

## USE OF BLENDED TECHNOLOGY TO IMPROVE THE QUALITY OF TEACHING AND LEARNING IN TERTIARY INSTITUTIONS IN NIGERIA

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### Abstract

*This paper investigated the use of blended technology to improve quality of teaching and learning, particularly in Nigerian tertiary institutions. Blended learning combines traditional face-to-face teaching methods with online learning techniques, resulting in a more comprehensive and engaging learning experience for students. By incorporating technology into the classroom, teachers are able to diversify their instructional methods and provide students with a more interactive and personalized learning experience. This has shown to improve the overall quality of teaching and learning in Nigerian tertiary institutions. With the integration of blended technology, educators are able to create a more dynamic and modern learning environment for their students, while also equipping them with the necessary digital skills for the 21st century. This technology has shown promising results in improving students' learning outcomes, engagement, and satisfaction. In this paper, the researchers reviewed educational communication theory and its implications for blended learning, utilization of blended technology- to improve quality of teaching and learning in Nigeria which helps Providing new nuances, in the sense that it can provide new experiences for students who are too saturated with conventional learning models used by the teachers, discussing its potential benefits that increases learners accessibility to online resources and materials can reach a wider audience, including students with disabilities or remote location and challenges of using blended technology to improve teaching and learning in tertiary institutions in Nigerian. Suggestions for successful implementation in order to fully realize the potentials of blended learning in educational institutions is to invest in infrastructure and professional development to enable effective implementation of blended technology.*

**Keywords:** Blended Technology, Improve Quality, Education, Teaching and Learning

### Introduction

In recent years, the landscape of education in Nigerian tertiary institutions has been rapidly evolving, with a growing emphasis on the integration of technology to enhance teaching and learning experiences. This shift towards combining traditional face-to-face instruction with online resources and tools, presents new opportunities for educators to engage students in more interactive and personalized ways of learning. The world is changing constantly, as a result of technology which has seriously influenced educational activities. In recent time, the world of education has been transformed through the revolution of computer and internet technology, and according to Malter and Rindfleisch, (2019) the new knowledge is remarkable created and established in extraordinary ways. This has revolutionized teaching and learning, especially combining traditional face- to- face with blended technology. With the advancement of the World Wide Web (WWW) has resulted in high demand for distance learning, leading to the emergence of concepts such as online learning and e-learning.

Online learning systems are widely used in higher education, and much research has been conducted to identify both their advantages and disadvantages (Aljawarneh, 2020).

The traditional method of teaching, where teachers make used of chalkboard and in most cases lecture method in our tertiary institutions in Nigeria, has been a serious concern for parents, administrators, students and stakeholders in the field of education. As a result, online learning, also known as e-learning, has gained popularity and has been specifically adopted by some public Universities in the country. However, e-learning alone may not be enough to achieve effective teaching and learning in our tertiary institutions in Nigeria; it has to be married with face-to-face learning. This approach is known as blended learning, which has proven to be the most effective learning system.

The relationship between use of blended technology and quality of education according to (Maslin, 2021), Technology plays a crucial role in the life of our educational system because technology

makes work easier, simple and less time consuming. The impact of technology can be felt in every field; which education is inclusive. In general, the use of blended technology in education, especially for learners, can help learners create learning communities using digital communication channels, this way will increase learner's collaboration in digital-based interactive education (Teguh, Sri, Mela, Zebua, & Karomah, 2024).

The utilization of technology in educational units through the development of modern technology-based pedagogical concepts known as online learning takes place. Seeing how important the role of technology is to the quality of education, it is necessary to improve the quality of education that must utilize technology by adjusting the use of information and communication technology for the world of education, especially in the learning process.

However, in a traditional method of teaching, the teacher presents, interacts, discusses, demonstrates, illustrate and communicates with learners face-to-face. Learners also interact and communicate with each other in their classroom settings. The teacher is responsible for giving assignments or group work to the students. According to Muhammad (2023), this type of teacher-led classroom learning is a proven method of learning that provides ample opportunities for interaction between the teacher and the learners, as well as between the learner themselves which go along way improving the quality of education. More so, the requirement for both the teachers and students to be present in a classroom at a designated time and date can be challenging in most cases. Also, lack of equipment, conducive learning environment hinder the effectiveness of the teaching and learning process.

