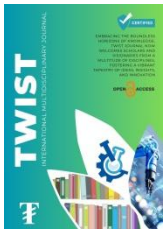
DOI 10.5281/twist.10049652#543

TWIST, 2025, Vol. 20, Issue 4, pp. 391-398

TWIST

Journal homepage: www.twistjournal.net



Students' Perceived Usefulness and Ease of Use of Blended Learning in Tertiary Institutions in Ekiti State

Oladele Dennis Omodara
Department of Educational Technology,
Bamidele Olumilua University of Education, Science and Technology,
Ikere-Ekiti, Ekiti State, Nigeria
ORCID: https://orcid.org/0000-0001-5267-8444

Abstract
The study examined how students perceived the value and simplicity of blended learning in Ekiti State's tertiary institutions. Three (3) higher education institutions were used to select the three hundred and twenty-six (326) respondents for the study, comprising two hundred (200) male students and one hundred and twenty-six (126) female students. Random sampling was employed in the study, and a descriptive survey was used as the design. The instrument used to collect data was a self-structured questionnaire about students' opinions of blended learning's usefulness and usability in Ekiti State's higher education institutions. A weighted mean, a statistical measure that considers the importance or weight of each value in a data set, was employed to offer descriptive responses to the two research questions posed for the investigation; two hypotheses were developed and tested using Chi-square. Based on the data analysis results, blended learning significantly influenced undergraduate students' perceptions of Ekiti State's institutions of higher learning. The ease of use of blended learning significantly impacted students' academic performance. The study advocated for blended learning strategies at the tertiary level; it suggested that the government collaborate with curriculum developers, federal and state authorities, and professional organisations such as the National Universities Commission to establish resource centres aimed at educating stakeholders in the educational sector about the advantages of blended learning and technology-supported learning methodologies.

Keywords
e-learning, technology supported, Ekiti state, perceived, usefulness, ease of use, blended learning

Introduction

Over a decade before today, the basic application of the use of information and communication technology, or ICT, was accelerated by an innovative change in pedagogical methods, including online instruction; it is often referred to as electronic learning or online learning that involves using ICT to transmit course-related information and provide access to reading materials, homework, and other learning tasks. (Keržič, Tomaževič, Aristovnik, Umek. 2019). Thus, they align with recent classes of children born with cell phones and are adept at modern innovations. According to Jones., Ramanau., Simon., & Healing, (2010). and Kubiatko (2013), contemporary youth have distinct cognitive and operational paradigms compared to preceding eras.

Using ICT for educational instruction delivery, E-learning is gaining prominence in higher learning. As noted by (Eze., Chinedu-Eze., Bello, (2018); Aboderin, 2015 Eze, Chinedu-Eze., Okike, and Bello (2020), this innovative technology can be successfully incorporated into the teaching and learning processes, benefiting students, lecturers, and administration of higher education institutions. Regular statistical studies of the effects of deploying a Learning Management System (LMS) implementation must be conducted based on accurate assessments to determine whether the outcomes are satisfactory or if any improvements are required. This continuous improvement aspect of e-learning is a reason for optimism about its potential in higher education.

Many factors must be considered, particularly when determining whether to utilise e-learning in a selected learning management system (LMS) to replace in-person instruction or blended learning, which combines virtual and traditional classroom lectures, according to Wu, Tennyson, and Hsia (2010) & Fenech., Baguant., & Abdelwahed, (2021). In contrast to face-to-face instruction, online instruction makes extensive use of LMS functions and

functionalities, allows objectives to be efficiently specified, organises the materials, facilitates engagement and outcomes assessment, makes student-teacher interaction more straightforward and efficient, allows for personalisation, and significantly overcomes time and space constraints Blended learning enhances the benefits of both asynchronous and synchronous online courses while maximising the advantages of face-to-face methods in classroom lectures The ability to adapt training to the needs of each student is a feature of blended learning systems. Given that students may take charge of their education and study at their own pace, this individualised learning approach can result in better student outcomes and higher levels of engagement. Kamalov., Calonge., and Gurrib, (2023).

