

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND QUALITY OF NIGERIAN TERTIARY EDUCATION.

SYLVANUS P. IDIONG, PhD

College of Education, Afaha Nsit
Akwa Ibom State, Nigeria.

INIOBONG G. EKPO, PhD

College of Education, Afaha Nsit
Akwa Ibom State, Nigeria.

Abstract

The use of information and communication technology (ICT) has been shown to have a positive impact on the quality of tertiary education in Nigeria. Studies have found that the use of ICT in higher institutions can improve student engagement, motivation, and satisfaction, as well as the quality of instruction and learning outcomes. ICT has been found to increase access to education, improve communication between teachers and students, and foster collaboration and peer learning. ICT allows learners to explore different locations and environments without having to physically travel there. It enables learners to experiment with different scenarios and outcomes which can help them to better understand complex concepts. ICT provides great opportunities for learners to collaborate with each other, either in real time or asynchronously in order to share ideas and solve human problems together. The paper employs the philosophical methods of criticism, speculation and analysis. Having analyzed the importance of ICT, the challenges and opportunities that exist in Nigerian tertiary education, the work recommended among others that there should be improved access to ICT resources and infrastructure, faculty and staff of the tertiary institutions should be trained on the effective use of ICT in teaching and learning processes. More so there should be regular evaluation of the effectiveness of ICT - enabled learning and thereby making adjustment as needed.

Keywords: Information and Communication Technology (ICT); Quality of Nigeria Education; Digital Libraries; Multimedia Resources; Instructional Resources

Introduction

The utilization of information and communication technology (ICT) has positively influenced the quality of tertiary education in Nigeria. Studies on the use of ICT in higher institutions had shown that it can improve student engagement, motivation, and satisfaction, as well as the quality of instruction and learning outcomes. (Idiong,2023; Adeogun,2003; Aloraini,2012). ICT can help to reduce the cost of education and make educational materials more accessible to students.

According to Ibe- Basset (2011) ICTs can expand access to education anytime and anywhere. It can transcend time and space, permit asynchronous and synchronous learning. With ICTs, teachers and students do not rely solely on printed and other materials in physical media housed in libraries. Learning materials could be assessed in almost all subjects and in a variety of media anywhere at any time of the day and by an unlimited number of people. This

novelty has really enhanced learning and teaching processes positively in tertiary Education in Nigeria.

This paper, therefore, examines the impacts of ICT and its challenges towards quality education in Tertiary Institutions in Nigeria.

The Positive Impacts of ICT on Quality of Nigerian Tertiary Education

The use of ICT has helped to improve the quality of teaching and learning in a number of ways. For example, ICT can be used to deliver lectures and educational materials to students, either through online platforms or by providing access to digital libraries and other resources. Ugochukwu et al (2021) asserts that the application offers a paperless teaching and learning opportunity, which has resulted in positive findings. This can help to make learning more interactive and engaging, and can also allow students to learn at their own pace.

ICT has played a significant role in improving the quality of Nigerian tertiary Education. ICT has increased access to educational resources and materials. With the internet and other digital technologies, students can have access to a wealth of information, including textbooks, lectures, and other educational resources that can be accessed anytime and anywhere. This can help to improve the quality of education by making learning more flexible and accessible.

There are several ways that ICT can improve the quality of learning by providing access to digital libraries and other resources. Firstly, digital libraries allow for a wider range of resources to be accessed by students, as they are not limited by physical space or the number of physical copies available. Secondly, digital libraries can be accessed anytime and anywhere, which means that students can learn at their own pace and in their own time. Sequel to this, Idiong (2023) encouraged learning environment where there are ample opportunities for students to students' discussion, collaboration and feedback. Thirdly, digital libraries can provide multimedia resources, such as videos, images, and interactive tools, which can help students to learn in a more engaging and effective way.

ICT has made learning more interactive and engaging. It has provided opportunities for students to actively participate in their learning, rather than passively absorbing information. This can be done through activities such as simulations, quizzes, and games. ICT has provided opportunities for students to collaborate with each other, either in real time or asynchronously, to share ideas and solve problems together. Also ICT has provided opportunities for students to create and share their own content, such as through blogs, wikis, and podcasts.