Considering the growing understanding the potential of the Information and Communications, Technology (ICT) to connect learners with learners as well as with instructors, and also to provide them with interactive and engaged learning experiences, the transformation of teaching and learning in higher education is inevitable. As new educational technologies become available, re-thinking conventional practices around teaching and learning is of paramount importance as resources gradually diminish and demand for access to better and quality higher education dramatically increases. Information overload is a serious concern in an information-based, technology-driven society. Much information is available in form of facts, concepts, rules, principles and

procedures. For educators, to rapidly changes Information, Communication and Technology posed several challenges. Some of these challenges in blended learning Blended learning implementation has raised several issues of concern. Earlier research and recent studies have discussed the disadvantages of blended learning. In his research, Graham (2004) identified five concerns related to blended learning. These include the loss of classroom community feelings, the role of self-regulation as an independent learner, support and training for instructors and learners, the digital divide, and the cultural adaptation of course materials. In addition, Sabri, Isa, Daud, and Aziz (2010) highlighted technical issues related to the online component of blended learning that need to be addressed.

All these require educators to train their students to search for, access, retrieve, interpret, synthesize, organize, and communicate information, as well as to become independent, life-long learners. In order to address the needs and demands associated with knowledge and the wave of technological innovations, there is serious need to transform educational system in Nigerian. According to Garrison and Vaughan (2008), higher education must start delivering on its promises by providing learning experiences that engage and address the needs of society in the twenty-first century. The good news is that the government of Nigeria should be fully committed to the widespread adoption of ICTs in all sectors of the economy, including education.

### Conceptual Framework

**Concept of Technology-Based Learning:** Is an evolution of the traditional learning concept that utilizes information and communication technology to support the learning process (Andriani, 2015). Conceptually, technology-based learning still refers to the basic principles of learning, such as clear objectives, structured planning, and continuous evaluation.

**Concept of Blended Technology:** According to Kim, (2007) blended learning involves using information technology to deliver learning materials outside the traditional classroom setting.

### Theoretical Framework

Educational communication Model which was propounded by Wilber Schramm in 1954 is used by the researchers as a medium of communication between the educators and the learners. The theory which the

educators select appropriate contents according to the learning objectives and transmit knowledge, skills, ideas, and concepts to specific learners through effective media channels. The essence is to make communication and interaction more effective. Therefore, the theoretical model of educational communication, which appeared before educational technology, can be used to interpret blended technology to improve the quality of education, as they both pursue the optimal effectiveness of teaching and learning interaction. With the development of psychology and the increasing recognition of constructivist epistemology, it is gradually realized that educational communication is a multi-directional interactive activity in which ideas and meanings are constructed by learners as subjects instead of being transmitted, thus adding new meaning to educational communication theories.

### Implication of the Model

Applying this theory into the education setting, in the complete communication circle between teachers and students, teachers encode knowledge and send them to students, then students receive the message and decode them based on their basic knowledge and comprehension ability which could be through face-to-face or online. After that, the students give feedback to the teacher to show their understandings. At the end, teachers also give feedback to students and help them understand the knowledge better.

### Utilization of Blended Technology- to Improve Quality of Teaching and Learning in Nigeria

The advancement of information and communication technology has quickly impact on the world of teaching and learning. Global demands on education require serious adjustment in technological developments and constantly efforts in improving the quality of education in the 21st century. The fast growing in information technology in the era of this globalization is inevitable because it will have positive influence in our educational system. In addition, the use of information and communication technology can accelerate effective and efficient management all activities in educational system. According to Teguh et al. (2024), the benefits for using blended technology-based learning to improve the quality of teaching and learning are:

1. Supporting the learning process, i.e. technology can make it easier for teachers to deliver the material being taught;
2. Providing new nuances, in the sense that it can provide new experiences for students who are

too saturated with conventional learning models used by teachers;

3. The development of information and communication technology can provide the possibility of teachers and students interacting with learning resources widely, in the sense that they are not only fixated on conventional material sources such as books; and
4. Learning becomes more flexible in terms of time and place.

Use of blended technology can utilize through technological based media which make it easier for teachers to send their lecture materials being taught to the learners. The use of technology-based media can also provide new experiences for students who are too bored with the face-to-face learning (Fitriani, 2021b). According to (Fitriani, 2021b) The advancement of information and communication technology has formed a network that provides the possibility for students to interact with learning resources widely. The internet and web networks have opened access for everyone to obtain information and knowledge as well as teaching materials. Various efforts have been in place to improve the quality of education, one of which is to improve the quality of learning using blended technology media because these are interrelated and support each other. Because the use of technology as often as possible will maximize good learning outcomes, in accordance with the times and following standards in this digital era (Teguh et al., 2024).

