

DIGITAL TECHNOLOGY-BASED INSTRUCTION IN ECONOMICS: AN IMPERATIVE FOR FUTURE-READY EDUCATION

Nji, Ifeyinwa Awele;¹ Chinyelugo, Tochukwu, C.;² & Robert, Augustine Igwe³

¹Department of Social Science Education, University of Nigeria, Nsukka

²Department of Arts Education, University of Nigeria, Nsukka

³Department of Economics and Political Science Education, University of Calabar

Abstract

The study investigated the extent of utilisation of digital technology-based instruction in teaching and learning of Economics in secondary schools in Nsukka Education Zone. The investigation was guided by 3 specific purposes and their corresponding research questions and one hypothesis. The study adopted a descriptive survey design. The population of the study comprised 85 Economics teachers from the 62 public secondary schools in Nsukka Education Zone, comprising 46 males and 39 females. The sample size was the entire 85 Economics teachers. Therefore, there was no sampling because the entire population was used for the study. A researcher-developed questionnaire was used for data collection. The instrument was face validated by 3 experts (two from economics education and one from measurement and evaluation units) all from the faculty of education, university of Nigeria. An overall reliability coefficient estimate of 0.86. Data was collected through direct face-to-face administration of the questionnaires. Frequency, percentage, mean, and standard deviation were used to answer research questions, while the t-test was used to test the null hypothesis at a 0.05 level of significance. Findings revealed that the available digital technology-based instructional tools are smart boards, digital classroom, augmented reality, online courses, laptops and television programmes, which were also used in high extent in teaching and learning Economics. Challenges of the use of DTB instruction include accessibility to infrastructure, unreliable internet, and power issues, among others. It was recommended, among other things, that school administration should improve the technology infrastructure in schools.

Keywords: Digital, technology, Economics, teachers, instruction

Introduction

Technology is a driving force for innovation and development in the educational sector. In the 21st century, globally, technology is an indispensable tool needed for effective teaching and learning for higher learners' interest and engagement. Digital technology-based (DTB) instruction is transforming Nigerian education, making it accessible and personalised through initiatives like the Nigerian learning passport and 3 Million Technical Talent Program (3MTT), with units of smart boards, and Afri-learn donated to schools across the nation for interactive learning (Mbaying, John, Otu, 2025). However, the availability, utilization and challenges of DTB instruction in Economics are not clear, thus, this paper. Digital technologies (DTs) refer to computer-based devices, which can be in the form of software, hardware, and systems used in the teaching and learning process. DTs are technological tools and system that aid easy and effective teaching in the classroom (Nji, Chinyelugo & Eneogu, 2025). Gilbert (2019) asserted that DTs are information, communication and administration technologies ranging from computers, laptops and tablets that either connect to the internet or not, and to a mobile phone. Bizimana and Orodho (2018) thought that DTs are teaching and learning tools and systems that are created digitally or through the digitalisation of analogue materials, which

include simulation, animation, quizzes, and electronic textbooks, learning objects, graphics, photographs or photos, audio, video and other digitally formatted capabilities. DTs are all forms of electronically supported learning materials in which text, voice, photographs, images, graphics and video could be used to deliver lessons to students online or offline. Digital technologies are used in web-based learning to generate information and enable the transmission of educational material content (Walters, 2020). In this paper, DTs are technological tools that facilitate teaching and learning of Economics online or offline. Digital technology-based (DTB) instruction, therefore, is a content delivery system or mode that utilizes digital technological tools for improved learning engagements and outcomes.

Digital technology-based instruction is an approach whereby digital tools dictate the structure and flow of learning, rather than just supporting a traditional lesson. According to Nkaanee and Mgbomo (2025), DTB instruction is an education method that incorporates different types of technology to improve teaching, learning and educational results. It involves the utilisation of technology to improve learning, making teaching instruction interesting and engaging. It focuses on student-centred learning which allows students to acquire qualities and abilities that are essential for their academic success in the 21st century. Thus, DTB instruction is the integration of technology into the learning of Economics. Digital technology based instruction is important for effective teaching and learning outcomes. DTB instruction frees learners from the constraints of boredom, saves time and space, which conventional teaching imposes (Jude, 2018). DTB instruction also encourages integrating technology into education, thereby making students become engaged in a learning experience and become more interested in learning without being disengaged. DTB instruction through the use of projectors, computers, and other cutting-edge technical gear in the classroom may make studying interesting and fascinating for students (Ezema, Okenyi & Ugwuanyi, 2021). In the 21st century, access to DTB instruction enhances efficiency, communication and access to information on students. DTB instruction assists in developing abilities that require students' performance, such as problem solving, thinking structure creation and process comprehension. It prepares students for an unpredictable and dynamic future in technology. This a good catalyst for nurturing digital literacy and essential skills for secondary school students.

