



# **Lecturers' Perception of Mobile Device use in Teaching and Learning at Shehu Shagari College of Education, Sokoto**

Sani Z. Maishanu<sup>1</sup>; Umar Abdulkadir<sup>2</sup> & Tahir Zanna<sup>3</sup>

<sup>1&2</sup>Planning, Research and Statistics Department,  
National Commission for Colleges of Education (NCCE), Abuja, Nigeria

<sup>3</sup>Department of Education,  
University of Maiduguri, University of Maiduguri, Nigeria

<sup>1</sup>Email address: [sanimaishanu4@gmail.com](mailto:sanimaishanu4@gmail.com)/ Tel. no.: 08167272143

<sup>2</sup>Email address: [kadiri.umar@yahoo.com](mailto:kadiri.umar@yahoo.com)/ Tel. no.: 08069630658

<sup>3</sup>Email address: [bazannaa@unimaid.edu.ng](mailto:bazannaa@unimaid.edu.ng)/Tel. no.: 07030177170

## **ABSTRACT**

Integrating mobile technologies in educational settings has garnered significant global attention, offering potential enhancements in teaching and learning by providing flexible, interactive, and personalized experiences. This study examines lecturers' perceptions of mobile device use in teaching and learning at Shehu Shagari College of Education, Sokoto, guided by the Technology Acceptance Model (TAM). A cross-sectional survey design was employed for the study. Using a research advisor (2006), 73 lecturers were selected from a population of 92. A self-designed questionnaire was utilized, and 51 valid responses were analyzed. The findings indicated that lecturers generally perceive mobile devices as easy to use, particularly for accessing instructional materials and managing course content, with an overall mean score of 4.00. Pilot testing of the instruments was carried out at the Federal College of Education (Technical). The content validity index was 0.83, and the reliability index was 0.782. The study also revealed that lecturers find mobile devices useful for collaborative teaching, accessing resources, and evaluating student progress, with a total mean score of 4.12. However, there were some concerns regarding the ease of contacting students via mobile devices, which scored a lower mean of 3.80. The study concludes that mobile devices are regarded as effective tools for enhancing educational practices at Shehu Shagari College of Education, despite challenges in communication. Recommendations include improving technological infrastructure, providing targeted training for educators, and addressing socio-economic barriers to maximize the benefits of mobile technology in education.

**Keywords:** Mobile Technologies, Teaching and Learning, Lecturers' Perceptions, Technology Acceptance Model (TAM), Educational Integration

## INTRODUCTION

The integration of mobile technologies in educational settings has garnered significant global attention. Mobile technologies, encompassing smartphones, tablets, and various mobile applications, have shown potential in enhancing teaching and learning activities by providing flexible, interactive, and personalized learning experiences (Gubevu & Mncube, 2024). This study focuses on the perception of the usefulness and ease of use of mobile technologies in teaching and learning activities at Shehu Shagari College of Education, Sokoto, guided by the Technology Acceptance Model (TAM).

Mobile devices have become an integral and critical component of modern knowledge management and performance enhancement. They provide a powerful and transformative force for the growth of the educational sector. The debate surrounding mobile standards is likely to shift from focusing on technology itself to addressing broader concerns about the quality of the learning experience. Effective learning requires knowledge to be integrated in a personally, socioeconomically, and culturally relevant manner (Naidu, 2003). Mobile devices are now widely used as learning resources in open, distance, and conventional institutions (Zawacki-Richter et al., 2007; Adzifome & Agyei, 2023).

The capabilities and applications of mobile devices are increasingly dominant in education. They significantly improve knowledge-sharing activities among academics and offer new ways to connect with campus resources, course materials, student records, and colleagues (Al-Hunaiyyan et al.). The ubiquity of mobile devices, with features such as connectivity, portability, GPS, and cameras, has great potential to enrich the teaching experience. Features like GPS, file storage, cameras, and video recording have made mobile technologies valuable tools for managing teaching tasks. As educational institutions expand, so does the advancement and use of mobile technologies. Higher education institutions are leveraging mobile devices with features like cameras, video, GPS, and MP3 players to support studying and collaboration anytime and anywhere. The rapid development of mobile technology has led to significant advancements in education, reshaping industries and introducing mobile systems into educational practices. For instance, Kuwait has experienced strong growth in mobile penetration (Tahat, 2024).

