
**HARNESSING DIGITAL TECHNOLOGY FOR QUALITY EDUCATION AND
SCHOOL LEADERSHIP IN ANAMBRA STATE COLLEGES OF EDUCATION****DR. PATIENCE OBIAGELI OBINEME**Department of Educational Management and Policy
Faculty of Education
Nnamdi Azikiwe University, Awka, Anambra State.po.obineme@unizik.edu.ng**08066124487****Abstract**

This article focused on harnessing digital technology for quality education and school leadership in Anambra state colleges of education. The study was guided by two research questions and two research hypotheses. It adopted the descriptive survey design. 4,012 and 2,214 teaching staff in the two colleges of education in the state (federal college of education, Umunze and Nwafor Orizu college of education, Nsugbe formed the population of the study. 600 teaching staff, (300 from each of the colleges of education) formed the sample of the study and were randomly selected through simple random sampling. The instrument for data collection was a structured questionnaire titled “Harnessing Digital Technology for Quality Education and School Leadership Questionnaire” (HDTQESLQ). The instrument for data collection was validated by 3 experts. The reliability was established using 15 teaching staff from each of the colleges of education who were not selected as sample. The test-retest technique was used for the process. Cronbach Alpha technique was used to compute the result which yielded reliability coefficient values of 0.93 and 0.89 with a general index of 0.91 and confirms that the instrument reliable. Mean and standard deviation were used as data analysis instrument while t-test was used to test the hypothesis at .05 level of significance. Findings show that computer, internet connectivity, teachers use of smart phones, interactive television, use of intranet/extranet, video tape and artificial intelligence can improve quality education in Anambra state colleges of education. it was also found that with the use of computers, internet connection, artificial intelligence, communication platforms, video conferencing and electronic learning resources, could improve school leadership. The study recommended among all that both lecturer and school leaders need to be exposed on training and

retraining programs to be informed on how to utilize these technologies for academic and administrative purposes.

Keywords: digital technology, quality education, school leadership.

Introduction

Education is the engine block that powers societies into civilization. The consistent management of societies for the attainment of certain goals is championed by educational ideas. Temesgen (2017) said that education is vital for the building and development of a better economy. The author averred that education is responsible for the elimination of illiteracy among citizens. Onwu, Ijeoma, Amarachi and Akaneme (2018) posited that education is a process by which an individual is socially, physically, emotionally, intellectually, spiritually and morally trained and developed. Education also means the training of a child in a school for the acquisition of relevant skills useful to himself, his family and the society he belongs. When education becomes more real in terms of availability of quality infrastructure, instructional materials and their likes, with a view to enhance learning, one can say that such education is of good quality.

Quality education is a type of education that ensures the effective teaching learning process. It is a kind of education that ensures that all necessary resources needed for teaching and learning are available and effectively utilized. Drista (2016) refer to quality education as that associated with the improvement of the learning process. This improvement as stressed by Drista, results from the implementation of appropriate teaching practices and methods, from the design of a curriculum that meets students' needs to the improvement of services provided by schools. Batra, Pallai and Kaim (2023) held that the quality of education is not only related to the curriculum and educational technology but also to the content of the education and teaching itself. One major aspect that makes education qualitative is the introduction of digital technology.

Digital technology refers to all electronic tools, devices, and systems that process, transmit and store data in binary form. They can also be referred to as technologies used in creating, storing and managing data in various fields and applications. Egbeji (2024) refers to digital technology as systems and resources that help create, store, and manage data. Egbeji averred that digital technology involves the use of technology to enhance learning which include digital collaboration, satellite broadcasting, CD-ROMS amongst others. In the views of Mafara, and Shehu (2025),

digital technology represents technology that relies on the use of microprocessors; hence, applications that are dependent on computers such as the Internet, as well as other devices such as video cameras and mobile devices like phones and personal digital assistants (PDAs) all comes under digital technologies. Mafara and Shehu further said that digital technology includes technologies such as Internet, online games, smart phones, intranet/extranet (LAN/WAN), audio-and video-tape, satellite broadcast, interactive TV, CD-ROM, and more used to improve learning.