Secondary school is a level of education after primary school in Nigeria. It is classified into junior and senior secondary schools. The main objective of secondary school is to provide learners with a well-rounded education for future and further studies. According to the Federal Republic of Nigeria (FRN) (2013), in her national policy on education, the aims are to develop academic skills and knowledge; foster personal growth and social skills; prepare students for future careers or higher education; and equip students with critical thinking and problem-solving skills. Looking at these objectives, it can be deduced that the Economics subject which aids round development of students is a sure way to achieving them. Therefore, these objectives may not be achieved if DTB instruction is not incorporated into the teaching and learning process of Economics. Basically, Economics as a secondary school subject is to equip students to become self-reliant, critical thinkers and problem-solvers.

Economics is the study of man's behaviour and his environment. The American Economic Association (2026) explained Economics as the social science studying how individuals, businesses, and government allocate limited resources to satisfy unlimited wants, focusing on production, distribution and consumption. Eneogu et al (2026) opined that Economics is the study of choice-making among alternatives to maximise limited

resources in the face of unlimited wants. It critically analyses how individuals and government take decisions on how to manage scarce resources. The study of Economics makes students become a rational being and become developed to manage resources efficiently. Thus, to ensure efficient management of resources, there is a need for digital technology based instruction in Economics. Operationally, Economics is a study that deals with how individual, firms and government ensure optimal utilisation of limited resources efficiently and effectively.

The learning of Economics requires that students participate effectively in economic and social matters to make intelligent day-to-day decisions. However, in the present-day Nigeria, especially in Nsukka Education Zone of Enugu State, students seem to dislike Economics and thus perform poorly in the subject. In this regard, Chinyelugo (2024) observed that some students in Nsukka Education Zone, Enugu State do get away from choosing Economics as a school subject, citing difficulty in graphical and mathematical contents in Economics as the reason for not choosing the subject. The available statistics from the 2014 to 2021 WAEC examination results shows low percentage of students' performance in Economics (Ileuma & Adesope, 2023). In Economics, 75 percent of the students scored grades between F9 to D7 within the period under review (Ileuma & Adesope, 2023). The ugly situation above could probably be as a result of the method of instruction (such as conventional methods), the lack of use of instructional materials, and students not being involved in the teaching and learning process. These could easily be taken care of through DTB instruction as West African examination (WAEC) chief examiners emphasised the need to integrate digital technology in teaching and learning to help to improve proficiency in the difficult content of Economics. In other words, the use of traditional/conventional teaching makes learning more abstract and difficult for the learner to understand. With DTB instruction, teaching and learning of Economics becomes concrete, lively and interesting to both teacher and students. The teacher finds it easier to translate the content with ease to the learner, and less time is wasted trying to explain ideas. Studies have identified that DTB instruction makes students engaged and improves performance (Bepeh et al, 2023); Nji, Chinyelugo and Eneogu (2025) also identified DTB instruction as significantly effective in teaching Economics. Therefore, this article investigated the availability, utilization and challenges of DTB instruction in Economics for future-ready education. .

The investigation also looked at teachers' gender in the utilization of DTB instruction in Economics. Gender is seen as a variable in this study as males and females have been stereotyped in to science/computer based subjects and arts/language subjects respectively.. Studies identified different outcomes. Nwoke, Ajileye, and Uwazurike (2023) identified that gender did not influence digital usage among teachers. A study carried out by Danko, Deman, Kerzic & Zorko (2020) observed that female teachers used DT more than male teachers. On the contrary, Odual (2019) identified that male teachers use DT more in teaching. Based on these studies, there tends to be an inconclusive finding on gender responses concerning DT utilisation. Therefore, this study further investigated the gender utilization of DTB instruction in teaching and learning of Economics in secondary schools in Nsukka education zone.

Purpose of the Study

Specifically, the objectives of this study are to:

1. determine the availability of Digital Technology-based instructional tools Economics in secondary schools

2. determine the extent to which Digital technology- based instructional tools are used in Economics in secondary schools.
3. determine challenges that affect digital technology- based instruction in Economics in secondary schools.