Mobile learning involves interacting with digitally delivered content, network-based services, and tutoring support. E-learning refers to any technologically mediated learning using computers, whether from a distance or in a face-to-face classroom setting (computer-assisted learning) (Itam, 2024). This represents a shift from traditional education or training to ICT-based personalized, flexible, individual, self-organized, and collaborative learning involving a community of learners, teachers, and facilitators (Mbato & Osigwe, 2024).

Mobile devices improve learning opportunities by giving users access to a wide range of resources and educational content. They cater to a variety of learning methods and enable students to interact with the subject (Adzifome & Agyei, 2023). Salhab & Daher (2023) found that mobile devices can promote personalized learning experiences and boost student engagement. Furthermore, mobile applications can enhance learning by providing interactive simulations and real-time feedback, making abstract concepts more understandable (Adzifome & Agyei, 2023).

Mobile devices have also been hailed for making education more accessible, especially to students in remote or underserved locations. These gadgets can help to bridge the gap by giving users access to online classes, educational apps, and digital textbooks. According to Traxler (2010), mobile learning has the potential to democratize education and open up new prospects for lifelong learning. Furthermore, mobile technology can help students with disabilities by delivering helpful tools and materials that are specific to their requirements.

Several factors drive the integration of mobile devices in higher education, including increased student enrollment, evolving learning needs, and the benefits of new technologies (McHaney, 2023). The emergence of new universities focused on electronic distance education or virtual learning options has also pushed older institutions to innovate (Al Masud, 2023). Mobile devices would offer significant opportunities for effective education and training across the educational system, including schools and technical colleges.

Mobile technology has become crucial for educational processes, such as electronic access to resources, downloading, storing, communicating, and reading. Certain smartphone applications assist students in gathering information via network services (Anshari et al., 2017). Mobile devices enable learners to access curriculum content both inside and outside the traditional classroom, whether online or offline (Jones & Bennett, 2017).

According to Tabowei (2021) mobile learning can be broadly defined as the use of handheld technologies, combined with wireless and mobile phone networks, to facilitate, support, enhance, and extend teaching and learning. Mobile learning can occur in any location and at any time, including traditional learning environments like classrooms as well as workplaces, homes, community locations, and while in transit Ahmad et al., (2020).

The relative advantages of an idea influence its rate of adoption. For technology to be integrated into teaching and learning, educators must first recognize its usefulness and the relative advantages of technology over traditional methods Goh & Sigala (2020). Once stakeholders understand the relative advantages of a new technology, they can perceive how compatible it is with their current practices.

Recent studies indicate that teachers' opinions, beliefs, and values about teaching are influenced by new ideas Joram et al., (2020). Understanding educators' perceptions of innovations is crucial for predicting the future adoption of specific technologies. Successful technology adoption in education depends on comprehending these perceptions.

Rughoobur-Seetah & Hosanoo (2021) found that technological infrastructure services are essential for successful e-learning integration, positively influencing perceived usefulness, stakeholder satisfaction, and institutional value. Rof et al., (2022) emphasized that while technology accelerates academic learning changes, more focus should be on cultural and structural changes to ensure successful adoption.

The advent of mobile technologies has transformed traditional educational paradigms. According to Traxler (2007), mobile learning (m-learning) offers unique benefits such as accessibility, portability, and immediacy, which are essential for modern educational practices. These technologies support various educational activities, including accessing educational content, collaborative learning, and continuous assessment, which align with the needs of the 21st-century learner.

