

Impact of Access to and use of ICT in School on Students' Perceived Performance

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Abstract

Aim: The use of Information Communication Technology (ICT) in education has become increasingly important, as educators and policymakers recognize the potential of these technologies to enhance learning outcomes. This quantitative research study investigated the impact of students' access to and use of ICTs in school.

Methods: The study employed a descriptive survey design using a 13-item questionnaire with a four-point Likert scale, administered to 110 out of 154 college students. The study was conducted in a college of education in Hohoe, Volta region of Ghana. Participants were obtained using stratified random sampling techniques. Descriptive statistics and mediation analysis were used to analyze the data at a 5% alpha level.

Results: The results showed that the grand mean was highest for the "Always utilizing ICT" group and lowest for the "Not at all utilizing ICT" group. On average, female students reported higher mean scores for having access to and use of ICT to improve their learning in school than male students. Primary Education (PE) student teachers had the highest mean scores, followed by Junior High School (JHS) student teachers, and Early Childhood Education (ECE) student teachers had the lowest mean scores for having access to and use of ICT to improve their learning in school. The study also found that access to and use of ICTs had a significant negative relationship with program of study and a positive relationship with the impact of ICTs used in school. Gender did not have a significant impact on the use of ICTs in school.

Conclusion: This study concludes that access to and use of ICTs in school can have a positive impact on student teachers learning, and the impact is influenced by program of study.

Recommendation: It is important for all stakeholder (particularly, teachers and institutions management) to encourage students to utilize ICTs in school to support their learning. The study highlights the importance of ensuring equitable access to ICTs, especially for student teachers in ECE.

Keywords: *Access to and use of ICT, in school, gender, program of study*

INTRODUCTION

The use of information and communication technology (ICT) has become increasingly important for students in all areas of life, including education (Majumdar, 2015). ICTs have transformed the way people access and share information, interact with others, and carry out daily activities. The use of ICTs has become increasingly important in education, with schools using various ICT tools to support teaching and learning processes (Budhwar, 2017). It appears that technology, particularly ICT, which has clearly impacted teaching and learning processes, has an impact on education. Many educational institutions employ ICT because they believe it will benefit students greatly and empower instructors and students to improve learning and develop 21st century abilities. ICT offers students a fresh, collaborative and interesting environment for teaching and learning. The use of digital technologies for learning has presented hurdles for educators and policymakers in incorporating new skills that are increasingly essential in today's information society, despite the tremendous development in ICT and technology usage (Goedhart et al., 2019).

Research has shown that many students have access to ICTs in school, including computers, smartphones, and tablets (Jan, 2018). They use these devices for various purposes, such as social networking, entertainment, and educational activities. The use of ICTs in school can have a significant impact on students' use of ICTs in school. For example, students who are comfortable using ICTs in school are likely to be more receptive to using them in the classroom. Moreover, Gubbels et al. (2020) opined that students who have access to and use ICTs are more likely to have the necessary skills and knowledge to use them effectively in school. For instance, they may be more proficient in using software applications, searching for information online, and communicating digitally. This can lead to improved learning outcomes and increased engagements. However, the digital divide remains a significant challenge, particularly in low-income and rural communities, where access to and use of ICTs in school is limited. Students in these communities may not have access to the same technologies and resources as their peers in more affluent areas, which can impact their ability to use ICTs effectively in school. Therefore, it is crucial to understand how students' access to and use of ICTs in school affects their learning. This can inform the development of strategies and policies that support equitable access to ICTs and promote their effective use in education.

Aim and Objectives

This study aimed to assess the impact of students' access to and use of ICTs in school on their learning performance. The following objectives were formulated to guide the study.

1. Determine student teachers access to and use of ICTs in school and its perceived impact of ICTs use in School.
2. Examine the influence of gender of student teachers access to and use of ICTs in school and its perceived impact of ICTs use in School.
3. Examine the moderating effect of gender and program of study on the relationship between student teachers access and use of ICTs in school and its effect on ICT use in school.

Research Questions

1. How does student teachers access to and use of ICTs in school impact performance?
2. What is the moderating effect of gender on the relationship between student teachers access to and use of ICTs in school and its impact on performance?
3. What is the moderating effect of program of study on the relationship between student teachers access to and use of ICTs in school and its impact on performance?