Using online learning in addition to traditional classroom training is known as blended learning. Higher education already extensively uses asynchronous learning activities in teaching and learning. (Hrastinski, 2008). In universities, blended learning is an advantageous teaching and learning paradigm (Garrison., & Kanuka, 2004). Technological innovation has evolved from merely delivering course material to students to one that continuously determines each student's unique learning needs and offers tailored learning paths in real-time, personalising learning and transferring expertise and abilities to the privileged individual at the optimal time for achieving learning objectives. (Taylor., Yeung., & Bashet, 2021). Face-to-face learning is mixed with new technology to preserve regular social connections between students and teachers (Morgan. 2002., Nouby., & Alkhazali. 2017)

In light of this, "different teaching strategies and learning methods are synthesised in blended learning." (Wu et al., 2010). However, the ratio of these two teaching-learning concepts may change; Owston., & York (2018)., and Lazar., Panisoara., & Panisoara. (2020)., & Tong., Uyen., & Ngan. (2022). Propose that the proportion of e-learning falls between 33% and 50% and even as high as 80%. However, blended learning should not be seen as a substitute for time-based online learning and in-person instruction; instead, it should be marketed as a strategic institutional initiative that considers the progress a student is making in the virtual environment. (Graham., Woodfield., & Harrison, 2013).

STATEMENT OF THE RESEARCH PROBLEM

With the growing use of blended learning models in higher education globally, it is critical to comprehend how students view their usefulness and ease of use, especially in states with limited resources like Ekiti State. Integrating digital and in-person learning approaches, known as blended learning, can improve educational flexibility, accessibility, and engagement. (Shroff., & Vogel 2010).. However, students' acceptance of blended learning is frequently impacted by how beneficial and straightforward they are seen to be, which is crucial to their efficacy (Davis, 1989). The potential for improved engagement and achievement through blended learning is a promising aspect of this study.

While research has delved into blended learning in various settings, empirical studies targeting Ekiti State's higher education institutions still need to be conducted. These studies should focus on how undergraduate students perceive the benefits and accessibility of blended learning. Understanding students' perspectives on blended learning is crucial, and your role as educators, policymakers, and researchers is not just essential but integral to this process for deep and meaningful learning outcomes. (Vaughan., Cleveland-Innes., & Garrison, 2013). **(**Venkatesh., Thong., & Xu, 2012). By addressing perceived usability issues, one can significantly improve the implementation of blended learning for effective teaching and learning.

Thus, this study aims to investigate undergraduate students' opinions on the usefulness of blended learning in the educational process and their perceptions regarding how user-friendly these systems are. The study's objective is to provide helpful information to the discussion on how to best enhance student engagement and academic achievement in Ekiti State's higher education institutions by optimising blended learning.

PURPOSE OF THE STUDY

The study aims to discover how blended learning is viewed as practical and straightforward for students in tertiary institutions in Ekiti State. The study specifically looked at;

1. Undergraduate students' opinions on blended learning's value to the learning process.
2. How do undergraduate students feel about the simplicity of using blended learning in the learning process? `

RESEARCH QUESTIONS

The study was guided by the two research questions listed below.

1. What are the undergraduate students' perceptions of the usefulness of blended learning in the learning process?
2. How do undergraduate students perceive the ease of using blended learning in the learning process?

RESEARCH HYPOTHESES

The research hypotheses developed for the study are;

1. Blended learning does not significantly impact Undergraduate students' academic progress in Ekiti State's tertiary institutions.
2. 2. The ease of using blended learning does not significantly influence the academic success of undergraduate students in tertiary institutions in Ekiti State.

LITERATURE REVIEW

Concept of Blended Learning

The blended learning approach to teaching and learning is gaining popularity among scholars worldwide. Blended learning combines traditional in-person teaching and learning environments with different types of instruction that involve technology, as opposed to pure e-learning, which refers to learning solely through electronic media. According to Bielawaski and Metcalf (2003), blended instruction seeks to enhance instructional goals by using the right learning technology to complement various instructional methodologies and deliver the right skills to the right person at the right time.

Computer technology courses on computing and strategies are instructed by Yigit., Koyun., Yuskel., and Cankaya (2013), and to improve learning, the researchers used the blended learning methodology. In their comparative analysis, blended learning is implemented by the institution's Learning Management System (LMS). Students were assessed based on their scores on their final test, midterm, and homework assignments. Students' performance exceeded expectations when compared to the conventional approach. Students taking the Algorithm and Programming Course in traditional and blended learning environments demonstrated similar algorithmic thinking abilities. The study showed that blended learning is a more practical education delivery method.

Technology Enhanced Learning

Technology-assisted education Research in Technology Enhanced Learning (TEL) centres on how technologies might improve teaching and learning processes. The portable computers available to students nowadays are getting cheaper and more powerful. These gadgets include tablets, smartphones, gaming consoles, and gaming devices. (Ishaya & Etienne, 2020) It also implies that technology is organised in its approach, using scientific concepts and other structured methods of knowledge-gathering to solve problems and advance society. Iacovitti, (2022). According to Erdmer., Ottenbreit-Leftwich., Sadik., Sendurur., & Sendurur (2012), Hsu (2010), Ritzhaupt et al. (2012), Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer (2010), and Yemothy (2015). Utilising technology to enhance learning through a variety of media, offer chances for student-centred learning, engage students, and accommodate learning preferences and differentiation is known as technology integration.

