to improve the declining performance of students in higher institutions in Nigeria and improve the quality of education delivery. According to some educationists, one of the ways to achieve this aim is to provide computers and related equipment to colleges, and encourage is use for teaching and learning. Workshops and seminars have been held to train lecturers in order to improve their skills and knowledge of use of computers and computer applications to boost their productivity, competency, and efficiency while delivering lessons, while students improve academically and vocationally. However, these efforts have not always been met with success because of many challenges in the colleges. These challenges include low levels of computer literacy and usage among staff and students, inadequate and/or insufficient computers for practical lessons, a nonchalant attitude of students towards the learning of computer studies, a lack of internet connectivity, poor power supply in the ivory towers, poorly equipped computer laboratories, and insecurity challenges.

All over the world, the classroom is changing as a result of technology, which is becoming more prevalent in educational institutions around the nation. In developed nations of the world, computer use in education has led to improvement in research, academic studies, vocation development, societal impact and so on. In Nigeria, like many other parts of Africa, little is known about the impact of computer studies on education and educational development. This study therefore, becomes necessary to assess the impact of computer studies that have been incorporated into students' curriculum on their academic and vocational performance with a view to informing policy for more positive action.

Purpose of the Study

The main purpose of this research is to critically examine the perception of students on the effect of computer studies on their academic performance in a tertiary institution in Kwara state. Extensively in the pursuit of this, the study sets to achieve the following objectives:

- To ascertain the level of introduction of the teaching and learning of computer studies as courses in the college of education schools in Offa Local Government Area of Kwara state.
- To determine the level/extent of use of computers in College of Education in Kwara State.

- To find out how the users of computers in the college perceive the use of computer literacy among staff (Lecturers) and students of the College of Education in Kwara State.
- To ascertain the availability of computer systems and its related/essential facilities in the college of education schools in Kwara State.
- To percept the possible problems militating against the teaching and learning of computer studies in Kwara State.

Research Question

What are the perceived effects of computer studies on the academic performance of colleges of education in Kwara state?

Hypotheses

The subsequent research hypotheses were formulated to direct the execution of the investigation:

H_{o1}: There is no significant difference in the effect of computer studies on academic performance as perceived by colleges of education students in Kwara state, on gender

H_{o2}: There is no significant difference in the effect of computer studies on academic performance as perceived by colleges of education students in Kwara state based on age

$H_{03;}$ There is no significant difference in the effect of computer studies on academic performance as perceived by colleges of education students in Kwara state, based on level

Literature Review

According to Tamin and Al-Rashidi (2018), the duo searched in major bibliographic databases that have shown that the integration of computer studies into tertiary education has become a pivotal aspect of modern academic curricula. As technology continues to advance, its influence on education, particularly on students' academic performance, has attracted significant attention. Kirkwood and Price (2014) emphasize the importance of technology-enhanced learning in higher education. Also, Puentedura (2013) examines the notion of integrating technology in education and its effect on student learning. This literature review examines the perceptions of students on the effect of computer studies on their academic performance in tertiary institutions in Nigeria.The academic advancement in many advanced societies is as a result of computer and technological innovations, which has made lives easier (Tamin & Al-Rashidi, 2021). Educationists have tapped into its use, and it is now used in almost all facets of education at all levels - from pre-primary to post-graduate level (Kirkwood & Price, 2021). This has made learning easier in several ways, including teaching, reading, doing assignments, designing, exploring, etc. (Puentedura, 2021). The end result is overall improvement in academic performance. It has also assisted students to develop vocational abilities and self-development (Alshareef, 2021). In Nigeria, like many other countries in Africa, the implementation of computer education in the education curriculum has not been given the attention of a nation that wants to develop technologically and economically (Liu et al., 2021). Therefore, it is necessary to examine the effect of perception of computer studies in the tertiary institution curriculum and its implementation on academic performance of students. This research study examines the perceptions of students on the effect of how computer studies

impact their academic performance in tertiary institutions (Nguyen et al., 2021). It synthesizes findings from various studies, highlighting the positive and negative effects, challenges, and opportunities associated with computer studies in higher education in Kwara State, Nigeria (Koh et al., 2021).