The Technology Acceptance Model (TAM) is the theoretical model guiding this study. TAM posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system, which in turn affects actual usage behavior. This model helps in understanding the factors that influence the acceptance and use of mobile technologies in educational settings.

The perceived usefulness of mobile technologies in education is largely influenced by their ability to facilitate learning processes. Research by Park et al. (2012) indicates that mobile devices can enhance student engagement and motivation by providing interactive and multimedia-rich learning environments. Additionally, mobile technologies support ubiquitous learning, enabling students to access educational materials anytime and anywhere, thereby promoting self-directed learning (Cochrane, 2010).

Ease of use is another critical factor influencing the adoption of mobile technologies in education. The Technology Acceptance Model (TAM), proposed by Davis (1989), emphasizes that perceived ease of use significantly impacts users' acceptance of new technologies. In the context of education, if educators and students find mobile technologies easy to use, they are more likely to integrate these tools into their teaching and learning activities. Studies by Cheon et al. (2012) and Kim et al. (2011) confirm that user-friendly interfaces and the simplicity of mobile applications contribute to positive attitudes towards their use in educational settings.

Examining educators' and students' perceptions through the lens of TAM, this study aims to provide insights into the lecturers' perception towards the integration of mobile technologies in teaching and learning at Shehu Shagari College of Education, Sokoto. Located in Nigeria, this college has been making strides in adopting modern educational technologies to improve teaching and learning outcomes. The college aims to integrate mobile technologies into its educational framework to enhance the quality of

education provided. Understanding the perceptions of both educators and students regarding the usefulness and ease of use of these technologies is crucial for successful implementation.

The integration of mobile technologies into educational settings has been widely recognized for its potential to enhance teaching and learning processes. Despite the proven benefits of mobile learning, such as increased accessibility, portability, and immediacy, there remains a significant gap in the adoption and effective utilization of these technologies, particularly in developing countries. Shehu Shagari College of Education, Sokoto, like many educational institutions in Nigeria, faces challenges in integrating mobile technologies into its curriculum. These challenges are compounded by factors such as limited technological infrastructure, lack of training for educators, and socio-economic constraints. While global studies have extensively documented the advantages of mobile technologies in education, there is a dearth of localized research that examines the specific perceptions and attitudes of educators and students in Nigerian educational institutions. Understanding these perceptions is crucial, as they directly influence the acceptance and successful implementation of mobile technologies in teaching and learning activities.

This study seeks to fill this gap by examining the perceptions at Shehu Shagari College of Education, Sokoto, thereby contributing to the broader understanding of mobile technology integration in similar educational settings. Guided by the Technology Acceptance Model (TAM), this study aims to investigate the perceptions of lecturers regarding the usefulness and ease of use of mobile technologies. Exploring these perceptions, the study seeks to identify the factors that facilitate or hinder the integration of mobile technologies in the college's educational framework, thereby providing insights that can inform policy and practice to enhance the quality of education through effective use of mobile technologies.

The key motivator for mobile device use in education is the ability to improve learning experiences through flexibility, engagement, and personalized learning opportunities (Salhab & Daher, 2023). Mobile devices enable students to access material at any time and from any location, thereby promoting student-centered learning (Jotsov, 2023). However, despite these advantages, difficulties remain. Another issue is the digital gap, which causes disparities in access to mobile devices and reliable internet connections. Socioeconomic hurdles can inhibit underprivileged students from fully engaging in mobile learning environments (Dey & Kumar, 2024). This discrepancy exacerbates existing educational disparities while undermining the potential benefits of mobile learning technologies (Alam & Forhad, 2023). Furthermore, technological concerns such as limited infrastructure and inadequate technical assistance can impede the successful use of mobile devices in the classroom (Nikolopoulou et al., 2023).