Using technology to assist and surround education in institutions is known as "technology in education." Supporting, improving, and facilitating instruction and encouraging changes in the learning environment entails using technologically based teaching resources, such as audio, visual, and audio-visual aids. This observation makes the learning process more meaningful and responsive to the unique and local needs of the learner. Educational technology concerns the method or pedagogy (Chan, Chin, Nagami, & Suthiwan, 2011; Omariba, 2022). Effective technological integration into education is crucial to thrive and accomplish its intended goals in the present educational environment. The distinctive feature is a methodical adoption or approach to instruction with explicitly specified learning objectives.

Johnson., Jacovina., Russell., & Soto, (2016). Technology integration incorporates technological tools—such as audio and visual materials and activities—into daily routines, work ethics, teaching methodologies, and school administration. "Technology resources" refers to a broad range of educational tools, including computers, devices for communication via the Internet or a network, software, and various technologically driven devices or resources. In the meantime, techniques include network-based transmission, internet-based research, data retrieval, remote instrument access, technology-mediated communication, teamwork, and other strategies (National Centre for Education Statistics [NCES], 2021). Innovation blending should be constant, regular, effective, and successful to support educational objectives and aims.

Susikaran, (2014). Opined that chalk and talk are insufficient to teach educational technology effectively. According to Taiwo (2013), the digital revolution has caused professionals in various disciplines to reevaluate their careers, with new media and digital technology playing a significant role—the implications for the statement above on 21st-century teachers. Technology material in our new classroom is essential since it suggests spatial borders. Over time, student performance has decreased, especially in postsecondary institutions.

Technology in Education

In recent years, educators and learners have shown interest in the impact of interns on education (Jabr., 2011., Elkaseh., Wong., & Fung, 2016). Students learn more efficiently because they can concentrate better during digital and interactive activities, which help expedite the assimilation of concepts. With technology tools, students get more practical classroom experience while also being able to reinforce what they have learned. (Haleem., Javaid., Qadri., & Sumanc, 2022). The availability of technological instruments means pupils have more opportunities to apply ICT for learning, improving instruction quality. Ratheeswari. (2018). Software has been developed to improve teaching using digital technology. Most universities and other higher education institutions are adopting ICT at an increasing rate globally (Lydia., Naidu., Bhat., & Frrag, 2023).

Modern civilisation is changing quickly due to ICTs. They affect all aspects of life. Its repercussions are becoming increasingly apparent in classrooms. Society is putting pressure on educational institutions to adapt to this technological revolution since ICT increases the opportunities for educators and students to tailor instruction to each student's needs. (Shokeen., Naveen., & Priyanka, 2022). ICT use, according to Mintah., Owusu-Darko., & Apoenchir

(2023) and Fu (2013), changes the relationship between teaching and learning by providing students additional time to delve deeper into the machines of the course material and enhance their conceptual comprehension. Thus, the user's point of view is essential when implementing an LMS and assessing its efficacy (Mutua, 2021). Evaluating students' perceptions is one of the most important parts of designing and implementing a thriving online learning experience.

Hrastinski (2008) claims that in his review of the literature on online learner involvement, he argues that learning and participation must be positively correlated for students to benefit the most from their participation experiences. They believed involvement improved students' academic engagement and helped them learn and grow. The underlying presumptions of intrinsic motives indicate a multifaceted approach to education that prioritises democratic values. (Bergmark & Westman, 2016; Westman & Bergmark, 2018. Bergmark., & Westman, 2018)

METHODOLOGY

Research Design

The research employed a descriptive survey strategy, which was selected because it enables data to be collected from a representative population sample to portray situations as they are. The target population is all of Ekiti State's tertiary educational institutions. Comprising male and female undergraduate students from state-affiliated and federally-funded higher education institutes. The study used a random sampling technique. Two hundred (200) male students and one hundred and twenty-six (126) female students made up the three hundred and twenty-six (326) respondents who were drawn from three (3) higher education institutions. A self-structured questionnaire is the instrument used to collect the data. Based on students' specific perceived characteristics regarding the utility and convenience of blended learning among tertiary institution students in Ekiti State.

Test and measurement scholars and specialists in educational technology assessed the instruments' face and content validity in the College of Education at Bamidele Olumilua University of Education, Science, and Technology, Ikere Ekiti, Ekiti State. (Adewale 2024). The instrument's reliability was assessed using the test-retest procedure. With a reliability coefficient of 0.77, the instrument was deemed reliable for the study, and the acquired data was examined using the proper statistical techniques. Descriptive statistical methods of weighted mean data analysis addressed the two (2) research questions posed for the study. SPSS Version 23 was also used, while the chi-square of an independent sample was utilised to assess the two (2) hypotheses at the 0.05 significance level.