Learning with digital technology seems to improve concentration and motivation among learners while teachers find it easy to navigate concepts of the topic taught. Uwaifo & Edoumiekumo, (2020) highlighted six benefits of learning using digital technology in quality education as follows: (a) provides consistent, worldwide training; (b) reduces delivery cycle time; (c) increases learner convenience; (d) reduce information overload; (e) improves tracking learners' activities, and (f) lowers expenses of educational provision (Low-cost technologies). Omodan (2021) affirmed that digital technologies enhances teacher's presence and aid teaching delivery by supplementing learning with Power Point presentations. Apart from the above benefits, it has also been observed that digital technology contributes to school leadership.

School leadership connotes influencing and enabling staff, students and stakeholders to achieve shared educational goals with major propriety on student's educational outcomes. It involves setting clear vision and objectives, developing staff, managing resources and improving teaching and learning. EASNIE (2020) refers to school leadership as all roles played by school leaders which focuses mainly on enlisting and guiding the talents and energies of teachers, learners and parents to achieve common educational aims. Similarly, Unesco (2026) refers to school leadership as the set of practices by which school-level leaders influence and organize the school community to achieve educational goals-particularly, by setting direction, improving learning, enabling collaboration and developing capacity. The researcher is of the view that school leadership is important because it improves educational standard and drive teacher job performance. It also helps to improve active learning.

In the course of this article, the researcher discovered that numerous literatures have been written on digital technologies and its improvement of quality education and school leadership. For instance, Duc, Van and Minh (2025) reported that digital technologies improves the quality of teaching & learning, increases access to technology, enhance student engagement and learning experiences; these are essential areas for quality education. Garcia, Abrego & Jauregui (2019) held that Principals use technologies to supervise teachers works as well, assist school managers in

finding creative solutions for complex allocation problems (e.g., teacher allocation, timetable construction) and supporting them in monitoring carefully how the school operates.

Eziuzo (2022) has it that school information systems (SISs) provide school managers with the information required for informed planning, policy-making, and evaluation; in addition, SISs can assist in improving the efficiency and effectiveness of schools. This also occurs in the form of school office automation: electronic mail, electronic archives, spreadsheets, electronic appointment books, automatic dialing, and desk-top publishing. The author further stressed that technologies can be utilized also by school administrators in preparing, administering, compiling and analyzing students' test marks. Technologies can be utilized in managing personnel administration, students' administration, financial administration, general administration and supervision and instructions in school. A review of technologies utilized by school administrators in managing the educational processes in secondary schools includes the use smart television and smart phones, DVD, radio; software applications as the latest Microsoft office like new versions of the word processor, excel or spreadsheet, PowerPoint, graphic design, 3D animations, virtual realities; and internet technologies using wired and wireless networks to connect to different websites such as Yahoo, Google for activities cloud computing and others, social media through Facebook, Twitter, Instagram, teleconferencing, videoconferencing, zoom, Skype, WhatsApp, online group chats, among many others (Ali, Ashraf and Yasmin, 2020). Despite the review of the above literatures, the researcher observed that their research works were related to the topic but not related to the study area which made the researcher ponder if digital technologies could improve quality education as well as improve school leadership in the study area. These unsettled doubts were motivations behind this article.

Purpose of the Study

The purpose of this study is to ascertain digital technologies harnessed for quality education and in Anambra state colleges of education. Specifically, the study sought to;

1. Find out the digital technologies that can improve quality education in Anambra state colleges of education
2. Examine the digital technologies that can improve school leadership in Anambra state colleges of education

Research Questions

The following research questions guided this study

1. What are the digital technologies that can improve quality education in Anambra state colleges of education?
2. What are the digital technologies that can improve school leadership in Anambra state colleges of education

H01: There is no significant mean difference in the opinion of male and female lecturers on the digital technologies that can improve quality education in Anambra state colleges of education

H02: There is no significant mean difference in the opinion of male and female lecturers on the digital technologies that can improve school leadership in Anambra state colleges of education