LITERATURE REVIEW

Theoretical Perspective

Digital Divide Theory

Van Dijk (2017) explain digital divide theory as unequal access and use of digital technologies among different groups of people, resulting in disparities in opportunities and outcomes. It highlights the gap between those who have access to technology and those who do not, as well as the disparities in digital literacy and skills. The theory recognizes that access to digital technologies is not only about physical availability but also affordability, infrastructure, and relevant skills. It encompasses various dimensions, including access to internet connectivity, devices, and digital literacy. The digital divide theory serves as a framework to understand the barriers and challenges faced by individuals and communities in accessing and utilizing digital technologies, ultimately impacting their social, economic, and educational opportunities. Understanding this theory is crucial in identifying and addressing the factors contributing to the digital divide and formulating effective policies and interventions to bridge the gap (Fang et al., 2019).

Pick and Sarkar (2016) suggest that factors contributing to the digital divide can be attributed to various socio-economic, demographic, and geographic factors. Income disparity is one of the primary contributors, as individuals with lower incomes may not have the financial means to afford internet access or necessary digital devices. Additionally, disparities in educational attainment and digital literacy skills can widen the divide, as individuals with limited education or digital skills may struggle to effectively utilize digital technologies. Geographical location also plays a role, as rural areas often have limited or no access to high-speed internet infrastructure compared to urban areas. Furthermore, Schradie (2011) opined that age and generational gaps can contribute to the digital divide, as older individuals may be less familiar with technology or have limited access to training opportunities. These factors collectively contribute to the digital divide, creating disparities in access to information, educational resources, and opportunities for social and economic advancement.

Youssef et al. (2022) The digital divide, which refers to the gap between those who have access to digital technologies and those who do not, has significant implications for student performance. they further argued that limited access to digital resources and tools can hinder students' ability to fully engage in educational activities and acquire necessary skills for the modern world. Students without access to digital devices or reliable internet connections may struggle to complete online assignments, access educational materials, or participate in virtual classrooms. This lack of access can lead to disparities in academic achievement and hinder students' ability to develop digital literacy skills, which are increasingly important in today's digital age. Additionally, the digital divide can exacerbate existing inequalities in education, as students from disadvantaged backgrounds may face greater challenges in accessing and utilizing digital resources compared to their more privileged peers.

Bridging the digital divide is crucial to ensure equal opportunities for all students and to enhance their educational outcomes. Surianshah (2021) also examined the digital divide across different demographics by analyzing the disparities in access to and use of digital technologies among various groups within a population. This includes considering factors such as age, income, education level, and geographical location. Faloye and Ajayi (2022) have shown that certain demographic groups, such as low-income households, rural communities, and individuals with lower levels of education, are more likely to experience limited access to digital resources and skills. These disparities can have significant implications for individuals'

ability to participate fully in the digital age, as they may face challenges in accessing educational opportunities, job prospects, healthcare services, and civic engagement. Understanding the variations in the digital divide across different demographics is crucial for policymakers and stakeholders to develop targeted interventions and initiatives to bridge these gaps and ensure equal opportunities for all individuals to benefit from digital technologies.

Empirical Review

The pursuit of identifying non-contextual factors that contribute to school effectiveness has gained popularity due to the prevalence of research that analyzes large-scale evaluations (Martínez-Abad et al., 2018). Their study utilizes data mining techniques, specifically decision trees, to identify ICT factors associated with school effectiveness in the Spanish sample of the Programme for International Student Assessment (PISA) 2015 evaluation. The study finds that excessive use and availability of ICTs in both educational and home environments are linked to lower effectiveness, while personal characteristics of students, such as their self-efficacy and interest in using technology, can protect school effectiveness.

Another study Ishaq et al. (2020) investigated the effects of ICT on tertiary education and its impact on academic achievement among students in public and private academia in Pakistan. The research objectives included determining the reasons for providing students with access to ICT services, examining how many students use ICT and for how long, and describing the relationship between the use of ICT and academic performance. The findings revealed that most students had access to laptops, personal computers, and the Internet at universities. Many students reported using ICT to enhance their essential skills and to facilitate their learning process with greater engagement. Moreover, the study concluded that the effective use of ICT had a substantial and significant impact on students' academic performance.