RESULTS

Descriptive Analysis

Research question 1: What are the undergraduate students' perceptions of the usefulness of blended learning in the learning process?

Table 1 Responses of the perception of undergraduate students towards the usefulness of blended learning in the learning process

S/N	Items	SA	A	D	SD	Mean	Remarks
1.	Using blended learning would help me acquire better Internet knowledge.	159 48.8%	150 46%	10 3.1%	7 2.1%	3.41	Agreed
2.	The most successful learning strategy for me is blended learning.	87 26.7%	181 55.5%	25 7.7%	33 10.1%	2.98	Agreed
3.	My desire to pursue academic success can be realized through blended learning.	96 29.4%	157 48.2%	40 12.3%	33 10.1%	2.96	Agreed
4.	Blended learning is my most effective technique for pursuing independent study.	85 26.1%	155 47.5%	34 10.4%	52 16%	2.83	Agreed
5.	Self-motivation is improved via blended learning.	112 34.4%	150 46%	23 7.1%	41 12.6%	3.02	Agreed
6.	I will have more and more influence over my study habits if I use blended learning.	95 29.1%	153 46.9%	35 10.7%	43 13.2%	2.92	Agreed
7.	My academic performance would be enhanced by using blended learning.	105 32.2%	146 44.8%	33 10.1%	42 12.9%	2.96	Agreed
8.	Using blended learning makes me grasp additional tasks quickly in my studies.	101 31%	160 49.1%	31 9.5%	34 10.4%	3.00	Agreed
9.	I could learn on my own through blended learning.	113 34.7%	144 44.2%	37 11.3%	32 9.8%	3.03	Agreed
10.	blended learning has contributed to my academic progress.	94 28.8%	159 48.8%	28 8.6%	45 13.8%	2.92	Agreed
	Grand Mean					***3.00***	***Agreed***

Source: Field survey 2023

The findings in Table 1 illustrate how undergraduates view the value of blended learning in the educational process. Out of the 326 who completed the survey, 94.8% said that using blended learning would help them become more understanding of using the Internet. Additionally, 77.6% of respondents believed that utilising blended learning would allow them to pursue their academic passion, and 82.2% said that blended learning was the most excellent approach **for** them to learn efficiently. In addition, 73.6% of respondents said blended learning is the most superb option to give them independence, and 80.4% said it increases self-motivation. 76% of the respondents stated that blended learning would allow students more and more control over their academic lives. 77% of respondents said blended learning will boost academic performance. According to 80.1% of respondents, blended learning would enable them to pick up new skills quickly.

Furthermore, 78.9% of respondents said blended learning would enable them to learn independently. As 77.6% of respondents stated, using blended learning is an excellent approach to improving the calibre and soundness of teaching strategies. The response demonstrated that undergraduate students have a favourable view of the importance of blended learning in the educational process. The grand weighted mean of 3.00 indicated that respondents agreed with the statements.

Research question 2: How do undergraduate students perceive the ease of using blended learning in the learning process?

Table 2 Response of the perception of undergraduate students on the ease of using blended learning in the learning process

S/N	Items	SA	A	D	SD	Mean	Remarks
1.	I am okay with using blended learning.	113 34.7%	160 49.1%	21 6.4%	32 9.8%	3.08	Agreed
2.	Utilizing blended learning, my capacity for reason has increased.	92 28.2%	170 52.1%	20 6.1%	44 13.5%	2.95	Agreed
3.	I always feel very comfortable when using blended learning.	82 25.2%	152 46.6%	39 12%	53 16.3%	2.80	Agreed
4.	Using blended learning will improve my ICT usage proficiency.	112 34.4%	159 48.8%	28 8.6%	27 8.3%	3.09	Agreed
5.	Blended learning dramatically facilitates my ability to complete my coursework successfully.	116 35.6%	162 49.7%	25 7.7%	23 7.1%	3.13	Agreed
6.	Using blended learning makes it very simple to communicate my learning experiences to my lecturers.	94 28.8%	159 48.8%	36 11%	37 11.3%	2.95	Agreed
7.	Thanks to blended learning simplicity, I now like studying more than ever.	111 34%	132 40.5%	34 10.4%	49 15%	2.93	Agreed
8.	The convenience of blended learning encourages me to complete my tasks online.	115 35.3%	154 47.2%	36 11%	21 6.4%	3.11	Agreed
9.	Because I participate in blended learning, I have more effective control over how I complete assignments.	96 29.4%	157 48.2%	37 11.3%	36 11%	2.96	Agreed
10.	Blended learning made my interaction with lecturers and other students simple.	93 28.5%	127 39%	41 12.6%	65 19.9%	2.76	Agreed
	Grand mean					***2.97***	***Agreed***