Method

This study examined harnessing digital technology for quality education and school leadership in Anambra state colleges of education. The study was guided by two research questions and two research hypotheses. It adopted the descriptive survey design. The population of the study comprised of 4,012 and 2,214 teaching staff in the two colleges of education in the state (federal college of education, Umuze and Nwafor Orizu college of education, Nsugbe. The sample size comprise of 600 teaching staff, 300 from each of the colleges of education and were randomly selected through simple random sampling. The instrument for data collection was a structured questionnaire titled “Harnessing Digital Technology for Quality Education and School Leadership Questionnaire” (HDTQESLQ). The instrument for data collection was validated by 3 experts. The reliability was established using 15 teaching staff from each of the colleges of education who were not selected as sample. The test-retest technique was used for the process. Cronbach Alpha technique was used to compute the result which yielded reliability coefficient values of 0.93 and 0.89 with a general index of 0.91 and confirms that the instrument reliable. Mean and standard deviation were used as data analysis instrument while t-test was used to test the hypothesis at .05 level of significance.

Results

Research Question One

What are the digital technologies that can improve quality education in Anambra state colleges of education?

Mean response on digital technologies that can improve quality education

S/N	Items	Gender	N	X	SD	Remarks
1	Computer is a digital technology that can ensure quality education	Male	578	2.81	0.14	Agree
		Female	578	2.76	0.39	Agree
2	Internet connectivity helps in connecting students and retrieving online instructions and is suitable for qualitative education	Male	578	2.98	0.62	Agree
		Female	578	3.05	1.00	Agree
3	Teachers can use Smart phones to teach students how to download necessary information needed to improve instructions and as well, quality education	Male	578	2.67	0.92	Agree
		Female	578	2.79	0.31	Agree
4	Interactive Television can be used by teachers to enhance quality education	Male	578	2.76	1.14	Agree
		Female	578	2.61	1.07	Agree
5	Educators can utilize Intranet/extranet (LAN/WAN) to improve quality education	Male	578	3.11	0.31	Agree
		Female	578	2.72	0.86	Agree
6	Audio tape can be used to hear audio instructions and by this, contribute top quality education	Male	578	2.09	0.97	Disagree
		Female	578	2.36	1.05	Disagree
7	Video tape contributes to quality education for it can be used to play visual instructions	Male	578	2.66	0.81	Agree
		Female	578	2.84	0.12	Agree

8	Artificial intelligence simulates videos which can help improve quality education	Male	578	2.93	0.14	Agree
		Female	578	2.43	0.91	Agree
9	Simulation games software enhances play way learning as well as quality education	Male	578	1.34	1.07	Disagree
		Female	578	2.11	1.63	Disagree
Grand Mean				2.59	0.68	Agree
				2.63	0.81	Agree

The information contained on Table 1 showed that seven items (1, 2, 3, 4, 5, 7 and 8) had weighted mean scores above the criterion mean, and the remaining two items (6 and 9) had weighted mean score below the criterion mean of 2.50 on digital technologies that can improve quality education. In summary, with an aggregate weighted mean of 2.59 and 2.63 the respondents generally accepted that computer, internet connectivity, teachers use of smart phones, interactive television, use of intranet/extranet, video tape and artificial intelligence can improve quality education in Anambra state colleges of education.

Research Question Two

What are the digital technologies that can improve school leadership in Anambra state colleges of education?

Mean response on digital technologies that can improve school leadership

S/N	Items	Gender	N	X	SD	Remarks
1	With the use of computer, school leaders can improve in their leadership by relying on information on softcopy rather than hardcopy or manual.	Male	578	3.16	0.31	Agree
		Female	578	3.01	0.11	Agree
2	Internet connectivity can improve school leadership by helping school leaders communication effectively with teachers	Male	578	2.61	0.64	Agree
		Female	578	3.10	0.96	Agree