Research Questions

The following research questions guided the study;

1. What are the available digital technology-based instructional tools in Economics in secondary schools?
2. To what extent are digital technology-based instructional tools used in Economics in secondary schools?
3. What are the challenges that affect digital technology-based instruction in Economics in secondary schools?

Hypothesis

H₀₁: There is no significant difference between male and female teachers' use of digital technology-based instructional tools in Economics.

Methods

This study adopted a descriptive survey research design. This study was carried out in the Nsukka Education Zone of Enugu State. The population of the study comprises eighty-five (85) Economics teachers (46 male and 39 female) from the 62 public secondary schools in Nsukka Education Zone, in the 2024/2025 academic session (Post Primary School Management Board (PPSMB), Nsukka). The sample size was the entire 85 Economics teachers, hence, there was no sampling because the population size is small. All the population was used. The instrument used for this study was a researcher-developed questionnaire titled "Digital technology-based instruction in Economics Questionnaire (DTBIEQ)". The instrument has two sections. Section A is on personal information of the respondents. Section B has three clusters: cluster A, cluster B, and cluster C. Cluster A is on the availability of DTB instructional tools in Economics. Cluster B is on the extent of use of DTB instructional tools in Economics, and Cluster C is on challenges of DTB instruction in Economics. Cluster A has twenty items with response options of Available (A) and Not Available (NA). Cluster B has twenty items with response options of Very High Extent (VHE, 4 point); High Extent (HE, 3 points); Low Extent (LE, 2 points); Very Low Extent (VLE, 1 point). Cluster C has ten items with response options of Strongly Agree (SA, 4 point); Agree (A, 3 points); Disagree (D, 2 points); Strongly disagree (SD, 1 point). The Questionnaire was validated by three experts, two from the Department of Social Science Education and one from measurement and evaluation units of the university of Nigeria, Nsukka. The reliability of the Questionnaire was ascertained through trial testing of the instrument to determine the internal consistency of the items. The reliability coefficient was determined using Cronbach's Alpha, which yielded 0.84 for cluster A, 0.79 for cluster B, and 0.81 for cluster C, respectively. The instrument has an overall reliability index of 0.86, which indicates that the instrument is reliable and therefore considered appropriate for use. In this study, the questionnaire was administered to the respondents directly by the researchers to ensure immediate collection and a 100 per cent return rate of the instrument. The data gotten was analysed using frequency, percentage, Mean and Standard Deviation for research questions and t-test for the hypothesis. A percentage of 50 or above was considered available. A mean benchmark of 2.50 guided the decision-making process. Thus, items

with a mean score less than 2.50 were rejected, while items with a mean score of 2.50 and above were accepted as they fall within the mean criteria of acceptance.

Results

Research Question 1: What are the available digital technology-based instructional tools in Economics in secondary schools in Nsukka education zone?

Table 1: Frequency and percentage of available digital technology-based instructional tools in Economics (n = 85)

S/N	Items	A	NA
1	Radio	25(30.2%)	60(69.7%)
2	Smartphones	37(43.9%)	48(56.1%)
3	Internet services	42(49.5%)	43(50.5%)
4.	Projectors	30(35.4%)	55(64.6%)
5	Smart boards	43(51.1%)	42(48.9%)
6.	Specialised education software	36(41.8%)	49(58.2%)
7.	Tele conferencing	26(31.0%)	59(70.0%)
8.	Virtual reality simulation	37(44.2%)	48(55.8%)
9.	Video and podcast	39(46.3%)	46(53.7%)
10.	Digital classroom	46(53.6%)	39(46.4%)
11.	Augmented reality	43(50.5%)	42(49.5%)
12.	Online subjects	45(53.3%)	40(46.7%)
13.	Virtual classroom	42(49.7%)	43(50.3%)
14.	Simulation and games	39(46.7%)	46(53.3%)
15.	Blockchain technology	37(43.9%)	48(56.1%)
16	3D model and printing	35(41.2%)	50(58.8%)
17.	Television programme	56(66.2%)	29(33.8%)
18.	Laptops	57(67.6%)	28(32.4%)
19.	Google classroom	40(47.8%)	45(52.2%)
20.	Nearpod/online peer learning	42(48.9%)	43(51.1%)
Grand percentage		50.2%	49.8%

Table 1 shows the available DTB instructional tools in teaching and learning of Economics in the Nsukka education zone. The result indicated that items 5, 10, 11, 12, 17, and 18 had the percentile scores of 51.1, 53.6, 50.5, 53.3, 66.2, and 67.6, respectively, which are above 50 per cent used as decision making, indicating availability. The overall grand percentage is 50.2% for those tools available, while those not available in schools had a percentage of 49.8%. This implies that there are few available digital technology – based instructional tools in teaching and learning of Economics in secondary schools in Nsukka education zone. Thus, the result showed that smart boards, digital classrooms, online subjects, television programmes, and laptops were readily available DTB instructional tools for teaching and learning of Economics in secondary schools.