Tezci (2011) also investigated Turkish primary school teachers' perceptions of school culture in relation to the integration of ICT in education. The study also sought to identify factors that might influence the teachers' perceptions of school culture in relation to ICT integration. The findings indicated that the teachers' perceptions of school culture in relation to ICT integration were not positive, particularly in motivational and technical aspects. Furthermore, the study identified factors that appeared to influence the teachers' perceptions of school culture regarding ICT integration in education. These included gender, ownership of a personal computer, access to the Internet, professional experience, and weekly computer use. This suggests that these factors could play an important role in shaping teachers' attitudes and beliefs about ICT integration in education, and ultimately affect the level of integration and use of ICT in the classroom.

Díaz et al. (2019) investigated the relationship between the use of ICT and mathematics performance in a specific geographic region. The study indicates that, to gain a comprehensive understanding of the phenomenon, a mixed research method was used which involved the use of a linear hierarchical model (HLM) analysis to evaluate the characteristics of both students and schools. The findings indicated a positive association between effective use of ICT and school performance in mathematics. This suggests that the use of ICT can enhance learning outcomes, as long as it is used appropriately. The study highlights the importance of understanding the role of ICT in education, as it can significantly impact student performance in certain subjects.

As society becomes more digitally focused, the integration of information and communication technologies (ICT) into education is becoming increasingly important (Gómez-Fernández & Mediavilla, 2020). Their study further identifies the personal characteristics of teachers, as well

as those of the school and classroom environment, that are associated with a higher likelihood of ICT use in the classroom. The logistic model was used with the data from the census survey and evaluated individual students' competencies. The results suggest that higher teacher motivation, greater use of ICT by students at school and home, and better-prepared teachers requiring less ICT training are associated with more frequent use of ICT in the classroom. However, some factors affecting ICT use differ depending on the competency being evaluated. Teachers who work full-time use ICT more frequently in Spanish and Mathematics, while those with more disruptions in their classrooms use ICT less frequently in social and civic competence and English. A lack of digital devices in the school is associated with lower use of ICT in English, Spanish, and Mathematics, but higher use in social and civic competence. Finally, private and semi-private schools use more ICT than public schools in Mathematics, English, and Spanish.

Similarly, Pullen (2015) and Wims and Lawler (2007) expressed that the use of information and communication technology (ICT) in schools has been widely researched in terms of students' use of ICT at school, as well as their experiences with technology in school. The study found that students who learn to use certain technologies at home bring that knowledge to school and vice versa. Therefore, teachers should consider the value of the technologies that students use at home for personal use and incorporate them into classroom activities. The study also found that schools played a significant role in enhancing students' confidence in using ICT, while the home environment provided opportunities for students to practice and communicate with technology. Both domains contributed to students' ICT skills, resulting in more independent learners and users of technology. Karakara and Osabuohien (2019) indicate that although education is a fundamental human right that plays a critical role in unlocking human potential. There are high numbers of children who are not in school and who face challenges in their learning. The study revealed that, households with access to information and communication technologies (ICTs) promote children's learning at home and decrease the likelihood of a child being educationally disadvantaged.

Becker (2022) investigated how social origin, immigrant background, and gender impact the use of information and communication technologies (ICTs) for educational purposes in school, and whether certain combinations of these factors lead to specific advantages or disadvantages). The study uses data from the EU sample of the Programme for International Student Assessment (PISA) 2018 to examine these inequalities and the factors that drive them. The study reveals that male students with an immigrant background and highly educated parents use ICTs for educational purposes more frequently than native female students with less educated parents. The study also indicates that higher usage of ICTs in free time for boys and better access to educational resources at home for students with academic family backgrounds. The study suggests that all students should be supported in becoming familiar with using ICTs for educational purposes, particularly those from less familiar social groups. This can be achieved by promoting the inclusion of ICTs in school curricula.