Source: *Field survey 2023*

The findings in Table 2 show undergraduate students feeding on how simple it is to integrate blended learning within the learning process. According to the results obtained, 83.8% of respondents believe that blended learning is simple to use, and 80.3% think that using blended learning increases one's capacity for rational thought. According to 71.8% of respondents, implementing blended learning is always simple. Most responders agreed that blended learning will increase their proficiency with ICT. 85.3% of respondents thought effective classwork was very simple via blended learning.

Additionally, 77.6% of the respondents found that sharing learning experiences with their lecturers through blended learning is very simple. Seemly put, 70.5% of respondents indicated that the ease of using blended learning increased their enjoyment of their studies. Due to its simplicity, 82.5% of those surveyed said blended learning motivates them to complete online tasks. Due to their utilisation of blended learning,

77.6% of the respondents said they enjoy beneficial control over how assignments are completed, and 67.5% claimed that it was simple for them to communicate freely with their lecturers and other students. According to the

analysis above, undergraduate students have a favourable opinion of how simple it is to use blended learning for the learning process. The grand weighted mean of 2.97 supports the respondents' positive impression of the claims.

Research Hypotheses

Hypothesis 1

Blended learning does not significantly impact Undergraduate students' academic progress in Ekiti State's tertiary institutions.

Table 3 Chi-square analysis of the impact of blended learning on academic progress of undergraduate students in tertiary institutions in Ekiti State

Results of Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	53.031[a]	9	.000
Likelihood Ratio	150.839	9	.000
Linear-by-Linear Association	116.096	1	.000
N of Valid Cases	326		

Table 3 shows the findings, demonstrating how blended learning has affected undergraduate students' academic development in tertiary institutions in Ekiti State. The chi-square test indicated that the calculated $\chi 2$ (.000) was below the significance level of 0.05. This finding implies that blended learning significantly affects undergraduate students' academic success in Ekiti State's higher institutions. Consequently, the null hypothesis was rejected.

Hypothesis 2

There is no significant influence of ease of usage of blended learning on the academic success of undergraduate students in tertiary institutions in Ekiti State.

Table 4 Chi-square analysis of the influence of ease of usage of blended learning on academic success of undergraduate students in tertiary institutions in Ekiti State

Results of Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.653[a]	9	.014
Likelihood Ratio	214.138	9	.117
Linear-by-Linear Association	114.318	1	.038
N of Valid Cases	326		

The analysis findings are displayed in Table 4, illustrating the impact of blended learning usability on the academic progress of undergraduate students at tertiary institutions in Ekiti State. The chi-square test indicated that the calculated $\chi 2$ (.014) fell below the significance threshold of 0.05. The research findings suggest that blended learning's ease of use may impact undergraduate students' academic progress in Ekiti State's higher learning institutions. Therefore, the null hypothesis could not be upheld.

DISCUSSION OF FINDINGS

The study examined how students in Ekiti State's tertiary institutions perceived the value and simplicity of blended learning. According to the study's descriptive analysis, blended learning increases undergraduate students' internet literacy. It empowers them to pursue their academic passions through self-directed learning and self-motivation, giving them more and more control over their studies. Furthermore, it was discovered that because blended learning allows students to study independently, it speeds up their mastery of various tasks.

In addition, blended learning is one of the finest ways to improve the quality and validity of instructional methods. The investigation's descriptive analysis of undergraduate students' impressions of how easy it is to use blended learning in the learning process indicates that most of them find it easy to use because it improves their ability to think critically, boosts their ICT proficiency, and makes them more effective in their studies.

Further research found that undergraduate students frequently think about utilising blended learning since it makes it simple to share their learning experiences with their lecturers, makes studying more enjoyable than before, and encourages them to complete their assignments online. It was also discovered that blended learning allowed undergraduate students to connect freely with their lecturers and other students while having helpful control over how tasks were completed. According to the inferential analysis of the study, the academic success of undergraduate students in Ekiti State's tertiary institutions was considerably impacted by blended learning. The findings corroborated Graham, (2013), Dziuban., Graham., Moskal., Norberg., & Sicilia, (2018). assertion that blended learning was growing in importance in university education.

Additionally, to corroborate this study's findings, Drysdale, Graham, Halverson, and Spring (2013). Hundreds of corporate training programs, higher education institutions, and schools currently use blended learning strategies.

