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Impact of the Digital Divide on Internet Access and Computer Usage Amongst College of Education Students in South-Western Nigeria

Shehu Ahmed Hassan

Federal College of Education, Iwo
Osun State, Nigeria
h.s.aofficials@gmail.com*

Article Information:
Received January 30, 2025
Revised February 22, 2025
Accepted February 26, 2025

Keywords:
Colleges of Education; Digital Divide; ICT; Learning

Abstract

This qualitative and exploratory case study aims to find out how 20 education students at the Federal College of Education (Special), Oyo State, and the College of Education, Iwo, Osun State, in Nigeria perceive and use the internet and ICT. Drawing upon a comprehensive review of existing literature and empirical data, this paper examines the multifaceted dimensions of the digital divide within higher education institutions specifically Colleges of Education in South-Western Nigeria. The study adopted stratified random sampling to gather information from respondents. The research identifies crucial factors that cause the digital divide in this context, including disparities in infrastructure, internet accessibility, digital literacy, and socioeconomic backgrounds. The research results show that only four out of twenty (20%) people own a computer and pay a hefty price for internet access, eighteen (90%) of the research participants provided favorable feedback on their experiences with the usage of computers and the Internet having a good impact on their life, Eighteen out of twenty (90%) expressed a desire for the establishment of computer centers within schools and libraries, the extension of current infrastructure, computer training, and decreased tariff prices, and Eighteen (90%) of the participants endorsed computer and Internet training. It can be concluded that disparities in computer use and internet access persist among College of Education students in Nigeria due to factors such as socioeconomic background, geographical location, and digital literacy levels. Such consequences not only affect students' academic performance but also have implications for their future employability in an increasingly digital job market.

A. Introduction

Modern society has been completely changed by Information and Communication Technology that has become the major source of computerization for information systems in the 21st century (Aceto et al., 2019; Wu et al., 2018). However, for a variety of reasons, these ICT resources (computers, application software, internet access, scanners, photocopiers, laptops, different handheld devices, online databases etc.) are dispersed unequally. Among these is the fact that some individuals have greater technology access than others, which has led to a technological division known as the "digital divide." There have been discussions and disagreements over the impact of the digital gap between developed and developing nations. While developed nations get the benefits of information technologies in nearly every aspect of their lives, developing nations have not yet fully embraced these technologies' manifold advantages. With the 21st

How to Cite : Hassan, S. A. (2025). Impact of the Digital Divide on Internet Access and Computer Usage Amongst College of Education Students in South-Western Nigeria. *FINGER: Jurnal Ilmiah Teknologi Pendidikan*, *4*(1), 26–33. https://doi.org/10.58723/finger.v4i1.366
ISSN : 2830-6813
Published by : Asosiasi Profesi Multimedia Indonesia

century becoming into the global information superhighway that it is, "technology" plays a big part in a lot of areas, including education.

As Information and Communication Technologies have advanced, the information gap between the rich and the poor has grown wider, and this has prevented some nations from taking full advantage of ICT and participating in international society (Lembani et al., 2020; Yoon et al., 2020). The swift growth in the utilization of digital technologies has yielded notable benefits for numerous facets of everyday existence. ICT resources have had a significant impact on global economies and societies (Bahrini & Qaffas, 2019; Pradhan et al., 2018). ICT facilities and how to handle them digitally are applicable to every aspect of library and information endeavors, just as they are to other human endeavors.

Being proficient with technology is especially important when gathering, storing, recovering, sharing, and evaluating information. The expansion of ICT has brought the world closer together, transforming modern civilizations and creating many challenges for international integration, one of which is the issue of the "digital gap." As ICT becomes more prevalent in every facets of life, there is growing concern about how it varies among populations, creating digital disparities in access to and usage of ICT resources based on factors like income, sex, ethnic minorities, race, place of residence, education, and so on (Elena-Bucea et al., 2021; Fang et al., 2019; Van Dijk, 2017).

The concept of the digital gap demarcates the geographic division of the world into nations possessing and lacking access to modern information technology. Due to Nigeria's inadequate ICT infrastructure and insufficient societal investment in the new communication technology, there is unequal access to the computer network. The degree of ICT accessibility varies across industrialized and developing nations. The term "digital divide" denotes this discrepancy in Information Technology access and utilization (Afzal et al., 2023; Chipeva et al., 2018; Wang et al., 2021).