Research Question 2: To what extent are digital technology-based instructional tools used in teaching and learning economics in secondary schools in the Nsukka education zone?

Table 2: Mean and Standard deviation of the extent to which digital technology-based instructional tools are used in teaching and learning of Economics

S/N	Items	N	Mean	Standard deviation	Dec.
1	Radio	85	1.69	0.89	LE

2	Smartphones	1.76	0.91	LE
3	Internet services	1.09	0.71	LE
4.	Projectors	1.11	0.72	LE
5	Smart boards	2.63	0.69	HE
6.	Specialised edu software	1.49	0.71	LE
7.	Tele conferencing	1.69	0.91	LE
8.	Virtual reality simulation	1.78	0.76	LE
9.	Video and podcast	1.79	0.69	LE
10.	Digital classroom	2.71	0.71	HE
11.	Augmented reality	1.59	0.81	LE
12.	Online subjects	2.61	0.71	HE
13.	Virtual classroom	1.81	0.69	LE
14.	Simulation and games	1.49	0.71	LE
15.	Blockchain technology	1.81	0.82	LE
16	3D model and printing	1.83	1.21	LE
17.	Television programme	2.69	0.68	HE
18.	Laptops	2.61	0.74	HE
19.	Google classroom	1.56	0.81	LE
20.	Near pod/online peer learning	1.79	0.71	LE
Cluster mean		1.87	0.77	

VLE-Very low extent, LE- low extent, HE-high extent, VHE- Very High Extent

Table 2 shows the extent to which digital technology-based instructional tools are used in teaching and learning economics in secondary schools in the Nsukka education zone. On Table 2, instructional tools 5,10,12,17, and 18 had means 2.63,2.71, 2.61, 2.69 and 2.61, respectively. These mean scores are above the 2.50 accepted threshold. This implies that some digital technology-based instructional tools have a great extent of use in teaching and learning of economics in secondary schools. In other words, DTB instructional tools in high use were electronic smart boards, digital classrooms, online courses, television programmes, and laptops.

Research Question 3: What are the challenges that affect digital technology-based instruction in Economics in secondary schools in Nsukka education zone of Enugu state?

Table 3: Mean and standard deviation on the challenges that affect digital technology-based instruction in Economics

S/N	Item Statements	Mean	SD	Decision
1.	Inaccessibility to infrastructure	3.26	1.38	Accepted
2.	Unreliable internet connectivity	3.82	1.24	Accepted
3.	Irregular Power supply	3.14	1.30	Accepted
4.	Teachers lack technology skills	2.60	0.90	Accepted
5.	Insufficient time to use technology in teaching	3.09	0.71	Accepted
6	High cost of technology tools	2.98	1.22	Accepted
7.	High rate of students distracted by social media	2.15	1.44	Accepted
8.	Fear of online insecurity	2.32	0.82	Accepted
9.	Low computer literacy	2.76	1.35	Accepted
10	Difficulty in using technology for some content in Economics	2.58	1.56	Accepted
Cluster Mean		2.87	1.19	Accepted

Table 3 shows the challenges affecting the use of digital technology-based instruction in teaching and learning of Economics in secondary schools in the Nsukka education zone of Enugu state. Mean analysis from table 3 shows that the mean scores of items 1, 2, 3, 4,5,6,9 and 10, which are 3.26, 3.82, 3.14, 2.60, 3.09, 2.98, 2.76, and 2.58, respectively, are above the criterion mean of 2.50 for acceptance, which implies that they are accepted. The grand mean of 2.87, which is also above the 2.50 acceptance benchmark, also implies that respondents accepted the items in table three above as challenges affecting the use of digital technology-based instruction in teaching and learning of Economics in secondary schools in Nsukka education zone. Thus, this means challenges such as accessibility to infrastructure; unreliable internet, power issues; teacher lack of technology skill; inadequate time to use the technology in teaching; high cost of technology tools; low computer literacy; and difficulty to use technology for some content in Economics were identified to affect the use of DTB instruction in Economics.