This research studies, examines the perceptions of student on the effect of how computer studies impact their academic performance in tertiary institutions. It synthesizes findings from various studies, highlighting the positive and negative effects, challenges, and opportunities associated with computer studies in higher education in Kwara State Nigeria.

Theoretical Framework

This review is based on the Technology Acceptance Model (TAM) and Constructivist Learning Theory. TAM posits that perceived utility and simplicity of use substantially impact students' acceptance and utilisation of technology, therefore influencing their academic performance. (Mark Guzdial2015) argues that computer science Education should be designed with the learner in mind, and this requires a fundamental shift in how we perceive computer studies. In these views, Constructivist Learning Theory emphasizes active engagement and hands-on learning, which computer studies facilitate through practical applications and problem-solving activities.

Positive Perceptions of Computer Studies on Academic Performance

Computer literacy: Students who are computer literate tend to have a more positive perception of computer studies and their impact on academic performance (Alshareef, 2021).

Teacher support: Students who receive support from their teachers in using computers tend to have a more positive perception of computer studies (Kumar et al., 2021).

Learning style: Students who prefer hands-on learning tend to benefit more from computer studies, leading to a more positive perception of their impact on academic performance (Nguyen et al., 2021). In addition, computer-enhanced Learning Opportunities: Students perceive computer studies as a tool that broadens their access to information and resources. Online databases, e-books, and educational software provide additional learning materials that complement traditional classroom instruction (Selwyn, 2016).

Although computer studies positively influence students' academic achievement, obstacles and restrictions require attention. These encompass:

Access to computers: Not all students have access to computers, which can limit their ability to benefit from computer studies (UNESCO, 2021).

Technical issues: Technical issues such as slow internet connectivity and outdated hardware can hinder the effectiveness of computer studies (Liu et al., 2021).

Teacher training: Teachers need training to effectively integrate computers into their teaching practices, which can be a challenge (Koh et al., 2021).

Gender Differences: Research suggests that male students tend to have more positive perceptions of computer studies compared to female students, who may feel less confident in

their technical abilities (Margolis & Fisher, 2020). This gender gap can influence academic performance and participation in computer-related fields.

Technical Difficulties: Technical issues, such as software malfunctions and hardware failures, can disrupt learning and cause frustration, leading to a negative perception of computer studies (Henderson et al., 2017).

Computer literacy: Students who are computer literate tend to have a more positive perception of computer studies and their impact on academic performance (Alshareef, 2021).

Teacher support: Students who receive support from their teachers in using computers tend to have a more positive perception of computer studies (Kumar et al., 2021).

Learning style: Students who prefer hands-on learning tend to benefit more from computer studies, leading to a more positive perception of their impact on academic performance (Nguyen et al., 2021).

Methodology

The design for this study is evaluative and descriptive in nature. It involved the use of a questionnaire as the primary source of data to elicit responses from the respondents. The study was conducted in a Tertiary Institution in Kwara State, Nigeria. The population for this study comprises students of private and government-owned colleges of education in Kwara State, Nigeria. A purposeful selection of five Colleges of Education in Kwara State, Nigeria, consisting two government-owned and three private-owned Colleges of Education. In each College of Education, four departments were selected at random, and five students were selected from each selected Department. In all, twenty students were selected in each College of Education, making a total of 100 respondents for the study. The sampling technique for the study involved a simple random sampling technique with which simple judgment of justice was adopted in the selection of sample size of 100 respondents.

Results

Socio-demographic characteristics of respondents

Table 1: Computer studies and Impact on academic and computer literacy among students

Characteristics			Percentage
Gender	Male	45	45.0
	Female	55	55.0
Academic level	NCE 3	42	42.0
	NCE 2	28	28.0
	NCE 1	30	30.0
Age (in years)	>20	26	26.0
	21 – 25	64	64.0
	26 – 30	8	8.0
	>30	2	2.0
Marital status	Single	89	89.0
	Married	7	7.0
	Divorced, separated/widowed	4	4.0

Source: Research survey, 2018.
Table 1 showed that about 88.0% of students reported that Computer Studies was part of their school curriculum. This implies that they offered computer studies as a course required for graduation. When probed further about their performance in the computer studies, only 71.0% reportedly got credit and above. The proportion of success in the course id graphically depicted below.