3	School leaders would improve in their leadership role when they make effective use of artificial intelligence	Male	578	2.81	1.19	Agree
		Female	578	3.01	1.52	Agree
4	Communication platforms like whatsapp, zoom and Trello can improve school leadership	Male	578	3.04	1.12	Agree
		Female	578	2.93	0.39	Agree
5	Learning management system is a software that can help school leaders coordinate learning activities in schools	Male	578	2.14	0.74	Disagree
		Female	578	1.92	1.90	Disagree
6	Video conferencing has the tendency to enhance leadership characteristics ion schools	Male	578	2.62	0.13	Agree
		Female	578	2.87	0.46	Agree
7	The adoption of Electronic grade management can improve school leadership in he study area	Male	578	2.11	1.11	Disagree
		Female	578	2.28	1.24	Disagree
8	The use of electronic learning resources has many tendencies to improve school leadership in the study area	Male	578	2.79	0.81	Agree
		Female	578	2.99	0.31	Agree
9	School leaders can make use of data analysis tools to enhance school leadership	Male	578	2.14	0.54	Disagree
		Female	578	1.08	0.61	Disagree
Grand Mean				2.60	0.73	Agree
				2.57	0.83	Agree

The information contained on Table 2 showed that six items (1, 2, 3, 4, 6, and 8) had weighted mean scores above the criterion mean, and the remaining ones item (5, 7 and 9) had weighted mean score below the criterion mean of 2.50 on digital technologies that can improve school leadership in Anambra state colleges of education. In summary, with an aggregate weighted mean of 2.60 and 2.57, the respondents generally accepted that with the use of computers, internet connection, artificial intelligence, communication platforms, video conferencing and electronic learning resources, could improve school leadership.

Testing of hypothesis

H₀₁: There is no significant mean difference in the opinion of male and female lecturers on the digital technologies that can improve quality education in Anambra state colleges of education

Table 3

t-test comparison of mean ratings of of male and female on the digital technologies that can improve quality education in Anambra state colleges of education

location	N	Mean	SD	Df	tcal`	α	tcrit	Decision
Male	311	2.59	0.68	576	0.740	.05	1.965	Not Rejected
Female	267	2.63	0.81					

Table 3 indicates that there is no significant mean difference in response of male and female lecturers on the digital technologies that can improve quality education in Anambra state colleges of education. The null hypothesis in this regard is therefore not rejected since the tcrit = 1.965 at .05 level of significance is higher than tcal=0.740.

H₀₂: There is no significant mean difference in the opinion of male and female lecturers on the digital technologies that can improve school leadership in Anambra state colleges of education

Table 4

t-test comparison of mean ratings of of male and female on the digital technologies that can improve school leadership in Anambra state colleges of education

location	N	Mean	SD	Df	tcal`	α	tcrit	Decision
Male	311	2.60	0.73					
				576	0.55	.05	1.965	Not Rejected
Female	267	2.57	0.83					

Table 4 indicates that there is no significant mean difference in response of male and female lecturers on the digital technologies that can improve school leadership in Anambra state colleges of education. The null hypothesis in this regard is therefore not rejected since the tcrit = 1.965 at .05 level of significance is higher than tcal=0.55.

Discussion

Findings from research question one showed that computer, internet connectivity, teachers use of smart phones, interactive television, use of intranet/extranet, video tape and artificial intelligence can improve quality education in Anambra state colleges of education. In line with the above findings, Rgbeji (2024) outlined digital technologies that enhances quality learning to include the Internet, intranet/extranet (LAN/WAN), audio- and video-tape, satellite broadcast, interactive TV, CD-ROM, and more) and that these technologies can accelerate, enrich and deepen basic skills in reading, writing and can motivate students to learn as they become more independent and responsible for their learning.

Findings from research question two showed that with the use of computers, internet connection, artificial intelligence, communication platforms, video conferencing and electronic learning resources, could improve school leadership. The above findings tallies with the findings of Ali, Ashraf and Yasmin (2020) reported that technologies utilized by school administrators in managing the educational processes in secondary schools includes the use smart television and smart phones, DVD, radio; software applications as the latest Microsoft office like new versions

of the word processor, excel or spreadsheet, PowerPoint, graphic design, 3D animations, virtual realities; and internet technologies using wired and wireless networks to connect to different websites such as Yahoo, Google for activities cloud computing and others, social media through Facebook, Twitter, Instagram, teleconferencing, videoconferencing, zoom, Skype, WhatsApp, online group chats, among many others.