H₀₁: There is no significant difference between male and female teachers' use of digital technology-based instructional tools in Economics.

Table 4: t-test analysis on the male and female teachers' use of technology-based instructional tools in Economics

Gender	N	Mean	Std. Deviation	Df	T	Sig	Decision
Male	46	0.91	1.21	83	3.63	0.66	NS
Female	39	0.96	1.25				

NS = Not Significant

Table 4 indicates that a t-value of 3.63 with a degree of freedom of 82 and a probability value of 0.66 was obtained. Based on this, the null hypothesis formulated was accepted; hence, there is no significant difference in the mean response of male and female teachers on the level of digital technology-based instructional tools used in teaching and learning of Economics.

Discussions of the findings

The results show that electronic smart boards, digital classrooms, online subjects, television programmes, and laptops were available DTB instructional tools for teaching and learning Economics in secondary schools in Nsukka education zone. The findings are in alignment with Sentriyo, Sumarna, Rabani and Arisanti (2023) that reported that there were provisions for DTB instructional tools moderately but not well used. Also, the report by Haleem, Javaid, Quadri and Suman (2022) was in line with the findings that some technologies, such as TV, radio, online classes, and digital classrooms, were easily accessible to teaching, which improved teaching productivity. This, on the contrary, is that access to technology alone does not guarantee educational gain (Forsstrom, Nja, Munthe, Alvarez-Galvan & Houldsworth, 2025).

The findings support that teachers should leverage the opportunity by ensuring that DTB instructional tools bridge the gap between traditional learning and modern digital learning. This transforms learners into active and engaged in their learning. The study of Economics makes DTB instructional tools so relevant because the students need real-world preparation for a proper understanding of the subject matter. Thus, DTB is relevant in improving academic performance, streamlining teaching workflow and maximising classroom efficiency.

The findings of the study showed that the same items that are available had high use in teaching and learning of Economics. Abenez (2025) supported the findings that revealed teachers often use digital tools in both pedagogy and assessments. The study further found that students were often engaged in technology integration. On the contrary, Igwe and Chima-Uduma (2023) identified that multi-media projectors and interactive whiteboards were utilized in very low extent in teaching business education in universities. Likewise, Kennedy, Ekong and Okorie (2022) revealed low utilisation of digital technologies in teaching and the universities.

The study also highlighted that there was no significant difference in terms of gender in the level of digital technology-based instructional tools used in teaching and learning of Economics. The findings are in favour of Fomse and Orduah (2017), who reported that either male or female teachers showed differences in the use of Information technology. Also, Achuonye (2019) supported that gender did not affect the use of computers. It was further explained that the use of computers helped teachers to improve students' learning. On the contrary, study by Danko, Decman, Kerzic and Zorko (2020) identified that gender positively correlates with technology use in particular tools and their pedagogical uses in favour of females.

The study also found out challenges affecting the use of digital technology-based instruction in teaching and learning of Economics in secondary schools in the Nsukka education zone of Enugu state. These challenges include accessibility to infrastructure, unreliable internet, power issues, and teachers' lack of technology skills, inadequate time to use the technology in teaching, high cost of technology tools, low computer literacy, and difficulty using technology for some content in Economics were identified to affect the use of DTB instruction in teaching Economics. In line with the findings, Ravendaram and Nasi (2025), infrastructure and professional developments were basic challenges affecting the use of digital technology in teaching. Also, Zou, Kuek, Feng, and Cheng (2025) identified socioeconomic and pedagogical challenges as factors that affect the assessment of technology. The study's findings highlight the challenges of using DTB in teaching and learning Economics. These challenges were identified to help transform teaching into an inclusive and effective learning environment for the future.

Conclusion

DTB instruction in Economics is a pivotal in today's teaching and learning process for relevance, clarity and enhanced students' interest and engagement. Therefore, the optimum availability and utilization of the DTB instruction is of paramount importance to harness the full benefits of DTB instruction in Economics. The challenges that affect digital technology-based instruction in Economics in secondary schools in Nsukka education zone of Enugu state such as unreliable internet connectivity, irregular power supply and low computer literacy need to be adequately and urgently handled for smooth and effective utilization of DBT instruction in Economics.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. School administrators should provide a conducive technology-based environment to enhance DTB instruction in Economics.
2. The government should provide facilities that will enhance the use of DTB instruction in Economics. .
3. The government should organize workshops and seminar for teachers on DTB instructions.