Currently, internet-based learning, such as online learning with zoom meetings, web-learning, e-learning has been widely practiced. Especially when the learning system in schools became online learning during the increasing number of Covid-19 Pandemic cases. These lessons utilize the internet as a medium. In addition to learning being more flexible in terms of time and space, students accessed the information needed and learning was convenient. However, internet-based learning also has its disadvantages, one of which is the costs internet facilities which are very expensive and poor network which often affect the connectivity.

Similarly, the position of the teacher is an important part in the implementation of blended learning technology. Various methods, techniques, approaches, and learning models are very necessary to learn. Not only that, but teacher creativity is also needed to create new things. (Azzahra, 2022). Information technology as an education quality improver, the use of information technology in improving the quality of teaching and

learning consists of three things which include: skills, knowledge and competency will result in quality education (Hanannika & Sukartono, 2022).

To maximize the use of technology in education, teachers need those who has adequate knowledge of the use of technology. In line with the rapid development of information technology, the view of learning in the classroom and outside the classroom has shifted significantly through the use of radio, television, whatsapp, telegram among others. Improving the quality of teaching and learning using information technology requires equitable access to technology, quality materials, and teachers' knowledge and skills in using digital tools and resources.

### **Role of Blended Technology to Improve the Quality of Education in Nigeria**

According to the researchers the role of information technology in the world of teaching and learning in Nigeria includes:

- i. Blended technology allows teachers to tailor instruction to individual students' needs and ability;
- ii. **Increased Accessibility:** Online resources and materials can reach a wider audience, including students with disabilities or remote location;
- iii. **Enhanced Engagement:** Interactive digital content and multimedia resources can increase student engagement and motivation;
- iv. **Real-Time Feedback:** Technology enables immediate assessment and feedback, helping students track progress and identify areas for improvement;
- v. **Data Analysis:** Teachers can use data and analytics to inform instruction and make data-driven decision;
- vi. **Virtual Collaboration:** Students can collaborate on projects and share resources more easily, promoting teamwork and communication skills;
- vii. **Flexibility and Pacing:** Students can learn at their own pace, reviewing materials as needed and accelerating or decelerating their progress; and
- viii. **Access to High Quality Resources:** Blended technology provides access to high quality educational resources including videos, simulations and virtual labs.

In addition, according to Teguh et al. (2024) the application of learning technology, especially using

various sources and media in both mono and multimedia to support independent learning completeness, is very important. Learners will be able to learn to use technology which will serve as a tool for effective instruction. To improve the quality of teaching and learning using blended technology there is need to facilitate learning in various dimension and backgrounds for students to easily, and widely, create learning that is fun, flexible in the dimensions of time, space, and develop the potential of students individually and the groups.

### **Benefits of Blended Technology to Improve Teaching and Learning in Nigeria Tertiary Institutions**

The integration of blended technology to improve teaching and learning has brought about significant changes in higher education, particularly in the Nigerian tertiary institutions. By adopting blended learning approaches, educators and students will be actively engaged in a more dynamic and interactive educational process. Studies conducted by Staker and Horn (2012) indicated that traditional classroom activities such as lectures and labs if moved to online students could study with flexibility. By using multidisciplinary practices and technologies, teachers moved students beyond the restrictions of the classroom into the online environment. It emphasizes the view of blended learning as it delivers access to course materials regardless of time and space. It indicates significant evaluation of personal space and convenience in accessing learning resources.

The use of blended-based instruction allows more engagement, and it increases students' participation (Baragash & Al-Samarraie, 2018; Bowyer & Chambers, 2017; Morton, Saleh, Smith, Hemani, Ameen, Bennie, & Toro-Troconis, 2016; Palmer, Lomer, & Bashliyska, 2017). Similarly, the findings made by Benson, Anderson and Ooms (2011) revealed that majority of the participants had reported an appreciation to the utilization of ICT-based instruction using blended learning approach.

According to Baragash & Al-Samarraie (2018) despite some degree of concerns on the use of web-based instruction, such as time consuming, more rigorous in teaching-learning preparations, and not all faculty members are inclined towards blended-based instruction, most of the academic staff have acknowledged its positive benefits in integrating with physical teaching approach. Gedik, Kiraz and Ozden

(2013) discussed that the use of blended-based instruction allows more engagement, and it increases students' participation. Relating this to the study conducted by Benson et al. (2011) who suggests the effectiveness of using a combination of face-to-face and online teaching approach. As such, it provides sense of flexibility for better classroom participation.