Furthermore, the study's inferential analysis demonstrated that the usability of blended learning significantly impacted undergraduate students' academic performance in Ekiti State's tertiary institutions.

The results corroborated the results of Aparicio, Bacao, and Oliveira (2017). The observation that blended learning considerably overcomes time and space constraints by facilitating more accessible, more effective, personalised student-teacher contact. Yigit., Koyun., Yuskel., Cankaya (2013) support the study's findings. Establish a blended learning technique for enhancing student learning. Algorithms and programming are covered in the computer engineering department's course at Süleyman Demirel University. The study's conclusions showed that blended learning programs were more effective than traditional ones since students' achievements exceeded expectations.

CONCLUSION

The study's outcomes make it abundantly evident that undergraduate students at Ekiti State's tertiary educational institutions felt at ease using the blended learning approach. The study concludes that blended learning substantially impacted undergraduates' academic progress. The applicability of blended learning significantly impacts academic accomplishment for students in higher institutions in Ekiti State.

RECOMMENDATIONS

Based on the research outcome, the researcher suggested that using blended learning strategies in tertiary institutions should be encouraged since it helps students learn and remember the concepts taught while improving their ICT proficiency and academic performance. For efficient information transmission during lectures, lecturers should make adequate use of the teaching resources available. Government management teams and institutions should periodically organise ICT training for lecturers to familiarise them with cutting-edge developments like blended learning in the context of the tertiary institution system. This observation will allow them to create, adapt, and manage the most recent online learning technologies, such as blended learning.

Making lectures activity-based would be an improvement above the conventional approach typically used in tertiary institutions. The government should set up resource centres to inform other educational stakeholders about the effectiveness of technology-supported learning and blended learning strategies. These centres should collaborate with curriculum developers, state and federal governments, and other professional organisations like the National Universities Commission.

REFERENCES

1. Aboderin, O.S. (2015). Challenges and prospects of e-learning at the National Open University of Nigeria. *Journal of Education and Learning (EduLearn),*9(3):207–216. *DOI:* https://doi.org/10.11591/edulearn.v9i3.1728
2. Adewale, A. J. 92024). Public relations: promotion of stakeholders relation in Bamidele Olumilua University of Education Science and Technology Ikere, Ikere Ekiti, Nigeria. *https//doi.org/10.71016/hnjss/nwfhws57*
3. Aparicio M, Bacao F, Oliveira T. (2017). Grit in the path to e-learning success. *Comput Human Behav.* 2017; 66: 388–399. https://doi.org/10.1016/j.chb.2016.10.009
4. Bielawaski, L. & Metcalf, D. (2003). *Blended e-learning: Integrating knowledge, performance support, and online learning.* Amherst, MA: HRDPress.
5. Chan, W. M., Chin, K. N., Nagami, M., & Suthiwan, T. (2011). *Media in Foreign Language Teaching and Learning*. Boston: De Gruyter Mouton.
6. Bergmark, U., & Westman, S. (2018). Student participation within teacher education: Emphasising democratic values, engagement and learning for a future profession. *Higher Education Research and Development,* 37(7), 1352–1365. https://doi.org/10.1080/07294360.2018.1484708
7. Bergmark, U., & Westman, S. (2016). Co-creating curriculum in higher education – promoting democratic values and a multidimensional view on learning. *International Journal for Academic Development*, 21(1), 28–40. *doi:10.1080/1360144X.2015.1120734*
8. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340. *https://doi.org/10.2307/249008*
9. Drysdale, J. S., Graham, C. R. Halverson, L. R. & Spring, K. J. (2013). An analysis of research trends in dissertations and theses studying blended learning. *Internet and Higher Education, 17(*90).
10. Dziuban, C., Graham, C. R., Moskal, P. D., Norberg, A., & Sicilia, N. (2018). Blended learning: The new normal and emerging technologies. *International Journal of Educational Technology in Higher Education, 15*(1), 1-16.
11. Elkaseh, A. M., Wong, K. W., & Fung, C. C. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in libyan higher education: a structura l equation modeling analysis. *International Journal of Information and Education Technology,* 6 (3) 192-199, *DOI: 10.7763/IJIET.2016.V6.683*
12. Erdmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: *A critical relationship. Computers & Education,* 59(2), 423–435. *doi:10.1016/j.compedu.2012.02.001*