4. Government and school administrations should provide equal opportunities and support for both male and female teachers on the use of DTB instruction in Economics without discrimination on the basis of gender.

REFERENCES

- Abenez, J. A. T. (2025). Utilization of digital tools in classroom instruction: Students' engagement and academic performance. *International Journal of Research in Interdisciplinary Studies*, 3(9), 80–86. Retrieved from <https://journal.ijris.com/index.php/ijris/article/view/223>
- Achuonye, K. A. (2019). *Trends in Nigerian educational innovations*. Port Harcourt, Nigeria: Pearl Publishers.
- Attih, J. A., & Ehibudu, M. U. (2023). Technology-driven education: A framework for 21st century development needs: ICT in focus. *Trends in Educational Studies Journal*, 13(3), 37–46.
- Chinyelugo, T. C. (2024). *Development of digital concept maps package for online economics instruction in secondary schools in Nsukka Education Zone, Enugu State* (Unpublished Ph.D. thesis). University of Nigeria, Nsukka.
- Danko, M., Dečman, M., Keržic, D., & Zorko, V. (2020). The effect of gender on university teachers' ICT use. In *Proceedings of the 14th IADIS International Conference on E-Learning 2020* (pp. 94–100). doi:10.33965/el2020_2020071012
- Parveen, S., & Ramzan, S. I. (2024). The role of digital technologies in education: Benefits and challenges. *International Research Journal on Advanced Engineering and Management*, 2(6), 2029–2037. doi:10.47392/IRJAEM.2024.0299
- Emeka, O. S., & Fomsi, E. F. (2017). Gender differences in the use of ICT among teachers in model primary schools in Rivers State, Nigeria. *British Journal of Education*, 5(4), 88–94.
- Eneogu, N. D., & Ezegebe, B. A. E. (2019). Assessing the extent of in-service education on participating teachers' effectiveness and classroom interaction skill in economics instruction. *International Journal of Economics Education Research*, 2.
- Muwanguzi, S. E., Musisi, B., & Itaaga, N. (2021). The pervasiveness of multi-school teaching among public secondary schools in Wakiso District (Uganda): Pedagogical dilemmas, handling and way forward. *American Journal of Educational Research*, 9(8), 522–531. doi:10.12691/education-9-8-9
- Forsström, S., Njå, M., Munthe, E., Álvarez-Galván, J.-L., & Houldsworth, L. (2025). *The impact of digital technologies on students' learning* (OECD Education Working Paper No. 335). doi:10.1787/9997e7b3-en
- George, W., Ekong, O., & Okorie, M. N. (2022). Digital technological tools for technical vocational education and training interactive learning: Availability and utilization in Nigerian universities. *Rivers State University Journal of Education*, 25(2), 85–95.
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. doi:10.1016/j.susoc.2022.05.004
- Igwe, K. O., & Chima-Uduma, C. E. (2023). Utilization of digital instructional technologies in teaching business education students for improved office skill acquisition in tertiary institutions in Ebonyi State, Nigeria. *Integrity Journal of Education and Training*, 7(5), 120–126. doi:10.31248/ijet2021.111

- Nigerian Educational Research and Development Council. (2013). *National policy on education* (6th ed.). Abuja, Nigeria: NERDC Press.
- Nji, I. A., Chinyelugo, T. C., & Eneogu, N. D. (2025). Digital technology application issues in classroom instruction among secondary school economics teachers in Delta State. *Journal of Home Economics Research*, 32(1). doi:10.66731/jher.v32i1.547
- Norbutaevich, J. T. (2020). Use of digital learning technologies in education on the example of smart education. *Journal La Edusci*, 1(3), 33–37. doi:10.37899/journallaedusci.v1i3.193
- Onasanya, H. I., & Fadeyibi, B. J. (2025). Navigating technological integration: Digital transformation and the challenges of educators in Nigeria. *Educational Perspectives*, 13(2), 117–126.
- Wonu, N., & Zalmon, I. G. (2019). Constraints to instructional effectiveness and undergraduate students' mathematics learning achievement.
- Zou, Y., Kuek, F., Feng, W., & Cheng, X. (2025). Digital learning in the 21st century: Trends, challenges, and innovations in technology integration. *Frontiers in Education*, 10. doi:10.3389/feduc.2025.1562391