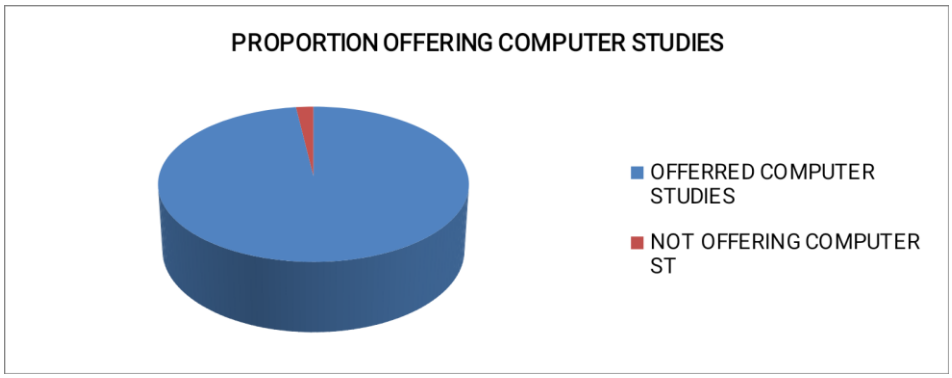

Table 1 showed that 98% of respondents strongly agreed that Computer Studies is offered as a course in the department. That is to say, Computer Studies is integrated into the college curriculum, while 89.0% strongly agreed that they regularly attend computer studies class. About 71% of respondents have used a computer to do assignments and other work at different times. 89% of respondents reported that their lecturers used a computer system to deliver lectures and for other academic activities in the classroom while 84% reported that their college has a computer laboratory or workshop with at least 5 computer systems for learning computing. 61% reported that they used a computer to play games and do other things other than academic work, while 90% of them strongly agree that the computer system used for word and data processing is far better than a typewriter.

About 70% of respondents strongly agreed that computer system education necessary for every college of education students while 92% strongly agreed that computer education has helped them to improve on their studies. Also, 82% of respondents reported that they can use computer to print, scan, design graphics, browse etc without supervision and their computer literacy is high and 94% strongly agreed that use of computer has helped me to performed better in my academic work. Conclusively, 91% of respondents strongly agreed that computer education have given them other benefits apart from computer education.

Answering of Research Question

What are the perceived effects of computer studies on the academic performance of colleges of education in Kwara state?

Table 2: Perception of students on the effect of computer studies on their Academic performance

Questions	Strongly Agree	Strongly disagree	Undecided
My school teaches computer studies as courses.	98	2	0
I attend computer class regularly in my school.	89	11	0
I use computer to do some of my studies/ assignments.	71	29	-0
Some lecturers use computer to present their lessons in my class.	87	13	0
My school has a computer laboratory with at least five (5) computers.	84	16	0
I use a computer for playing games, music etc.	63	37	0
The use of a computer in processing data is better and faster than typewriter.	90	7	3
It is necessary for every college of education students to know how to use a computer.	70	23	7
Computer studies have helped me to understand my studies better	92	4	4
I can use a computer to print, scan, design graphics, browse etc without supervision	82	12	6
The use of computers has helped me to performed better in my academic work	94	4	2
I have derived other benefits from use of the computer system in the classroom	91	6	3

The results presented in Table 2 provide a comprehensive understanding of students' perceptions regarding the impact of computer studies on their academic performance. A significant proportion of students (92%) reported that computer studies have helped them understand their studies better, and the majority (94%) agreed that the use of computers has helped them perform better in their academic work. Additionally, almost all students (98%) reported that their school teaches computer studies as courses, and most students (84%) have access to a computer laboratory with at least five computers, indicating that schools are generally providing students with the necessary resources to develop their computer skills.