Teachers may lack the requisite training to properly integrate mobile devices into their teaching practices, reducing mobile technology's instructional value (Abd El Bakey et al., 2023). One significant concern with mobile device use in education is distraction. Mobile devices can divert students' attention away from academic tasks and toward social media, games, or other non-educational content (Grigic Magnusson et al., 2023). This distraction negatively impacts learning outcomes, as students may struggle to focus on coursework when they are continually interrupted by notifications (Ofo, 2023; McCrea, 2024). The use of mobile devices in teaching and learning has generated varying perceptions among lecturers in higher education institutions. One key issue is resistance to technology adoption. Some lecturers, particularly those unfamiliar with digital tools, may not fully understand the potential benefits and usefulness of mobile technologies in enhancing teaching and learning.

The objective of this study is to determine the lecturers' perceptions regarding the ease of use of mobile devices for teaching activities as well as lecturers' perceptions concerning the usefulness of mobile devices in teaching activities at Shehu Shagari College of Education, Sokoto.

## RESEARCH METHODS

A quantitative research approach was employed, utilizing a cross-sectional survey design. This design involved gathering data from the study population at a single point in time. The approach was appropriate as the study collected samples from different respondents during the same period (Meredith et al., 2007).

The population for the study consisted of academic staff from the School of Education at Shehu Shagari College of Education, Sokoto. The school had a total population of 92 academic staff members across three departments: Curriculum Studies and Educational Technology, Educational Foundations, and Educational Psychology.

The sample for this study was drawn from the entire population of the three departments within the School of Education. Seventy-six (76) teaching staff members were randomly selected from the total population of 92, based on guidelines from the Research Advisors (2006). Simple random sampling was used to select 73 members of the academic staff, as this method was appropriate due to the homogeneous characteristics of the respondents and to ensure that each member had an equal chance of being selected.

The instrument used for this research study was a self-designed questionnaire. The questionnaire consisted of four items related to lecturers' perceptions of ease of use and six items on the usefulness of mobile devices for teaching and learning. A five-point Likert scale was used, with the following options: strongly agree, agree, disagree, strongly disagree, and undecided. Since the analysis of descriptive statistics is based on the mean, the mean response scores were interpreted using the following guidelines:  $1 \leq \bar{X} \leq 1.8$  = Strongly Disagree,  $1.8 \leq \bar{X} \leq 2.6$  = Disagree,  $2.6 \leq \bar{X} \leq 3.4$  = Undecided,  $3.4 \leq \bar{X} \leq 4.2$  = Agree,  $4.2 \leq \bar{X} \leq 5$  = Strongly Agree.

The Face and Content validity was used in validating the instrument. The Questionnaire items were validated by the three colleges of education lecturers' in the School of Education Federal College of Education (Technical) Gusau. The language, content, Construct and structure of the items were critically examined for possible corrections and suggestions. Some questions under easy to use of mobile devices were moved to usefulness of mobile devices. The content validity index was 0.83 which has proven that the instrument is valid for the study based on the acceptable standard of 0.5 to 1.00.

The reliability determines internal consistency of the items in the variable (Kaplan and Saccuzo, 2009). The concept therefore deals with the accuracy of the instrument and the consistency of the data collected by it. An Instrument is reliable if it measures consistently what it is supposed to measure. The reliability of the instrument was established through calculating Chronbach's alpha ( $\alpha$ ) coefficient (Cronbach, 1984) in the SPSS Version 20.0 for internal consistency. This was done after the pilot study conducted at the Federal College of Education (Technical) Gusau. The Cronbach's alpha for the completed instruments produced a coefficient of 0.782. This index confirmed that the instrument was consistent for the study.

The researcher met some of the respondents in their respective departments, while others were contacted through social media. Ninety-two (92) questionnaires were distributed to the respondents through both physical and electronic means; however, only 51 were returned. The 51 returned questionnaires were then coded and analyzed. This process took one month due to delays by some respondents in completing the questionnaire.