MATERIALS AND METHODS

The study used a quantitative research approach with a descriptive survey design to collect and analyze data. The quantitative data collected through a survey questionnaire measured student teachers access to and use of ICTs in school (Independent variable), and their perceived impact on performance (Dependent variable). The survey also collected demographic information such as gender and program of study (Moderating variables). The data collected was analyzed using descriptive statistics and inferential statistics such as mean and standard deviation, and mediation analysis to examine the relationships between the variables. The targeted population

for the study was 154 student teachers from a college of education in Hohoe, Volta region of Ghana. The study used a stratified random sampling technique to select 110 student teachers. The sample size determination was based on Krejcie and Morgan (1970) and verified with online sample size calculator, which suggest and affirm at least 109 sample size at 95% C.I and only $\pm 5\%$ error margin.

The survey questionnaire was administered to the selected student teacher in the classroom. This was done during the third week of the twelve weeks semester course. The participants were given instructions on how to complete the questionnaire and were assured of the confidentiality and anonymity of their responses. The participants were given two weeks to complete the questionnaire, and the researcher was available to answer any questions that arose. The questionnaire consisted of 13 question items on a four-point Likert scale (1 – strongly disagree to 4 – strongly agree). The questionnaire items were designed to collect information on student access to and use of ICTs in school, the perceived impact of ICTs use in school, gender differences, and program of study differences. The questionnaire items were validated by experts in the field of education and technology, and a Cronbach alpha at 0.7 threshold was conducted to ensure the reliability of the instrument.

Table 1: Item reliability statistics

	Mean	SD	Item-rest correlation	Cronbach's α
1. The use of ICTs in school has improved my understanding of course material.	2.63	1.04	0.631	0.80
2. The use of ICTs in school has made learning more engaging and interesting.	2.75	0.99	0.551	0.81
3. The use of ICTs in school has improved my ability to collaborate with other students.	2.75	0.98	0.482	0.81
4. The use of ICTs in school has improved my ability to communicate with teachers.	2.61	1.05	0.551	0.81
5. The use of ICTs in school has improved my ability to express myself creatively.	2.66	1.05	0.569	0.80
6. The use of ICTs in school has improved my ability to solve problems.	2.51	1.12	0.606	0.80
7. The use of ICTs in school has improved my ability to work independently.	2.47	1.12	0.601	0.80
8. The use of ICTs in school has improved my ability to research and analyze information.	2.68	1.11	0.508	0.81
9. The use of ICTs in school has helped me develop skills that are relevant to the workplace.	2.53	1.03	0.655	0.79
10. The use of ICTs in school has helped me prepare for my future academic pursuits.	2.63	1.06	0.630	0.80

11. The use of ICTs in school has made learning more accessible and inclusive for students with diverse needs.	2.19	1.08	0.070	0.84
12. The use of ICTs in school has enabled me to organize and manage my schoolwork more efficiently.	2.00	1.07	0.101	0.84
13. The use of ICTs in school has improved my overall academic performance.	1.67	0.90	0.136	0.83

Cronbach's α values for the scale ranged from 0.798 to 0.842, suggesting that the scale is a reliable measure of the construct being measured.

RESULTS

Demographic Information on the Participants

The study presents data on gender distribution, displaying the counts and percentages of females and males. From the data, there were 51 female student teachers, which represents 46.4% of the total. On the other hand, there were 59 male student teachers, accounting for 53.6% of the total. These indicate that the sample being referred to had a slightly higher percentage of males compared to females. For programs of study, there were 30 student teachers enrolled in ECE, which corresponds to 27.3% of the total. For JHS, there were 40 student teachers, accounting for 36.4% of the total. Similarly, PE also had 40 student teachers, representing 36.4% of the total. From this data, it can be observed that the sample or population consists of three different programs of study, with JHS and PE having an equal number of student teachers. The program with the lowest percentage of student teachers is ECE. Also, the data present 34 student teachers who reported always having access to and using ICT in school, representing 30.9% of the total. Additionally, 36 students (32.7% of the total) indicated that they do not have access to and use ICT in school all the time and 40 student teachers (36.4% of the total) reported using and accessing ICT in school sometimes. The sample surveyed displays varying levels of access to and use of ICT within the school setting. Approximately one-third of the student teachers have consistent access and use of ICT (Always group), while a similar proportion either lacks full access or uses ICT occasionally (Sometimes group) and Not all group.