However, the results also highlight areas for improvement. A notable proportion of students (63%) reported using computers for playing games, music, etc., highlighting the potential for distraction from academic activities. Furthermore, a minority of students (23%) disagree that

computer studies are necessary for every college of education student, suggesting a need for increased computer literacy among students. Overall, the findings suggest that computer studies have a positive impact on academic performance but also highlight the need for students to develop responsible computer use habits and for educators to provide guidance on effective computer-aided learning strategies.

Hypotheses' Testing

Three null hypotheses were postulated and tested for this study. The hypotheses were tested using t-test and Analysis of Variance (ANOVA) statistical methods at a 0.05 level of significance. The result is presented below:

H_1: There is no significant difference in the effect of computer studies on academic performance as perceived by Kwara state colleges of education students based on gender

Gender	N	Mean	SD	df	Cal. t-val.	Crit.t-val.	p-val.
Male	45	55.14	11.03	282	1.75	1.96	.08
Female	55	56.47	9.99				

Table 2 indicates that the computed t-value of 1.75 is inferior to the crucial t-value of 1.96, with a corresponding p-value of 0.08, which is above the 0.05 alpha thresholds. This signifies no substantial change; hence, the idea is accepted. Consequently, there is no substantial disparity in the impact of computer studies on academic achievement as observed by students of Kwara State Institute of Education, irrespective of gender.

H_2: There is no significant difference in the effect of computer studies on academic performance as perceived by Kwara state colleges of education students based on age

Table 3: ANOVA comparing respondents' on the Kwara state colleges of education students perception on computer studies based on age

Sources	Sum of Squaress	df	Mean Squares	Cal. F	Crit. F-	p-value
Between Group	625.878	3	312.939	10.20*	3.07	.00
Within Group	2974.962	96	30.670			
Total	3600.840	99				

* P<0.05

Table 3 reveals a calculated F-ratio of 10.20, exceeding the critical F-ratio of 3.00, accompanied by a p-value of .00, which is below the 0.05 alpha level. This indicates a substantial disparity in respondents' perspectives according to age; therefore, the hypothesis was dismissed. In order to ascertain which of the variables of age led to the significant difference found in Table 3, the Duncan Multiple Range Test (DMRT) was utilised as a post-hoc test. The results of the DMRT procedure are presented in Table 4.

Table 4: DMRT showing differences in respondents' view on the effect of computer studies on academic performance as perceived by Kwara state colleges of education students based on age

Age	Mean	N	Group
Below 20 years	62.70	26	4
20-25 years	68.29	64	3
26-30 years	69.83	8	2
30 years above	61.22	2	1

Table 4 presents the DMRT result to determine which of the age group mean that led to the significant difference noted in Table 4. The table showed that the mean values of group 1-4 differed significantly from one another. However, group 2 with a mean score of 69.83 took precedence over group 1, 2, and 3 with mean scores of (61.22); (68.29) and (62.70) respectively. This implies that college of education students between the ages of 26-30 years are responsible for the difference noted in Table 4.

H_3: There is no significant difference in the effect of computer studies on academic performance as perceived by Kwara state colleges of education students based on level

Table 5: ANOVA comparing respondents' on the Kwara state colleges of education students perception on computer studies based on level

Sources	Sum of Squares	df	MS	Cal. F ratio	Crit. F ratio	p-value
Between Group	466.025	2	233.013	7.21*	3.07	.00
Within Group	3134.815	97	32.318			
Total	3600.840	99				

* P<0.05

Table 5 displays a calculated F-ratio of 7.21, exceeding the essential F-ratio of 3.07, accompanied by a p-value of .00, which is below the 0.05 alpha level. This indicates a substantial disparity in respondents' perspective-based levels; hence, the hypothesis was dismissed. Consequently, a notable disparity existed in the impact of computer studies on academic achievement as perceived by students of institutions of education in Kwara State, contingent upon their level of study. To ascertain which variables of parental educational status contributed to the substantial difference noted in Table 6, the Duncan Multiple Range Test (DMRT) was employed as a post-hoc analysis. Table 6 presents the outcomes of the DMRT procedure.