## RESULT

### *What are the perceptions of lecturers on the ease of use of mobile devices for teaching activities?*

Table 1 reveals that lecturers generally perceive mobile devices as easy to use for teaching and learning, with an overall mean score of 4.00, indicating agreement on their ease of use. However, the ease of delivering virtual classes received the lowest mean score of 2.02, indicating that mobile devices may face challenges in virtual class delivery. The mean score for contacting students was slightly higher at 3.80, suggesting that while mobile devices are generally accessible for communication, some limitations or preferences for other methods may exist. Lecturers reported slightly higher ease of use for general mobile device tasks (mean = 3.92). Sharing educational information received positive feedback, with a mean score of 4.02. Managing course materials received a mean score of 4.10, reflecting a high level of comfort. Accessing instructional materials scored the highest, with a mean of 4.14, indicating that Lecturers find it easy to access instructional materials.

Table 1: Lectures perception on Ease of use of mobile devices in teaching and learning

S/N	Items on Perceived Ease of Use of Mobile Devices	Mean	Interpretation
1	I find it easy to deliver virtual classes using mobile devices	2.02	Disagree
2	I find it easy to contact my students for instructional communications using mobile devices	3.80	Agree
3	I find it easy to use mobile devices	3.92	Agree
4	Mobile devices are simple to use for sharing educational information with students	4.02	Agree
5	I find it easy to manage my course materials using a mobile device	4.10	Agree
6	I find it easy to access instructional materials using mobile device resources	4.14	Agree
<b>Total</b>		<b>4.00</b>	<b>Agree</b>

Source: Field Data

The consistent positive perceptions across different aspects highlight that mobile devices are widely regarded as user-friendly and valuable for various educational activities, contributing to their effective integration into teaching and learning practices.

***What are the perceptions of lecturers on the usefulness of mobile devices for teaching activities?***

Table 2 reflects lecturers' perceptions of the ease of use of mobile devices in their teaching activities. Overall, lecturers find mobile devices to be user-friendly, with an average mean score of 4.12, indicating a general agreement on their ease of use. When it comes to contacting students, the mean score is 3.80, which, although slightly lower, still falls within the "Agree" range. This suggests that while mobile devices are generally perceived as accessible, there may be some challenges or preferences for alternative instructional communication methods. In terms of delivering virtual classes, a mean score of 4.02 indicates a positive perception of mobile devices in this area. Similarly, sharing educational information with students also scores positively with a mean of 4.02.

Table 2: Summary of Lecturers' Perceptions of the Usefulness of Mobile Devices

S/N	Items on Perceived Usefulness of Mobile Devices	Mean
1	The use of mobile devices in teaching activities improves my productivity	3.94
2	I use mobile devices to share educational resources with my colleagues and students	4.06
3	I use mobile devices to access educational information at anytime and anywhere	4.10
4	Mobile devices are dynamic for usage in teaching and learning activities	4.20
5	The use of mobile devices supports me in conducting	4.22

Sources: Field Data

Lecturers also agree on the ease of managing course materials, as reflected in a mean score of 4.10. Furthermore, the highest mean score of 4.14 is associated with accessing instructional materials, highlighting that lecturers particularly value the ease of access mobile devices provide. The consistent positive feedback underscores a strong endorsement of mobile devices as effective tools in facilitating various educational tasks.

**DISCUSSION**

The findings from this study on lecturers' perceptions of mobile device use at Shehu Shagari College of Education, Sokoto, present a positive outlook towards the integration of mobile technologies in teaching and learning. Lecturers view mobile devices as user-friendly, a key factor that aligns with global trends in educational technology adoption. This ease of use suggests that lecturers are not only aware of the potential of mobile devices but are also increasingly comfortable utilizing them to enhance instructional delivery and course management. The high ratings for user-friendliness in this study corroborate the

principles of the Technology Acceptance Model (TAM), which emphasizes that perceived ease of use and usefulness are crucial determinants in the adoption of new technologies (Davis, 1989). Prior research by Cheon *et al.* (2012) and Kim *et al.* (2011) also supports this, indicating that when educators perceive technology as easy to use, they are more likely to integrate it into their teaching methodologies.