The Organization for Economic Cooperation and Development (OECD) (2001) defined Digital divide as the disparity in access to Information Technology (IT) and Internet use amongst different people, houses, companies, and geographical areas at various socioeconomic levels. The discrepancies that divide society and countries into groups with and without digital access, skills, and knowledge are referred to as the "digital divide" because they affect how each group uses and benefits from the internet differently (Van Deursen et al., 2021). Digital divide is a difference in how different populations utilize, access, and circulate ICT. Wilson claims that the digital divide has eight aspects: Access in terms of finances, physical space, intellectual property, projects, content, production, institutions, and politics. Digital divide refers to the differences in ICT use between people from different parts of the world; it is the gap existing between developing and developed nations, and the information impoverished may experience increased social marginalization. Many claim that the digital gap is like the black against white or rural versus remote difference, and they choose to ignore it. There are many who argue that it is a matter of the rich versus the marginalized or America versus the rest of the globe, and that the differences will eventually benefit both the rich and the needy. Some people perceive technology as masculine, while some women work in it.

The fault lines that divide the information society are spanned by the digital divide. Every person can create, access, use, and share knowledge and information in the information society. It enhances people's quality of life and enables individuals, groups, and people to realize their full stregths and create sustainable growth.

A fundamental tenet of a global information economy is unbiased access to information. Nigeria is the only nation that more exemplifies the necessity of information technology. Regarding information and communication technology (ICT), Nigeria, the most populous country in Africa, has marginalized its rural communities. Cell phones, PCs, and Internet connectivity are all included in this. ICT usage is hampered by poor service brought on by communication network capacity limitations, a lack of technology-supporting infrastructure, a lack of funding, and Nigeria's inconsistent electric supply (Martens et al., 2020; Nyika, 2020).

Out of all the African countries, Nigeria has one of the lowest in the utilization and accessibility of Nokia Siemens Networks mobile connectivity. Inequalities in access to the Internet for Nigerians, little or no knowledge of search engines, meagre quality of the internet connection, low English-speaking ability, and the disparity in socioeconomic levels are among the determining factors of digital divide (Okocha & Edafewotu, 2022).

Seventy percent of Nigerians lived below the $2 per day poverty line in 2010, according to World Bank estimates. Unemployment was reported to be 21% in the same year, with youth unemployment increasing more quickly in urban areas than in rural ones. The difference between those with computers and Internet

connections and those without is known as the Nigerian digital gap. The homes of the wealthy have computers and Internet access due to the high cost of these devices, while the residences of the impoverished do not. The digital divide is a significant obstacle that separates the haves and have-nots in Nigeria with regard to communication, information acquisition, and global economic competition (Ogbo et al., 2021).

Based on the above problems, a study was conducted to analyze the impact of digital gap on internet access and computer use between college students in Western Nigeria.

B. Research Methods

The population for this research are all College of Education students in Nigeria. 20 students of Federal College of Education Iwo, Osun state and Federal College of Education Oyo (Special), Oyo state in South-west Nigeria constituted the sample for the study; to investigate Internet access and computer use experiences and perceptions through face-to-face interviews where open-ended questions were asked. Stratified random sampling method was employed for sampling for the study as participants must have spent over a semester in the school enough to be confirmed as students and know their whereabouts in the school community. The two schools were specifically chosen as they are in Nigeria's south-west, in the states of Osun and Oyo. The two states are located in Nigeria's southwest area.

The interview questions (research instrument) were recorded in English, but Yoruba translation was provided because the majority/all of the participants were Yoruba (Yoruba people are a big ethno-linguistic group who speak Yoruba as their first language and English as their secondary language). Approximately 12 percent of Nigeria's 18 million inhabitants are Yoruba. All of the study's participants were college students who had finished at least one semester. A collaborative random selection strategy was used to recruit study participants. To compile a list of participants who had attended the school for more than a semester, cooperation with the school coordinators took place. The goal, scope, duration, and possible risks of the study were explained to the participants. A statement explaining the participants' rights to participate, deny participation, or withdraw from the study at any moment was read to them. Measures were taken to make sure participants understood the purpose and extent of the study before they gave their agreement to participate. All of the people who consented to participate were interviewed one-on-one. In Nigeria, interviews were place in The School Field, Federal College of Education Oyo (Special), Oyo State, and R139 (Room 139) at Federal College of Education, Iwo (Mini Campus), Osun State. The School Field and R139 are open meeting areas that were perfect for conducting interviews. The duration of each interview was roughly half an hour. Two interviewees per day were used for all ten-day interviews. A single research question guided this research study: “How does digital divide affect the studies of a sample of College of Education Students in Osun and Oyo states in Nigeria?” The information that follows is a discussion of the findings as they relate to the study's specific research topic.