Table 2: Descriptive distribution of impact of access to and use of ICT in school on performance

Access to and use of ICTs in school	Always (N=34)		Sometimes (N=40)		Not at all (N=36)	
Impact of ICTs on student performance	Mean	SD	Mean	SD	Mean	SD
1. The use of ICTs in school has improved my understanding of course material.	2.88	1.17	2.52	0.99	2.50	0.94
2. The use of ICTs in school has made learning more engaging and interesting.	3.09	0.87	2.67	1.05	2.50	1.00
3. The use of ICTs in school has improved my ability to collaborate with other students.	2.94	1.01	2.65	0.95	2.67	0.99

4. The use of ICTs in school has improved my ability to communicate with teachers.	2.91	1.08	2.63	1.00	2.31	1.01
5. The use of ICTs in school has improved my ability to express myself creatively.	2.79	1.07	2.63	1.13	2.58	0.97
6. The use of ICTs in school has improved my ability to solve problems.	2.65	1.18	2.55	1.06	2.33	1.12
7. The use of ICTs in school has improved my ability to work independently.	2.44	1.26	2.5	1.04	2.47	1.11
8. The use of ICTs in school has improved my ability to research and analyze information.	3.21	0.91	2.58	1.17	2.31	1.04
9. The use of ICTs in school has helped me develop skills that are relevant to the workplace.	2.88	0.95	2.22	1.04	2.50	1.02
10. The use of ICTs in school has helped me prepare for my future academic pursuits.	2.79	1.17	2.65	1.03	2.44	0.97
11. The use of ICTs in school has made learning more accessible and inclusive for students with diverse needs.	2.03	1.14	2.38	1.03	2.14	1.07
12. The use of ICTs in school has enabled me to organize and manage my schoolwork more efficiently.	2.03	0.94	2.00	1.11	1.97	1.16
13. The use of ICTs in school has improved my overall academic performance.	1.47	0.71	1.90	1.03	1.61	0.87
Grand Mean/SD	2.62	0.65	2.47	0.58	2.31	0.52

The table 3 shows the mean, standard deviation, and responses for three groups (Always, Sometimes, and Not all) on 13 items measuring the impact of ICTs on students' learning in school. The results indicate that the group with Always access to and use of ICTs in school had the highest mean scores on all items, while the group with Not all access to and use of ICTs in school had the lowest mean scores on all items. The Grand Mean was highest for the Always group (M=2.62, SD=0.65) and lowest for the Not all group (M=2.31, SD=0.52). The results suggest that access to and use of ICTs in school is positively related to student teachers' perception of the impact of ICTs on their learning in school.

Table 3: Descriptive distribution of impact of ICT use in school based on gender

Gender	Male (N=51)		Female (N=59)	
Impact of ICTs on student performance	Mean	SD	Mean	SD
1. The use of ICTs in school has improved my understanding of course material.	2.53	0.97	2.75	1.11
2. The use of ICTs in school has made learning more engaging and interesting.	2.69	1.02	2.8	0.98

3. The use of ICTs in school has improved my ability to collaborate with other students.	2.63	0.98	2.88	0.97
4. The use of ICTs in school has improved my ability to communicate with teachers.	2.53	1.06	2.71	1.04
5. The use of ICTs in school has improved my ability to express myself creatively.	2.44	1.12	2.92	0.91
6. The use of ICTs in school has improved my ability to solve problems.	2.46	1.06	2.57	1.19
7. The use of ICTs in school has improved my ability to work independently.	2.44	1.07	2.51	1.19
8. The use of ICTs in school has improved my ability to research and analyze information.	2.63	1.10	2.75	1.13
9. The use of ICTs in school has helped me develop skills that are relevant to the workplace.	2.51	1.02	2.55	1.05
10. The use of ICTs in school has helped me prepare for my future academic pursuits.	2.42	1.04	2.86	1.04
11. The use of ICTs in school has made learning more accessible and inclusive for students with diverse needs.	2.08	1.06	2.31	1.10
13. The use of ICTs in school has enabled me to organize and manage my schoolwork more efficiently.	1.92	1.04	2.1	1.10
15. The use of ICTs in school has improved my overall academic performance.	1.69	0.96	1.65	0.86
Grand Mean/ SD	2.38	0.56	2.57	0.62