The positive perception of mobile devices as useful educational tools further reinforces their significance in the modern learning environment. Mobile technologies offer flexibility, interactivity, and personalized learning experiences, all of which are essential for engaging today's learners. Lecturers' appreciation for mobile devices' ability to provide anytime, anywhere access to educational content underlines the shift towards more autonomous, self-directed learning approaches (Cochrane, 2010). This is particularly relevant in educational contexts where access to traditional learning resources may be constrained, as mobile devices help bridge this gap by providing broader access to instructional materials.

Similar studies, such as Park *et al.* (2012), have demonstrated how mobile technologies promote student engagement by creating interactive and multimedia-rich learning environments. Mobile applications are especially valued for offering real-time feedback and interactive simulations, which facilitate better understanding of complex concepts (Adzifome & Agyei, 2023). These tools not only enrich the learning experience but also encourage active participation, allowing students to engage with the content more meaningfully.

## CONCLUSION

The study concludes that mobile devices are perceived as valuable tools for enhancing teaching and learning at Shehu Shagari College of Education, Sokoto. The lecturers' positive perceptions of the ease of use and usefulness of mobile devices underscore their potential to improve educational practices. However, challenges such as difficulties in communication with students and the need for better technological infrastructure were identified. Addressing these issues could further enhance the effectiveness of mobile technology integration in education.

## RECOMMENDATIONS

1. To address the challenges related to contacting students, it is recommended that the institution explore and implement more effective communication platforms integrated with mobile devices. This could include the use of dedicated educational apps or messaging platforms that facilitate easier and more reliable communication between lecturers and students. Additionally, providing training on the use of these communication tools could help lecturers overcome any difficulties and improve overall engagement with students.
2. To enhance the effectiveness of mobile devices in educational tasks, particularly in communication, the institution should consider implementing a unified communication platform that integrates seamlessly with the existing mobile tools used by lecturers. This platform could include features such as instant messaging, push notifications, and integration with learning management systems to ensure that contacting students is as intuitive and efficient as other educational activities conducted via mobile devices. Additionally, training sessions could be organized to familiarize lecturers with the platform, ensuring they can leverage it fully for enhanced student engagement.

## REFERENCES

- Abd El Bakey, F., Shadi, G. A., & El-Refai, W. (2023). A mobile training context for in-service teachers: Methods of training and task practice to enhance e-content production skills. *International Journal of Emerging Technologies in Learning (IJET)*, 18(19), 205-226. <https://doi.org/10.3991/ijet.v18i19.34778>