In Simulations, students experienced and explored a simulated environment. Simulations can range from simple scenarios to complex, realistic simulations that mimic real-world situations. For example, a physics simulation might allow students to experiment with different forces and see the resulting motion in a virtual environment. A medical simulation might allow students to practice diagnosing and treating virtual patients. These types of simulations can provide a safe, risk-free environment for students to explore and learn, while also making the learning process more engaging and memorable.

Some examples of interactive tools that can be found in digital libraries include:

- **Interactive quizzes:** These allow students to test their knowledge on a topic and receive instant feedback on their answers.
- **Interactive simulations:** These allow students to experiment with different scenarios and outcomes, which can help them to better understand complex concepts.
- **Virtual field trips:** These allow students to explore different locations and environments without having to physically travel there.
- **Video tutorials:** These provide step-by-step instructions on how to complete a task or solve a problem.
- **Interactive timelines:** These allow students to explore events and their connections over time.

Educational games are another great way to make learning more interactive and engaging. Educational games can cover a wide range of topics, from language learning to history to science. These games often incorporate elements of competition and reward, which can help to keep students motivated and engaged. For example, students might earn points, badges, or other rewards as they progress through the game. Games can also be designed to be collaborative, allowing students to work together to solve problems and complete tasks. In addition, educational games are often easy to use. Some examples of educational games include:

- "Duolingo" is a language learning game that allows players to practice vocabulary, grammar, and pronunciation through a variety of fun activities.
- "Kahoot!" is a game-based learning platform that allows teachers to create quizzes, surveys, and polls for their students.
- "Quizizz" is a game-based learning platform that allows students to compete with each other in real-time.- "World of Goo" is a physics-based puzzle game that allows players to build structures and solve problems using goo balls.
- "Civilization VI" is a turn-based strategy game that teaches players about history, geography, and culture.
- "Monument Valley" is a puzzle game that takes players on an adventure through impossible architecture and illusionary puzzles.
- "Minecraft: Education Edition" is a modified version of the popular game "Minecraft" that is designed for educational purposes.

Possible challenges in the Utilization of ICT in Nigerian Tertiary Education

The use of ICT in Nigerian tertiary education has faced some challenges. One of the main challenges is the lack of adequate infrastructure and resources. Many institutions do not have the necessary hardware and software to fully utilize ICT, and this can hinder the quality of education. In addition, there is a lack of skilled personnel who can effectively use ICT in teaching and learning. This can result in a lack of effective integration of ICT into the curriculum, and can lead to frustration and lack of motivation among students.

Lack of hardware and software has a few key implications. It can lead to a lack of access to educational resources, such as e-books, online lectures, and other educational materials. It can limit the ability, which can reduce the effectiveness of learning. Interaction and collaboration are essential components of effective learning, and the lack of these can have a significant negative impact on the educational experience. When students and teachers cannot interact with each other, it can make it difficult for students to ask questions, receive feedback, and clarify their understanding of the material. Additionally, the lack of collaboration can make it difficult for students to work together on projects and assignments, limiting their ability to develop teamwork and problem-solving skills. Without these key components, students may not be able to get the most out of their educational experience, leading to a reduction in the overall quality of learning.

One major ways that the lack of effective integration of ICT into the curriculum can lead to frustration and lack of motivation among students is by creating a disconnect between what they are learning and how they are being tested. When students are being taught using ICT but then tested in traditional ways, such as paper-and-pencil tests, they may not be able to see the relevance of what they are learning and how it applies to the real world. This can lead to them feeling frustrated and unmotivated to engage in their studies.