Transcriptions of audiotaped interviews were used to collect data, which were then confirmed by educational technology professionals. In-depth research and data collection were made possible by the interviews, which also gave participants the freedom to express themselves. Twenty people between the ages of 18 and 30 participated in in-person structured interviews using open-ended questions. 10 male and 10 female individuals were present.

Qualitative coding was used to assess participant answers to open-ended interview questions. The general procedures of data organization and classification, coding, and interpretation were all part of the data analysis process. *NVivo10* qualitative software was used to analyse the findings of the face-to-face interviews. Pattern matching was used to analyse data and to capture the details and meaning, thematic analysis was used. Four main categories resulted from the developed codes based on the responses from the 20 students as discussed below.

C. Results and Discussion

Affordability of Computers and Internet Access

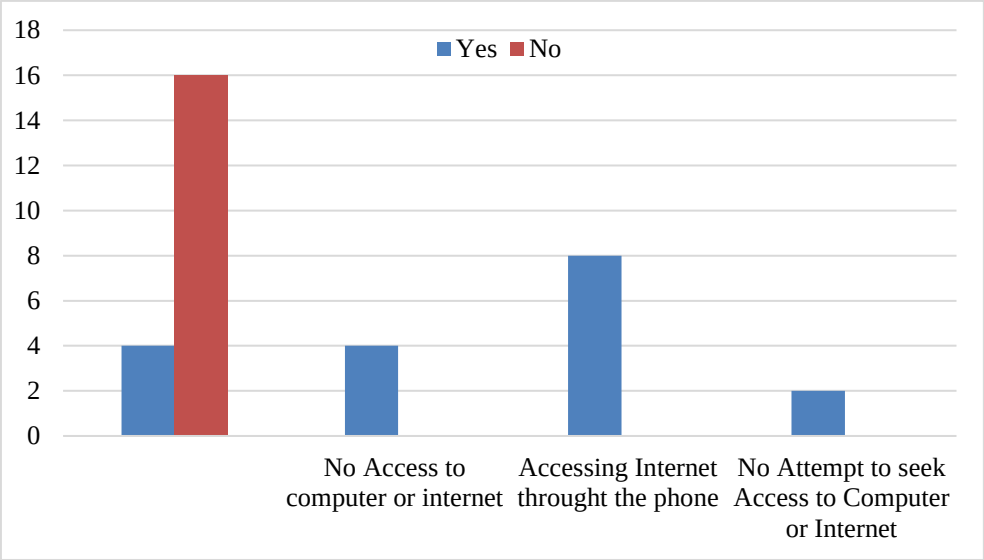

Figure 1. Affordability of Computers and Internet Access

One recurrent issue in the answers to several interview questions was the price of computers and internet connections. Just 20% of the population owns a computer, and internet connectivity is expensive. According to four participants, neither a computer nor the Internet were available to them. Among those without a desktop computer, eight said they used their cell phones to browse the Internet. Two participants had not tried to use a computer or the Internet due to their parents' limited financial resources and other survival needs. According to one person, "I don't really use computers, if there were no computers nearby, they would have no effect on me." The majority concurred that since they can access almost anything on their smartphones, they don't need a computer. Obtaining computer equipment and Internet connectivity was hampered by the two institutions' exorbitant Internet connection costs. Cell phones were used to access the Internet even though no personal computer was owned; nevertheless, at the time of the study, there was no open or free Wi-Fi at the school. The low income of the vast majority of Nigerians is the issue, not the cost of computers, which is comparable to those in the UK.