13. Eze, S. C., Chinedu-Eze, V., Bello, A. O. (2018) The utilisation of e-learning facilities in the educational delivery system of Nigeria: a study of M-University. *Int J Higher Educ* 15(34):1–20. *https://doi.org/10.1186/s41239-018-0116-z*
14. Eze, S. C., Chinedu-Eze, V. C., Okike, C. K., & Bello, A. O. (2020). Factors influencing students' use of e-learning facilities in a private higher education institution (hei) in a developing economy. *Humanities and Social Sciences Communications*, 7 (133 1-15) *https://doi.org/10.1057/s41599-020-00624-6*
15. Fenech, R., Baguant, P., & Abdelwahed, I. (2021). Blended learning: an experiment on student attitudes, *International Journal of Web-Based Learning and TeachingTechnologies*16(6)1-12. *https://pdfs.semanticscholar.org/d229/422a22e713484416019b4f500bca96060866.pdf*
16. Fu. J. S. (2013). ICT in education: A critical literature review and its implications, *International Journal of Education and Development using Information Communication Technology (IJEDICT),* 9 (1). 112-125
17. Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education, 7*(2), 95-105. *https://doi.org/10.1016/j.iheduc.2004.02.001*
18. Graham, C. R., Woodfield, W., & Harrison, J. B. (2013). A framework for institutional adoption and implementation of blended learning in higher education. *The Internet and Higher Education*, *18*, 4-14. *https://doi.org/10.1016/j.iheduc.2012.09.003*
19. Graham, C. R. (2013*). Emerging practice and research in blended learning*. In M. G. Moore (Ed.), Handbook of distance education, (3rd ed., pp. 333–350). New York: Routledge.
20. Hrastinski, S. (2008). What is online learner participation? A literature review. *Computers & Education*, 51(4), 1755-1765.
21. Hsu, S. (2010). The relationship between teacher's technology integration ability and usage. *Journal of Educational Computing Research*, 43(3), 309–325. *doi:10.2190/EC.43.3.chttps://doi.org/10.1007/978-3-030-58948-6_2*
22. Iacovitti, G. (2022) How technology influences information gathering and information spreading Church, Communication and Culture (CC&C). *International Open Access journal*, 7(1)76-90. *https://doi.org/10.1080/23753234.2022.2032781*
23. Ishaya, B., & Etienne, E. K. (2020) Technology enhanced learning in teaching foundation skills for literacy and numeracy among vulnerable children in the north eastern parts of Adamawa State. *World Journal of Innovative Research* (WJIR) 9(5) 93-99
24. Jabr, N. H. (2011) Social networking as a tool for extending academic learning and communication. *International Journal of Business and Social Science*, 2. 93-102.
25. Jane, E. C. (2017). Clickers in the large classroom: current research and best-practice tips, *CBE—Life Sciences Education*, 6 (1). *https://.www.liescied.org/journal/ise*
26. Johnson, A. M., Jacovina, M. E., Russell, D. E., & Soto, C. M. (2016). *Challenges and solutions when using technologies in the classroom*. In S. A. Crossley & D. S. McNamara (Eds.) Adaptive educational technologies for literacy instruction (pp. 13- 29). New York: Taylor & Francis.
27. Jones, C., Ramanau, R., Simon, C.S., & Healing, G. (2010). Net generation or digital natives: Is there a distinct generation entering university? *Computer & Education*, 54(3) 722 732
28. Kamalov, F., Calonge, D. S., and Gurrib, I. (2023). New era of artificial intelligence education: towards a sustainable multifaceted revolution. *Sustainability ,15*(16), 12451*; https://doi.org/10.3390/su151612451*
29. Keržič D, Tomaževič N, Aristovnik A, Umek L (2019) Exploring critical factors of the perceived usefulness of blended learning for higher education students. *PLoS ONE* 14(11): e0223767. https://doi.org/10.1371/journal.pone.0223767
30. Kubiatko, M., (2013). The comparison of different age groups on the attitudes toward and the use of ict. *Educational Sciences: Theory & Practice*, 13 (2) 1263–1272
31. Lazar, I.M. · Panisoara, G. · Panisoara, I.O. (2020). Digital technology adoption scale in the blended learning context in higher education: development, validation and testing of a specific tool, *Plos One.* 15, e0235957
32. Lydia, M. Z., Naidu, V. R., Bhat, A. Z., & Frrag, S. (2022). Impact of online tools on the learning experience of students in higher education. *SHS Web of Conferences*, 156, 06003, 1-4, *https://doi.org/10.1051/shsconf/202315606003*
33. Mintah, B. O., Owusu-Darko, I., & Apoenchir, H. (2023). The perception of teachers on integration of information and communication technology (ict) into mathematics teaching and learning. *European Journal of Education and Pedagogy,* 4(3) 65-77, *www.ej-edu.org*
34. Morgan, K. R. (2002) Blended learning: A Strategic action plan for a new campus. of central florida, seminole.course redesign for blended learning: modern optics for technical professionals. *International Journal of Continuing Engineering Education and lifelong Learning*, 13, 22-38. *https://doi.org/10.1504/IJCEELL.2003.002151*
35. Mutua, S. N. (2021). Factors affecting intention to use e-learning by people with hearing impairment: A case of Karen technical training institute of the deaf. Unpublished master's thesis of science in information technology management, School of computing and informatics, University of Nairobi.