- Adzifome, N. S., & Agyei, D. D. (2023). Learning with mobile devices: Insights from a university setting in Ghana. *Education and Information Technologies*, 28(3), 3381-3399. <https://doi.org/10.1007/s10639-023-11552-0>
- Ahmad, N., Hoda, N., & Alahmari, F. (2020). Developing a cloud-based mobile learning adoption model to promote sustainable education. *Sustainability*, 12(8), 3126. <https://doi.org/10.3390/su12083126>
- Al Masud, A., Hossain, M. A., Biswas, S., Ruma, A. P., Rahman, K. S., & Tagore, S. (2023). The emergence of digital learning in higher education: A lesson from the COVID-19 pandemic. *The International Journal of Information and Learning Technology*, 40(3), 202-224. <https://doi.org/10.1108/IJILT-01-2023-0011>
- Alam, G. M., & Forhad, M. A. R. (2023). The impact of accessing education via smartphone technology on education disparity—A sustainable education perspective. *Sustainability*, 15(14), 10979. <https://doi.org/10.3390/su151410979>
- Al-Hunaiyyan, A. Al-Sharhan and R. Alhajri, "A New Mobile Learning Model in the Context of the Smart Classrooms Environment: A Holistic Approach," *International Journal of Interactive Mobile Technologies (iJIM)*. Vol.11\_No.3(2017), pp. 39-56, 2017
- Anshari, M., Almunawar, M. N., Shahrill, M., Wicaksono, D. K., & Huda, M. (2017). Smartphones usage in the classrooms: Learning aid or interference? *Education and Information Technologies*, 22, 3063-3079. <https://doi.org/10.1007/s10639-017-9572-7>
- Azizan, A. A., Rasdi, H. F. M., Shahar, S., Manaf, Z. A., Haron, H., & Razalli, N. H. (2023). Knowledge, attitudes and self-reported practices questionnaire on pureed diet preparation (KAP DYS Puree) among food handlers in Malaysian hospitals for dysphagia management: Development, validity, and reliability testing. *Malaysian Journal of Medicine & Health Sciences*, 19(3), 205-226.
- Bernacki, M. L., Greene, J. A., & Crompton, H. (2020). Mobile technology, learning, and achievement: Advances in understanding and measuring the role of mobile technology in education. *Contemporary Educational Psychology*, 60, 101827.
- Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education*, 59(3), 1054-1064. <https://doi.org/10.1016/j.compedu.2012.06.002>
- Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2024). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, 41(2), 745-783. <https://doi.org/10.1007/s10490-023-09895-1>
- Cochrane, T. D. (2010). Exploring mobile learning success factors. *International Journal of Mobile and Blended Learning*, 2(4), 1-18. <https://doi.org/10.1504/IJMC.2010.035316>
- 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>
- Dey, B., & Kumar, R. (2024). Breaking barriers: The empowering effects of mobile e-learning for women in the digital age. *Bharati International Journal of Multidisciplinary Research & Development*, 2(5), 1-14. <https://doi.org/10.2024-79766228>
- Educational Media Centre for Asia (CEMCA) World Health Organization. 2020b. Coronavirus Disease 2019 (COVID-19): situation report-36. Available online: <https://www.who.int/docs/default>
- Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones, and social media. *The Internet and Higher Education*, 19, 18-26.
- Goh, E., & Sigala, M. (2020). Integrating Information & Communication Technologies (ICT) into classroom instruction: Teaching tips for hospitality educators from a diffusion of innovation approach. *Journal of Teaching in Travel & Tourism*, 20(2), 156-165. <https://doi.org/10.1080/15313220.2020.1732281>