As highlighted in the cited researches, the benefits of blended technology on teaching and learning outcomes are multifaceted. It is evident that the use of digital technologies, such as online resources and communication tools, not only enhances student engagement but also transforms traditional teaching methods. Moreover, the shift towards student-centered approaches in blended learning environments has shown to influence student learning strategies, with deep and strategic approaches correlating with higher levels of online activity and academic achievement. Understanding the interplay between student approaches to learning and technology utilization is crucial for designing effective blended learning experiences that can truly enhance teaching and learning outcomes in Nigerian tertiary institutions.

In the context of this study the researchers identify the following key benefits of Blended Learning to include:

- i. Opportunity for collaboration at a distance: Individual students work together virtually in an intellectual endeavour as a learning practice.
- ii. Increased flexibility: Technology-enabled learning allows for learning anytime and anywhere, letting students learn without the barriers of time and location but with the possible support of in-person engagement.
- iii. Increased interaction: Blended learning offers a platform to facilitate greater interactivity between students, as well as between students and teachers.
- iv. Enhanced learning: Additional types of learning activities improve engagement and can help students achieve higher and more meaningful levels of learning.
- v. Learning to be virtual citizens: Learners practice the ability to project themselves socially and academically in an online community of inquiry. Digital learning skills are becoming essential to be a lifelong learner, and blended courses help learners master the skills for using a variety of technologies, and

- vi. Blended learning provides making learning resources and experiences repeatable, reliable and reproducible.

### **Challenges of Using Blended Technology to Improve Teaching and Learning in Tertiary Institutions in Nigerian**

The integration of blended technology in Nigerian tertiary institutions presents both challenges and opportunities that are crucial for enhancing teaching and learning practices. As highlighted in the literature, the traditional brick-and-mortar classroom setup faces limitations in meeting the evolving educational demands of the 21st-century global knowledge economy (Ilechukwu et al., 2014). The COVID-19 pandemic has further accentuated the need for a paradigm shift towards virtual and blended learning approaches in Nigerian higher education institutions (Whyte, 2020). Challenges such as unpreparedness for technological advancements, low ICT literacy level, inequality of access to the technology itself by lecturers and students, outdated teaching methods, epileptic electricity supply, economic, political, and socio-cultural factors, insufficient infrastructure hinder the effective implementation of blended technology. However, amidst these challenges lie significant opportunities for innovative pedagogical practices, enhanced student engagement, and increased access to quality education.

### **Way Forward**

In addressing the gaps in e-learning strategies, leveraging ICT-driven platforms, and fostering digital literacy among educators and students, Nigerian tertiary institutions can harness the full potential of blended technology to create a dynamic and inclusive learning environment that promotes sustainable development and global competitiveness. Considering external factors such as economic, political, and socio-cultural factors. Institutional administrators should focus on experiences and interactions that lead to success across the institution, as illustrated in proven methods of blended learning course design. Massive investment in ICT infrastructure to provide the needed technology support becomes imperative. Administrators of public tertiary institutions on their part should embark on awareness and training of staff and students on the use of e-learning tools and Institutional administrators should prioritize student engagement through on-site

and online academic and social involvement to improve student, program, and institutional outcomes.

### Conclusion

In conclusion, the integration of blended technology in Nigerian tertiary institutions has shown great potential to enhance teaching and learning outcomes. Through the use of online resources, virtual learning environments, and interactive tools, educators have been able to engage students in a more dynamic and personalized way. This approach has not only improved students' access to educational materials but has also fostered collaboration and critical thinking skills. However, there are still challenges to be overcome, such as limited access to technology and internet connectivity issues in some regions. Moving forward, it will be crucial for institutions to invest in infrastructure and professional development to ensure the effective implementation of blended technology. By addressing these challenges and leveraging the benefits of blended technology, Nigerian tertiary institutions can continue to prepare students for success in the digital age.