Table 6: DMRT showing differences in respondents' view on the effect of computer studies on academic performance as perceived by Kwara state colleges of education students based on level

Level	Mean	N	Group
NCE 111	65.41	49	3
NCE 11	69.31	45	2
NCE 1	71.67	6	1

Table 6 presents the DMRT result to ascertain which of the level group mean led to the significant difference noted in table 5. The table showed that the mean value of groups 1-3 differed significantly from one another. However, group 1 with a mean score of 71.67 took precedence over group 2 and 3 with mean scores of 69.31 and 65.41, respectively. This implies

that colleges of education whose course level is NCE 1 are responsible for the difference noted in table 5.

Discussion of Findings

This study showed that there is a statistically significant positive impact of computer education on Colleges of Education students in the study area ($p<0.005$). This implies that students who are offered computer studies as a course alongside other courses perform better than those who do not. This was also observed by Davidson (2018) and Feyintolu (2019), who reported similar results in their studies. Students discovered that the use of a computer to learn brings many other benefits, which include internet explorer scanning and etc, which can be used to start a vocation.

Also, the vast majority of respondents strongly agreed that the incorporation of computer education has been of great benefits to students, apart from a positive impact on academic performance. Also, some respondents reported that they knew how to play games, design graphics, and so some students have developed vocational attributes which help them to be self-reliant after graduation. More than three-quarters agreed that it helped them to be more regular in the classroom and concentrate better.

The use of a computer system to deliver lectures by the lecturers also assists the students to learn more. In this study, about 89% of respondents reported that their lecturers used a computer system to deliver lectures and for other academic activities in the classroom, which is also similar to Donald, (2018). The presence of a computer laboratory for students is another plus mentioned by Smalling (2020) as a facilitating factor in computer acquisition. The computer literacy of the college students is high, and about 94% strongly agreed that the use of computers has helped them to perform better in their academic work and other areas in vocation and recreation. Hypothesis one revealed that there was no significant difference in the effect of computer studies on academic performance as perceived by Kwara state colleges of education students based on gender. This means that gender has no significant influence on respondents view on the effect of computer studies on academic performance among colleges of education. This finding is in agreement with Somolu (2016), who revealed that students' academic performances were not influenced by their gender when exposed to computer studies.

Hypothesis two revealed that was a significant difference in the effect of computer studies on academic performance as perceived by Kwara state colleges of education students based on age. This means that age has a significant influence on respondents views on the effect of computer studies on academic performance as perceived by Kwara state colleges of education students. The finding disagrees the finding of Henderson et al. (2017), who found that age of students does not influence their academic performance in computer studies. This implies that when students are exposed to computer studies, their academic performance is not influenced by their age range.

Hypothesis three revealed that there was a significant difference in the effect of computer studies on academic performance as perceived by Kwara state colleges of education students on the basis of class level. This implies that the level of respondents has a significant influence on their perception towards the effect of computer studies on academic performance. The finding is in agreement with the finding of Rosen et al (2013) who suggested that the level of

education of the tertiary institution students is the major contributor to their perception of the influence of ICT on academic performance.

Conclusion

This study was conducted in an attempt to find out the perception of students on the effect of computer studies on their academic performance in one of the Tertiary Institutions in Kwara State (Colleges of Education). In these regards, Students' perceptions of the effect of computer studies on their academic performance are multifaceted, encompassing both positive and negative aspects. While many students recognize the benefits of enhanced learning opportunities, improved skills, and better career prospects, challenges such as the digital divide, technical difficulties, and distractions persist. Addressing these challenges through institutional support, equitable access to resources, and thoughtful curriculum design is essential for maximizing the positive impact of computer studies on academic performance