Table 3 presented an analysis which examined the impact of ICTs use in school on various academic and skills-related outcomes, as reported by male (N=51) and female (N=59) student teachers. Participants were asked to rate their agreement with 13 statements on a 4-point Likert scale. Results showed that on average, female student teachers reported higher mean (M=2.57, SD=0.62) than male student teachers (M=2.38, SD=0.56). Specifically, females reported higher mean scores on items related to understanding course material, learning engagement, collaboration with other student teachers, communication with teachers, creative expression, research and analysis, workplace skills development, preparation for future academic pursuits, and making learning more accessible and inclusive for students with diverse needs. The only two items that male student teachers reported higher mean scores than females were related to problem-solving and independent work. These findings suggest that while ICTs use in school has the potential to positively impact students' academic and skills-related outcomes, it may not be equally effective across gender.

Table 4: Descriptive distribution of impact of ICT use in school based on program of study

Program of study	ECE (N=30)		JHS (N=40)		Primary (N=40)	
	Mean	SD	Mean	SD	Mean	SD
Impact of ICTs on student performance						
1. The use of ICTs in school has improved my understanding of course material.	2.77	0.97	2.50	0.934	2.65	1.19
2. The use of ICTs in school has made learning more engaging and interesting.	2.6	1.00	2.55	0.932	3.05	1.01
3. The use of ICTs in school has improved my ability to collaborate with other students.	2.53	0.86	2.75	1.06	2.90	0.98
4. The use of ICTs in school has improved my ability to communicate with teachers.	2.47	1.14	2.65	0.975	2.67	1.07
5. The use of ICTs in school has improved my ability to express myself creatively.	2.57	0.89	2.77	0.974	2.63	1.23
6. The use of ICTs in school has improved my ability to solve problems.	1.97	1.07	2.63	1.08	2.80	1.07
7. The use of ICTs in school has improved my ability to work independently.	2.4	1.19	2.35	1.08	2.65	1.12
8. The use of ICTs in school has improved my ability to research and analyze information.	2.83	1.02	2.42	1.06	2.83	1.20
9. The use of ICTs in school has helped me develop skills that are relevant to the workplace.	2.37	0.99	2.38	0.925	2.80	1.11
10. The use of ICTs in school has helped me prepare for my future academic pursuits.	2.23	1.01	2.52	1.01	3.02	1.03
11. The use of ICTs in school has made learning more accessible and inclusive for students with diverse needs.	1.8	1.03	2.40	1.1	2.27	1.04
13. The use of ICTs in school has enabled me to organize and manage my schoolwork more efficiently.	1.93	0.94	1.98	1.19	2.08	1.05
15. The use of ICTs in school has improved my overall academic performance.	1.47	0.68	1.65	0.949	1.85	0.98
Grand Mean/SD	2.30	0.58	2.43	0.48	2.63	0.67

From table 4, the highest mean scores were recorded for Primary School student teachers ($M = 2.63$, $SD = 0.67$), followed by JHS students ($M = 2.43$, $SD = 0.48$), and the lowest mean scores were recorded for ECE students ($M = 2.30$, $SD = 0.58$). Among the 13 items, the highest

mean scores were recorded for Item 2: “The use of ICTs in school has made learning more engaging and interesting” ($M = 2.73$, $SD = 1.01$), followed by Item 8: “The use of ICTs in school has improved my ability to research and analyze information” ($M = 2.69$, $SD = 1.08$). The lowest mean score was recorded for Item 15: “The use of ICTs in school has improved my overall academic performance” ($M = 1.66$, $SD = 0.85$). The findings of this study suggest that the impact varies across different programs of study, with Primary Education student teachers showing the highest mean scores of student access to and use of ICT in school. The use of ICTs in school has been perceived to make learning more engaging and interesting, and improve students’ ability to research and analyze information. However, more efforts are needed to improve the impact of ICTs on students’ overall academic performance. The study recommends the need for teachers to integrate ICTs into their teaching and learning strategies to enhance students’ learning experiences and academic performance.