### References

- Aljawarneh, S. A. (2020). Reviewing and exploring innovative ubiquitous learning tools in higher education. *Journal of Computing in Higher Education*, 32, 57-73.
- Anderson, T. & Ooms, B. (2011). Getting the mix right again: An updated and theoretical rationale for interaction. *The International Review of Research in Open and Distributed Learning*, 4(2), 9- 18. DOI: <https://doi.org/10.19173/irrodl.v4i2.149>
- Azzahra, A. (2022). *Pemanfaatan Teknologi Dalam Meningkatkan Mutu Pendidikan*.
- Baragash, R. S., & Al-Samarraie, H. (2018). Blended learning: Investigating the influence of engagement in multiple learning delivery modes on students' performance. *Telematics and Informatics*, 35(7), 2082-2098. DOI: <https://doi.org/10.1016/j.tele.2018.07.010>
- Benson, V., Anderson, D., & Ooms, A. (2011). Educators' perceptions, attitudes and practices Blended learning in business and management education. *Research in Learning Technology*, 19(2), 143-154. DOI: <https://doi.org/10.1080/21567069.2011.586676>
- Bowyer, J., & Chambers, L. (2017). Evaluating blended learning: Bringing the elements together. *Research Matters: A Cambridge Assessment Publication*, 23, 17-26. Retrieved from <https://www.cambridgeassessment.org.uk/Images/375446-evaluating-blended-learningbringing-the-elements-together.pdf>
- Fitriani, F. (2021b). Analisis Penilaian Pembelajaran Berbasis Teknologi Informasi dan Implikasinya Terhadap Peningkatan Kualitas Pendidikan SD/MI. *Genderang Asa: Journal of Primary Education*, 2(2), 18–30.
- Garrison, D. R., & Vaughan, H. (2008). *Blended learning in higher education: Framework, principles and guidelines*. New York: John Wiley & Sons.
- Gedik, N., Kiraz, E. & Ozden, Y. (2013). Design of a blended learning environment: Considerations and implementation issues. *Australasian Journal of Educational Technology*, 29(1), 1-19. DOI: <https://doi.org/10.14742/ajet.6>
- Graham, C. R. (2004). Blended learning systems: Definitions, current trends and future directions. In C. J. Bonk, & C. R. Graham (Eds.), *The Handbook of blended learning: Global perspectives, local designs* (pp. 3-21). San Francisco: Pfeiffer
- Hanannika, L. K., & Sukartono, S. (2022). Penerapan Media Pembelajaran Berbasis TIK pada Pembelajaran Tematik di Sekolah Dasar. *Jurnal Basicedu*, 6(4), 6379–6386. <https://doi.org/10.31004/basicedu.v6i4.3269>
- Ilechukwu, Leonard Chidi, Njoku, Collins Chibuzo. (2014). Optimizing E-Learning in Nigerian Universities for Sustainable Development. <https://core.ac.uk/download/234677151.pdf>
- Kim, W. (2007). Towards a definition and methodology for blended learning. In *The proceedings of workshop on blended learning* (pp. 1-8).
- Malter, A. J., & Rindfleisch, A. (2019). Transitioning to a digital world. In *Marketing in a Digital World* (Vol. 16, pp. 1-11). Emerald Publishing Limited.
- Morton, C. E., Saleh, S. N., Smith, S. F., Hemani, A., Ameen, A., Bennie, T. D., & Toro-Troconis, M. (2016). Blended learning: How can we optimise undergraduate student engagement?. *BMC medical education*, 16(1),

195. DOI: <http://dx.doi.org/10.1186/s12909-016-0716-z>

Muhammad, S.A. (2023). A Blended learning approach to improve student's performance in higher education. *Pakistan Social Sciences Review*, 7(4), 261-273.

Palmer, E., Lomer, S., & Bashliyska, I. (2017). Overcoming barriers to student engagement with active blended learning: Interim report.

Northampton: University of Northampton.

Sabri, N. M., Isa, N., Daud, N. M. N., & Aziz, A. A. (2010). Lecturers' experiences in implementing blended learning using i-learn. *Proceeding of International Conference on Science and Social Research* (pp. 580-585).

Staker, H., & Horn, M. (2012). Classifying K-12 blended learning. Retrieved from Clayton Christensen Institute for Disruptive Innovation: <http://www.christenseninstitute.org/wp-content/uploads/2013/04/Classifying-K-12-blended-learning.pdf>

Teguh, T. D. S., Sri, M., Mela, K.A.G., Zebua, J. O., & Karomah, F. (2024). Improving the quality of education through technology-based learning. *Perspektif Ilmu Pendidikan*, 38(1), 36-46.

Whyte, S. T. (2020). The need for virtual learning in nigerian tertiary institutions of learning in the face of covid-19 and after. <https://core.ac.uk/download/581122008.pdf>