36. National Centre for Education Statistics. (2021). *Educational technology: Definitions, uses, and impacts on learning outcomes*. U.S. Department of Education. Retrieved from *https://nces.ed.gov*
37. Nouby, A. and Alkhazali, T. (2017) The effect of designing a blended learning environment on achievement and deep learning of graduate students at the Arabian Gulf University. *Open Journal of Social Sciences*, 5, 248-260. doi: 10.4236/jss.2017.510022.
38. Omariba, A. (2022). The role of integrating audio-visual media to teaching and learning in public primary teacher training colleges in Kenya. *International Journal of Education and Research* , 10 (1) 155-174
39. Ottenbreit-Leftwich, A.T., Glazewski, K.D., Newby, T.J. & Ertmer, P.A. (2010). Teacher value beliefs associated with using technology: Addressing professional and student needs. *Computers & Education, 55*(3), 1321-1335. Elsevier Ltd. Retrieved January 16, 2025 *from* https://www.learntechlib.org/p/66866/.
40. Owston, R., and York, D.N. (2018). The nagging question when designing blended courses: Does the proportion of time devoted to online activities matter? *Internet and High Edu*, 2018; 36: 22–32. https://doi.org/10.1016/j.iheduc.2017.09.001
41. Ratheeswari, K.(2018). Information communication technology in education, *Journal of Applied and Advanced Research*, 3(S1) S45–S47.
42. Ritzhaupt, A. D., Dawson, K., & Cavanaugh, C. (2012). An investigation of factors influencing student use of technology in K-12 classrooms using path analysis. *Journal of Educational Computing Research*, 46(3), 229-254. *doi:10.2190/ec.46c.3.b*
43. Shokeen, Ram, N., & Ruwali, P. N. (2022). Information and communication technology (ict) in education. *Kala Sarovar*, 25 (1) 547-550. https://www.researchgate.net/publication/360963237
44. Shroff, R. H., & Vogel, D. R. (2010). Assessing the factors deemed to support individual student intrinsic motivation in technology-supported online and face-to-face discussions. *Journal of Information Technology Education*: Research, 9(1), 59-85. *https://doi.org/10.28945/1159*
45. Susikaran, R.S.A. (2014). The use of multimedia in english language teaching. *Journal of Technology for ELT,* 3 (2), 1-15.
46. Taiwo R. (2013). Language teaching and the 21st century teacher competences. Journal for Teaching ELTT, (10): 1, 1-8.
47. Taylor, D.L., Yeung, M., Bashet, A.Z. (2021*). Personalized and adaptive learning*. in: ryoo, j., winkelmann, k. (eds) innovative learning environments in stem higher education. springerbriefs in statistics. Springer, Cham. *https://doi.org/10.1007/978-3-030-58948-6_2*
48. Tong, D.H.,, Uyen, B.P., &, Ngan, L.K. (2022). The effectiveness of blended learning on students' academic achievement, self-study skills and learning attitudes: A quasi- experiment study in teaching the conventions for coordinates in the plane. *Heliyon* . 26;8(12):e12657. *doi: 10.1016/j.heliyon.2022.e12657*.
49. Vaughan, N., Cleveland-Innes, M., & Garrison, D. R. (2013). *Teaching in blended learning environments: Creating and sustaining communities of inquiry*. Athabasca University Press.
50. Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178. https://doi.org/10.2307/41410412
51. Westman, S., & Bergmark, U. (2018). Re-considering the ontoepistemology of student engagement in higher education. *Educational Philosophy and Theory. doi:10.1080/00131857.2018.1454309*
52. Wu, J. H. Tennyson, R.D, and Hsia, T.L. (2010). A study of student satisfaction in a blended e-learning system environment. *Comput Educ*. 2010; 55: 155–164. https://doi.org/10.1016/j.compedu.2009.12.012
53. Yemothy, N. E. (2015) Improving educational technology integration in the classroom. Doctoral studies degree Dissertations, Walden University : https://scholarworks.waldenu.edu/dissertations
54. Yigit, T., Koyun, A., Yuksel, A. & Cankaya, I. (2013).Evaluation of blended learning approach in computer engineering education. *Procedia- Social and Behavioral Sciences,* 141,807 – 812.