- Grigic Magnusson, A., Ott, T., Hård af Segerstad, Y., & Sofkova Hashemi, S. (2023). Complexities of managing a mobile phone ban in the digitalized schools' classroom. *Computers in the Schools*, 40(3), 303-323. <https://doi.org/10.1080/07380569.2023.2244717>
- Gubevu, B. W. S., & Mncube, V. S. (2024). Mobile smartphones as tools for ICT integration in geography teaching. *Education Sciences*, 14(9).
- Itam, W. P., Abang, M. O., Eze, E. A., & Takon, M. B. (2024). Educational technology and students' academic performance in health training institutions in Cross River State, Nigeria. *International Journal of Health and Psychology Research*, 12(1), 58-103.
- Jones, A., & Bennett, R. (2017). Reaching beyond an online/offline divide: Invoking the rhizome in higher education course design. *Technology, Pedagogy and Education*, 26(2), 193-210. <https://doi.org/10.1080/1475939X.2017.1296480>
- Joram, E., Gabriele, A. J., & Walton, K. (2020). What influences teachers' "buy-in" of research? Teachers' beliefs about the applicability of educational research to their practice. *Teaching and Teacher Education*, 88, 102980. <https://doi.org/10.1016/j.tate.2019.102980>
- Jotsov, V., Madyarova, G., Umirzakova, Z., Akramova, A., Tkach, G., Kerimbayev, N., & Beisov, N. (2023, October). The use of mobile technologies in education with an emphasis on a student-centered approach. In *2023 International Conference Automatics and Informatics (ICAI)* (pp. 140-145). IEEE. <https://doi.org/10.1109/ICAI59804.2023.10059621>
- Judge, T. A., & Kammeyer-Mueller, J. D. (2012a). Job attitudes. *Annual Review of Psychology*, 63, 341-67. <https://doi.org/10.1016/annurev-psych-120710-100511>
- Kim, S. H., Mims, C., & Holmes, K. P. (2011). An introduction to current trends and benefits of mobile wireless technology use in higher education. *AACE Journal*, 19(2), 207-220. <https://doi.org/10.1016/j.compedu.2011.05.014>
- Mbato, S. I., & Osigwe, J. N. (2024). E-learning in Nigerian education: The prospects and challenges. *Journal of Theoretical and Empirical Studies in Education*, 8(2), 210-218.
- McCrea, J. (2024). Teachers' perceptions of cell phone use in the secondary classroom: Benefits and barriers (Doctoral dissertation, Fielding Graduate University). ProQuest Dissertations Publishing.
- McHaney, R. (2023). *The new digital shoreline: How Web 2.0 and millennials are revolutionizing higher education*. Taylor & Francis.
- Naidu, S. (2003). *E-learning: A guidebook of principles, procedures and practices*. Commonwealth
- Nikolopoulou, K., Gialamas, V., & Lavidas, K. (2023). Mobile learning-technology barriers in school education: Teachers' views. *Technology, Pedagogy and Education*, 32(1), 29-44. <https://doi.org/10.1080/1475939X.2023.2159780>
- Ofo, I. (2023). Negative distractions for doctoral learners in online learning environment (Doctoral dissertation, Grand Canyon University). ProQuest Dissertations Publishing.
- Park, Y., Nam, M., & Cha, S. B. (2012). University students' behavioral intention to use mobile learning: Evaluating the technology acceptance model. *British Journal of Educational Technology*, 43(4), 592-605. <https://doi.org/10.1016/j.chb.2011.10.017>
- Rof, A., Bikfalvi, A., & Marques, P. (2022). Pandemic-accelerated digital transformation of a born-digital higher education institution. *Educational Technology & Society*, 25(1), 124-141. <https://www.jstor.org/stable/48632863>
- Rughoobur-Seetah, S., & Hosanoo, Z. A. (2021). An evaluation of the impact of confinement on the quality of e-learning in higher education institutions. *Quality Assurance in Education*, 29(4), 422-444. <https://doi.org/10.1108/QAE-11-2020-0128>
- Salhab, R., & Daher, W. (2023). The impact of mobile learning on students' attitudes towards learning in an educational technology course. *Multimodal Technologies and Interaction*, 7(7), 74. <https://doi.org/10.3390/mti7070074>

- Salhab, R., & Daher, W. (2023). University students' engagement in mobile learning. *European Journal of Investigation in Health, Psychology and Education*, 13(1), 202-216. <https://doi.org/10.3390/ejihpe13010015>
- Tabowei, A. (2021). Technology-enhanced learning: A case study of the potentials of mobile technologies in Nigerian College of Education (Doctoral dissertation). Open University of Nigeria.
- Tahat, L., Almasri, N., Tahat, T., Ismail, D., & Al-Ahmad, A. S. (2024). Assessing the influence of mobile direct social media advertising on consumer attitudes: A study of Kuwaiti consumers. *Cogent Business & Management*, 11(1), 2351107. <https://doi.org/10.1080/23311975.2023.2351107>
- Tajudeen, S. A., Basha, M. K., Michael, F. O., & Mukthar, A. L. (2013). Determinants of mobile devices acceptance for learning among students in developing countries. *Malaysian Online Journal of Educational Technology*, 1(3), 17-29.
- Traxler, J. (2007). Defining, discussing and evaluating mobile learning: The moving finger writes and having writ... *International Review of Research in Open and Distance Learning*, 8(2), 1-12. <https://doi.org/10.1504/IJMC.2007.011951>
- Zawacki-Richter, O., Brown, T., & Delpont, R. (2007). Mobile learning: A new paradigm shift in distance education.