Exposure to Information on the Internet

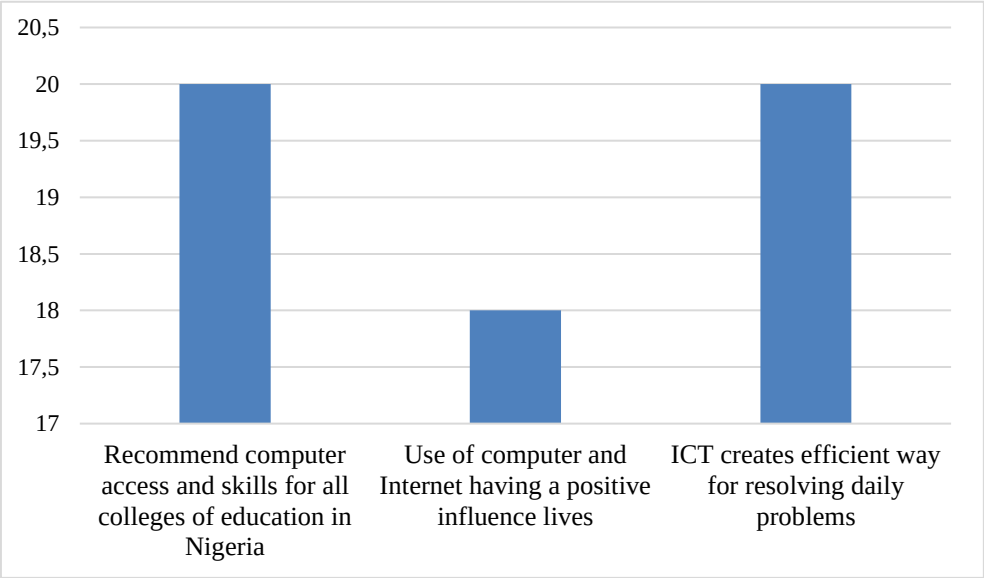

Figure 2. Exposure to Information on the Internet

All of the 20 participants said yes to the question, "Would you recommend computer access and skills for all colleges of education in Nigeria?". Participants showed that using computers and the Internet provided them with access to information and knowledge that was beneficial to their educational productivity. Eighteen (90%) of the research participants provided favorable feedback on their experiences with the usage of computers and the Internet having a good impact on their life. The most positive replies were for internet access via smartphones, which functioned as alternatives to desktops. It is worth noting, however, that Smartphones cannot perform many of the tasks that a computer can; as a result, cellphones are less effective when computer work is required. According to one participant, without computers and the Internet, he will be kept in the dark and his advancement will be stifled. There was a significant difference when it came to computers and the Internet. All 20 responses, accounting for 100% of the participants, mentioned ICT as a convenience factor that produced an effective manner of handling daily difficulties such as communication, business transactions, raising income, and providing career chances. One participant stated that the usage of e-mail and direct (Whatsapp) communications not only saved her employees money that would have otherwise been spent on long-distance phone calls, but also sped up the process of information transmission.