Conclusion

Digital technologies contribute to what is assumed as quality education as well as, enhance school leadership especially among colleges of education in Anambra state. These technologies are used by lecturers and students to make learning more meaningful just like school leaders utilize these technologies to make their leadership activities more effective and less stressful. For instance, school leaders can utilize communication platforms like zoom and whatsapp to have series of online meetings. They also make use of the internet to send and receive electronic mails. Lecturers make use of computers and the internet for their research and to compile student's results.

Recommendations

Base on the findings from this study, the researcher recommends as follows;

1. That teachers/lecturers at the colleges of education in Anambra state should be annually trained on the utilization of emerging technologies that could be used to improve quality education in their schools. These technologies could help them improve their teaching instruction as well as, work on student's results.
2. Government should provide school leaders with technologies that could assist them in carrying out their administrative activities both in school and at home. Government should also engage school leaders on seminars and workshop programs where they could be trained and facilitated on how to utilize available technologies provided to carry out their administrative and supervisory activities in this school.

REFERENCES

Adebayo, F. A., & Abdulraheem, I. (2020). ICT Integration in Nigerian Universities: Challenges and Prospects. *African Journal of Educational Management*, 4(1), 56–67.

- Ali, M. S., Ashraf, M. N. & Yasmin, A. (2020). Inequities of digital skills and innovation: An analysis of public and private schools in Punjab. *Bulletin of Education and Research*, 42 (2), 97-112.
- Batra, P., Pillai, P and Kaim, P. (2023). Quality education from teachers perspective. RESAERCH REVIEW *International Journal of Multidisciplinary*, 8(6), 44-52
- Dritsa, A. (2016). *Quality control and assurance in secondary education: the case of secondary education in Ptolemaida* (Master's thesis, University of Macedonia). Retrieved from <http://dspace.lib.uom.gr/handle/2159/19506>
- EASNIE (2020). School leadership. Retrieved 3rd April 22026 from <https://www.european-agency.org/resources/glossary/school-leadership>
- Egbeji, E. E. (2024). Availability of digital technology tools and their utilization in the management of teaching and learning at universities in cross river state, Nigeria. *Journal of contemporary research (JOCRES)*, 4 (3) 162-172
- Mafara, R. M and Shehu, S. A. (2025). Using digital technologies in mitigating challenges of teaching large classes in Nigeria tertiary educational institutions. *Journal of Current Research in Education*, 326-341
- Omodan, B. I. (2021). Enhancing ICT Integration in Nigerian Universities: Lessons from COVID-19. *Journal of Higher Education Policy and Leadership Studies*, 7(3), 32–47.
- Onwu, A. O., Ijeoma, O. A., Amarachi, J. M and Akaneme, I. N (2019). Influence of social media usage on academic engagement of university undergraduates in Enugu State of Nigeria. *Journal of the Nigerian Counsel of Educational Psychologists*, 13(1), 13-19
- Papanthymou, A. and Darra, M. (2023). Defining Quality in Primary and Secondary Education. *International Education Studies*, 16(2), 128-149
- Thangeda, A., Baratiseng, B. and Mompati, T. (2016). Education for sustainability: quality education is a necessity in modern day. How Far do the Educational Institutions Facilitate Quality Education? *Journal of Education and Practice*, 7(2), 9-17

- Temesgen, S. A. (2017) Teachers' perception and practices towards continuous assessment of mathematics classes: The case of secondary school in Wolaita Zone, Snnpr Region. *Journal of Education and Practice*, 2 (22) 84-109.
- Unesco (2026). School leadership. Retrieved 3rd April 22026 from <https://www.unesco.org/en/query-list/s/school-leadership>
- Uwaifo, F. O., & Edoumiekumo, S. G. (2020). ICT in Nigerian Education: Bridging the Gap. *Journal of Educational Innovations*, 5(1), 15–29.
- Zyl, S., & Olivier, L. (2022). Exploring Digital Literacy in Sub-Saharan Africa. *African Journal of Technology Education*, 3(4), 120–135.