Table 5: Path estimates gender as mediator

		Estimate	SE	Z	p
Access	→ Gender	-0.111	0.101	-1.1	0.27
Gender	→ Impact on performance	-0.163	0.111	-1.47	0.142
Access	→ Impact on performance	0.213	0.118	1.81	0.071

From table 5, the path estimates suggest that access to and use of ICTs in school has no direct effect on the impact on performance. Again, gender did not have a significant direct effect on the impact performance, and also gender did not significantly mediate the relationship between access to and use of ICTs in school and the impact on performance. This finding highlights the importance of providing students with access to and opportunities for using ICTs in school effectively to enhance their general learning outcomes.

Table 6: Path estimates of program of study as mediator

		Estimate	SE	Z	P
Access	→ Program of Study	-0.4017	0.1564	-2.57	0.01
Program of Study	→ Impact on performance	0.0855	0.0716	1.19	0.232
Access	→ Impact on performance	0.265	0.1209	2.19	0.028

The results show that there is a significant negative relationship between access to and use of ICTs in school and program of Study ($\beta = -0.4017$, $SE = 0.1564$, $p = 0.01$). However, the relationship between program of study and the impact on performance was positive but not significant ($\beta = 0.0855$, $SE = 0.0716$, $p = 0.232$), suggesting that program of study may not have a significant impact on the use of ICTs in school regarding performance. Finally, there is a significant positive relationship between access to and use of ICTs in school and the impact performance ($\beta = 0.265$, $SE = 0.1209$, $p = 0.028$), suggesting that student teachers who have more access to and use of ICTs in school tend to have a higher impact performance.

DISCUSSION

The results provide insights into the impact of student teachers access to and use of ICTs in school on their academic learning, and any differences that may exist based on gender and program of study. In relation to students perceived impact on performance and access to and use of ICTs in school (always, sometimes and not all), it found that participants in the Always group of having access to and use of ICT demonstrated high perceived impact on performance

while those in the Not all group demonstrate low impact. In support (Wims & Lawler, 2007; Pullen, 2015; Youssef et al., 2022) found that giving students access to ICT had real advantages for them. It was also discovered that previous students' employment decisions were influenced by their exposure to computers in the classroom. For gender (male and female) participants it was revealed that female demonstrated averagely high impact of ICTs use in school on performance compared to the males. Contrary to this study, Tezci, (2011) the perceived school culture with regards to the integration of information and communication technology (ICT) in education and access to and use of ICTs appeared to be significantly influenced by gender as well as possession of a personal computer, access to the Internet, professional experience, and frequency of computer usage on a weekly basis.

It was also found that, PE student teachers showed highest while ECE student teachers showed lowest impact of ICTs use in school. The results indicated that there was no statistically significant difference in the means of the impact of ICTs in school and access to and use of ICTs in school. In like manner, the results of Wastiau, et al. (2013) show that there is still work to be done to help students and teachers improve their social media abilities, which is important for a number of reasons. They continue to argue that despite the numerous chances some students have to use ICT in school, studies highlight how crucial it is to enhance ICT use during lessons in order for students to become more confident in their digital ability. This is especially true for those students who still do not have access to ICT. Similarly, it was found that gender have no statistically significant mediation effect between access to and use of ICTs in school and impact of ICTs use in school. However, program of study significantly mediates between access to and use of ICTs in school and impact of ICTs use in school.

CONCLUSION

In conclusion, the lack of significant indirect effect and the low percentage of mediation indicate that gender does not play a significant role in mediating the relationship between access to and use of ICTs in school and the impact of ICT use in school. Thus, gender may not be a critical factor to consider when developing policies or programs aimed at promoting the use of ICTs in schools. However, program of study did not significantly mediate the relationship between access to and use of ICTs in school and the impact of ICT use in school.

Suggestion for Further Study

Based on the findings, further research may be needed to fully understand the relationship between access to and use of ICTs in school and the impact on performance. Almost all inferential statistics results in this study suggest that gender may not be a significant factor in determining the impact of ICTs in school on performance, but additional research with larger samples could provide further insight.

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