Increasing Internet Access

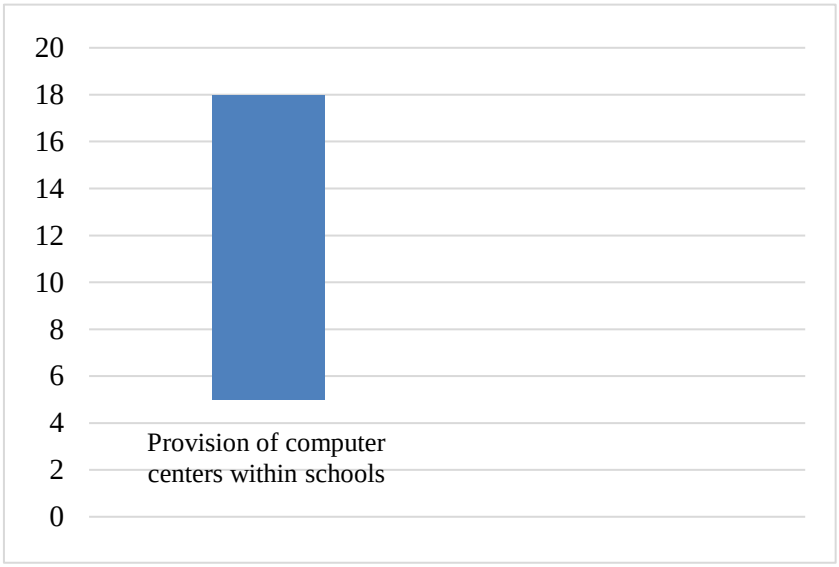

Figure 3. Increasing Internet Access

Concerns raised by participants included the high cost of computer gear, a lack of infrastructure, low income, a lack of computer know-how, poor technical assistance, slow Internet speed, and the high cost of high-speed Internet. Eighteen out of twenty (90%) expressed a desire for the establishment of computer centers within schools and libraries, the extension of current infrastructure, computer training, and decreased tariff prices. More computers should be placed in public spaces nearby, such as community libraries, and Internet connection should be affordable. There aren't enough computers in the school library for students to use. Many students visit Cybercafés to use the computers, which are limited in number. These Cybercafés are also becoming obsolete as patronage is minimal, owing primarily to the introduction of Smartphones, which are gradually replacing laptops. It is not uncommon to have to wait two to three hours to use a computer. Students would utilize the computers in the school library if it was equipped with enough machines and kept open at all times. Poor infrastructure and quality high-speed Internet connectivity were major themes that emerged throughout the responses to the interview questions. There were not enough computers in the school libraries to fulfill the needs of the kids. All 20 participants requested that the government aid in the establishment of standard computer centers/libraries that would be owned and operated by the schools, thereby making Internet connection more inexpensive. The Nigerian government should extend existing ICT infrastructures in Colleges of Education, purchase more computers for student use, and boost existing bandwidth to increase Internet speed.

Training Use of Computer

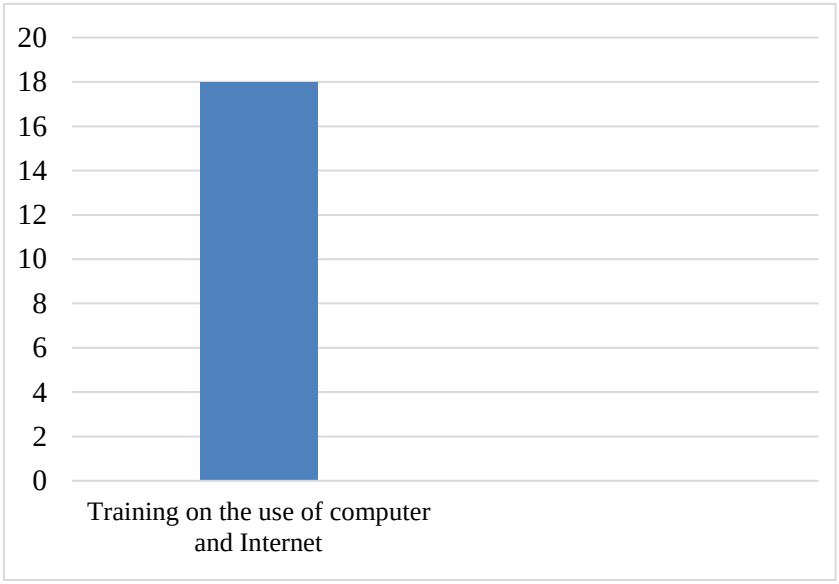

Figure 4. Training on Use of Computer

Eighteen (90%) of the participants endorsed computer and Internet training. Many of the students have simply seen the computer and have had insufficient interaction with it. Participants expressed a desire for training that will sensitize and raise awareness among both young and older students in the Colleges of Education about the benefits and use of computers and the Internet. Computer training was the second top response by all participants as the main way used to aid how to use and access the Internet in the Colleges as a single response to the interview questions, without being integrated into other themes. The most significant reaction was the influence of Internet access as a resource tool and educational tool. Another educational initiative that was introduced was the use of computers and the Internet to write online exams and check results. One attendee stated, "There are a lot of college of education students who have no idea what computers are." The majority of students who visit computer centers to verify their grades online require the aid of center workers. I believe it would be beneficial if the government (school) could make computer and internet use and access available, inexpensive, and appealing.