This study confirms that a positive effect exists. Apart from the positive academic impact, it also has a technological effect, recreation or relation and self-development effect on students. This contributes to the general success of computer education in the colleges as it assists students to achieve their goal. In today's world, the adoption and acquisition of computer science/technology has become a requirement for people (both students and lecturers), groups, society, and organizations. Computer media is gradually becoming an integral element of daily life. Therefore, the Colleges management, state government, policy maker and non-governmental organization need to support and improve funding to these institution for more improved implementation of computer education which is a bit capital intensive. recognize the benefits of enhanced learning opportunities, improved skills, and better career prospects, challenges such as the digital divide, technical difficulties, and distractions persist. Addressing these challenges through institutional support, equitable access to resources, and thoughtful curriculum design is essential for maximizing the positive impact of computer studies on academic performance

Recommendations

Based on the findings and results of this study, the following recommendations are hereby proffer that:

1. Government/policy implementers should launch monitoring and supervision measures for computer education in higher instruction
2. Investigate the long-term impact of computer studies on academic performance across different disciplines;
3. Government should explore strategies to bridge the digital divide and ensure equitable access to technology;
4. The education researcher should examine the role of gender and socioeconomic factors in shaping students' perceptions and outcomes in computer studies;
5. Assess the effectiveness of institutional policies and curriculum designs in enhancing the benefits of computer studies;
6. All students in higher institutions in Nigeria should be required to take computer studies as a practical course which must be passed before graduation. All lecturers should be trained and encouraged to use computer systems for delivering lectures and carry out other academic activities.

References

Alshareef, A. (2021). The impact of computer literacy on students' academic performance. *Journal of Educational Computing Research*, 59(4), 419-435.

Davidson, J. (2020). The importance of computer education in the 21st century. *Journal of Educational Computing Research,* 58(4), 349-361.

Donald, J. (2021). The Impact of education on economic development. *Journal of Economic Development,* 43(1), 1-12.

Feyintolu,A.O(2019). Impact of computer studies on students' Academic performance in Nigeria Tertiary Institution

Henderson,M, Selwyn, N., & Aston, R. (2017). Factors influencing Student Engagement and Academic Performance in computer based learning. Journal of educational computing research

Igbunu, R. O. (2022). Dire issues confronting computer education and the perspectives. *Mosogar Journal of Science Education*, *9*(1), 123-131.

Igbunu, R.O. (2021). Science and information and communication technology (ICT) education for the positive behavioural re-awakening of Nigerians for economic advancement.*African Journal of Studies in Education*, *16*(1).

Igbunu, M. (2022). The role of education in national development. Journal of Educational Research and Practice, 12(1), 1-10.

Iskrenovic-momcilovic, O. (2018).Using computers in teaching in higher education. Mediterranean Journal of Social Sciences, 9(4), 71–78. https://doi.org/10.2478/mjss2018-0116

Margolis, J.,&Fisher, A. (2002). Unlocking the Clubhouse: Women in Computing. MITPress.

Koh, J., Lim, J., & Lee, S. (2021). Teacher training and support for effective integration of computers in teaching practices. *Journal of Educational Technology Development and Exchange*, 13(2), 1-20.

Kumar, S., Kumar, N., & Sharma, S. (2021). Teachers' support and student engagement in computer-based learning environments. *Journal of Educational Technology Development and Exchange,* 13(1), 1-20.

Liu, M., Kang, J., & Liu, X. (2021). Technical issues and their impact on student learning outcomes in computer-based learning environments. *Journal of Educational Technology Systems,* 50(2), 147-164.

Khan, M. (2020). Preparing students for the digital age through computer education. *Journal of Educational Computing Research,* 59(1), 1-12

Nguyen,T. Nguyen, H., & Tran, T. (2021). Learning styles and their impact on students'

engagement in computer-based learning environments. *Journal of Educational Multimedia and Hypermedia,* 30(1-2), 5-22.

Somolu, O(2016).Impact of computer education on academic performance of students in tertiary institution. *Journal of Educational Technology*

UNESCO. (2021). *Global Education Monitoring Report 2021: Inclusion and Education.* UNESCO