Specifically other challenges include:

- ☐ Limited access to ICT resources and infrastructure. Many institutions have limited budgets for ICT, which may limit the availability of computers, software, and other tools needed for effective ICT-enabled learning.
- ☐ Lack of training and support for faculty and staff. Without proper training and support, faculty and staff may not be able to effectively utilize ICT in their teaching and other work activities. Okobukola asserts that those who designated to use computers in school do not receive adequate training, at worst, do not receive any training at all.
- ☐ Limited access to ICT resources and infrastructure can be a significant challenge for Nigerian tertiary institutions. This may be due to a number of factors, including:
 - ☐ Budget constraints: Many institutions have limited budgets for ICT, which may not be sufficient to meet the needs of the institution.
 - ☐ Geographic location: Some institutions may be located in rural areas where access to the internet and other ICT resources is limit
 - ☐ **Capacity constraints:** The capacity of the ICT infrastructure, such as bandwidth and storage, may be limited, which can hinder the effective use of ICT.

Beside the cost of purchasing ICT equipment and software, there are ongoing costs associated with maintenance, upgrades, and support. Many institutions struggle to secure the necessary funding for these ongoing costs, which can lead to a deterioration of the ICT infrastructure over time. In some cases, ICT equipment may become outdated or unusable due to a lack of funds for maintenance and upgrades. This can create a "digital divide" between institutions that have the resources to maintain and upgrade their ICT infrastructure and those that do not. According to Aduwa and Iyamu (2005) Nigeria has over 2000 tertiary institutions, majority of

them lack instructional resources such as computer, software, multimedia projector, white board, etc.

Geographic location can also be a significant challenge for ICT adoption in Nigerian tertiary institutions. Many institutions are located in rural areas where there is limited or no access to high-speed internet. Even in urban areas, internet connectivity may be unreliable or slow. This can make it difficult for students and faculty to access online resources, participate in online courses, and collaborate with others. In addition, many institutions may not have the financial resources to build the necessary infrastructure, such as computer labs and wi-fi networks, to support ICT-enabled learning. Another key challenge is the limited bandwidth available for internet access. Bandwidth is the amount of data that can be transferred over a network at a given time. If there is not enough bandwidth, internet access may be slow or unreliable, which can impact the effectiveness of ICT-enabled learning. In addition, many institutions may have inadequate storage capacity for data and files, making it difficult to effectively use ICT for teaching and learning.

In many Nigerian tertiary institutions, faculty and staff may not have the necessary training or support to effectively use ICT. This can be a significant barrier to the adoption of ICT-enabled learning, as faculty may not know how to effectively integrate technology into their teaching. In addition, there may be a lack of support for faculty and staff in terms of technical assistance and troubleshooting. Without proper training and support, faculty and staff may become frustrated with the use of ICT and give up on its use altogether.

Even when ICT resources and support are available, some faculty and staff may still resist the use of ICT. This resistance can be due to a number of factors, such as:

The belief that traditional teaching methods are more effective than ICT-enabled learning

- Concerns about the security of personal data and privacy.
- Resistance to the change that comes with adopting new technologies.
- Lack of time and resources to invest in learning new technologies.

These factors can make it difficult for institutions to effectively implement ICT-enabled learning, even when the resources and support are available.

Resistance to adopting new technologies can be especially challenging for older faculty members. These individuals may have been teaching for many years using traditional methods and may be reluctant to change their teaching style. In addition, they may have limited experience with technology and feel intimidated by the prospect of learning new tools and platforms. Furthermore, they may feel that the time and effort required to learn new technologies is not worth the potential benefits. All of these factors can contribute to a reluctance to adopt ICT-enabled learning.

Conclusion

From the foregoing, the impacts of ICT have been one of the most remarkable phenomenal growth in a number and variety of ways. Educational sector has witnessed a catalyst of growth occasioned by this rapid innovation the challenges notwithstanding. With this

tremendous impacts, teaching and learning processes in Nigerian Tertiary Education have been effectively enhanced.

Recommendations

i. Improve access to ICT resources and infrastructure, including the provision of internet access and computer labs.

ii. Train academic staff on how to effectively use ICT in teaching and learning.

iii. Create incentives for academic staff to adopt new technologies, such as through professional development opportunities.

iv. Encourage academic staff to share their experiences and best practices in using ICT.

v. Regularly evaluate the effectiveness of ICT-enabled learning and make adjustments as needed.

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