It was discovered during the course of the research that socioeconomic difference among the students was a major determinant of the digital divide. During the course of the study, it was noticed that many of the students tend to withdraw and relied on responses from their fellow students before echoing the answers. This may have affected the results of the study in some way. Timing of the study was too long and epileptic due to series of public holidays and breaks from school. The study was supposed to last for 10 days but eventually took over 2 months (60 days) to complete.

Based on the research results, there are several recommendations:

1. Infrastructure Development: The government and other relevant players in Nigeria should emphasize the extension and enhancement of broadband infrastructure in both rural and urban areas. This includes expanding access to dependable internet connectivity and guaranteeing the availability of appropriate computing devices in educational institutions.
2. Digital Literacy Programs: Implement comprehensive and tailored digital literacy programs within College of Education curricula. These programs should focus not only on basic computer skills but also on fostering digital literacy, critical thinking, and information literacy among students and educators.
3. Teacher Training: Offer continuous professional development programs for educators to enhance their digital competence and integration of technology in teaching practices. This training should empower teachers to effectively utilize digital resources and engage students in meaningful digital learning experiences.
4. Public-Private Partnerships: Foster partnerships between government agencies, educational institutions, private sector entities, and NGOs to provide funding, resources, and expertise for digital

inclusion initiatives. Collaborative efforts can facilitate the provision of affordable devices, internet access, and educational technology tools.

5. Community Engagement: There is the need to engage local communities in initiatives aimed at bridging the digital divide. Encourage community participation in establishing community-based digital access centers and provide support for students without adequate resources at home.
6. Policy Reforms: Review and update existing policies to reflect the importance of digital inclusion in education. Enact policies that mandate equitable access to digital resources and support the integration of technology in teaching and learning.

Targeted digital literacy training programs should be implemented to empower students with the skills necessary to navigate the digital landscape effectively. These programs should go beyond basic computer literacy and encompass critical digital competencies, including information literacy, online safety, and digital problem-solving. A coordinated effort involving government agencies, educational institutions, and private sector partners is essential to bridge the digital divide comprehensively. Public-private partnerships can facilitate the provision of resources, funding, and expertise to ensure sustainable and inclusive digital inclusion initiatives.

The digital divide in computer usage and access to internet among Nigerian College of Education students is a complex issue that requires immediate attention and concerted efforts from all stakeholders. By addressing the barriers to digital access and literacy, Nigeria can pave the way for a more equitable, digitally empowered generation of educators who can contribute to the country's educational advancement and socio-economic development. As Nigeria aspires to fulfill its educational and economic development goals, bridging the digital divide is no longer an option; it is a requirement to ensure that every student, regardless of background, can fully engage in and benefit from the opportunities afforded by the digital era.

D. Conclusion

The goal of this qualitative, multiple exploratory case study was to investigate the experiences and perceptions of 20 College of Education students in College of Education, Iwo, Osun State and Federal College of Education (Special), Oyo State in Nigeria regarding access and use of ICT and internet. The majority of participants recognized the advantages of computers and Internet access, but a few individuals professed no interest in computers or the Internet. Undergraduate students in universities make considerable use of the Internet. Inequitable internet access exists because students mostly rely on private/commercial internet cybercafés - both on and off campus - for access and use. Relevant authorities should do more to expand opportunities for students in colleges of education, as many of their colleagues in universities and polytechnics already benefit from the use of computers and internet access to enhance their academics.

In general, students at colleges of education do not have as much access to information and communication technology as students at other institutions of higher learning. The affordability of computers, high tariff prices for Internet access, and the school's lack of computer and internet availability were major themes throughout the interviews. Disparities in computer use and internet access persist among College of Education students in Nigeria due to factors such as socioeconomic background, geographical location, and digital literacy levels. These disparities manifest as limited access to educational resources, reduced engagement in online learning, and hindered development of essential digital skills. Such consequences not only affect students' academic performance but also have implications for their future employability in an increasingly digital job market. To address the digital divide in Nigerian Colleges of Education effectively, policymakers, educators, and stakeholders must collaborate on multifaceted strategies. First and foremost, infrastructure development initiatives, including the expansion of broadband access and the provision of affordable computing devices, are imperative to ensure equitable access to digital resources.

E. Acknowledgment

Respect and gratitude go to students of Federal College of Education Iwo, Osun state and Federal College of Education Oyo (Special), Oyo state in South-west Nigeria who have agreed to be involved in this research.

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