

IMPACT OF EDUCATIONAL TECHNOLOGY ON THE TEACHING AND LEARNING OF TECHNICAL EDUCATION COURSES IN COLLEGES OF EDUCATION IN KOGI STATE

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Abstract

The study was carried out to determine the impact of educational technology on the teaching and learning of technical education courses in colleges of education in Kogi state. The study was conducted in Kogi state with a total population of 40 lecturers and 60 students from a Federal and State Colleges of Education. The instruments used for data collection was structured questionnaire titled: “Teaching and Learning of Technical Education Using Educational Technology (TLTEUET)”. Three research questions were formulated. Percentages were used to analyze the data for answering research questions based on the availability of Technology while mean and standard deviation were used to analyze the data for answering research questions based on the level to which technologies are been used and the benefits of using technology in teaching and learning of technical education courses. Based on the data analyzed, it was found out from the study that few technologies are available but are poorly used in some Colleges of Education that offers Technical education courses as a result of either poor funding or poor staff training. From the finding, it was recommended that all the educational technologies identified in this study should be incorporated into the curriculum of all Colleges of Education in Nigeria.

Keywords - Colleges of Education, Educational Technology, Technical Education, Teaching and Learning

Introduction

Education can be pictured in the corporate and academic settings as very essential. It is a driving instrument that prepares an individual for brighter future. Education or training exposed to learner enables the learner do things positively than ever before. Education is geared towards creating curiosity in the minds of students but with the use of technology it helps students with better understanding and retaining concepts (Rela and Naga, 2023). There is a clear indication that technology is now an important and vital part of our daily activity either at work or home. Technology helps in achieving success and improving ways of ensuring quality instruction delivery by technical education teachers (Ohi and Eli, 2024). Today, more than ever, the educational technology role in teaching and learning of technical education is of great importance because of the emerging educational technologies. Emerging technologies according to Bola (2021) are those technologies with a large impact on teaching and learning or technologies said to be on the rise (podcasts, blogs and e-books), have been shown to be useful in improving education. The emergent technologies seek to contribute positively to the teachers and learners total scientific and technological literacy Okafo, (2022). However, the integration of technology into teaching and learning has become increasingly necessary in technical education. Research shows that the use of modern educational technologies such as digital tools, multimedia, and

interactive platforms assist to enhance student engagement, supports active learning, and improves the overall quality and effectiveness of educational processes by facilitating access to information, fostering collaboration, and enabling more personalized learning experiences (Idris & Al Dabbagh, 2021; Nkomo et al., 2021). Therefore, educational technology must be systematically incorporated into classrooms and curricula as a means of applying contemporary technological tools and practices to improve teaching and learning outcomes.

Technical education, as stated in Nigerian national policy on education, it involves qualitative technological human resources development gear towards a national pool of skilled and self reliant craftsmen, technicians and technologists in technical education fields (Oke and Are, 2024).

According to Uwaifo (2010), technical education involves the formal training of individuals to become technically oriented personnel who can serve as initiators, facilitators, and implementers of technological development in a nation. This type of education equips learners with practical and technical skills and fosters technological literacy necessary for self-reliance, innovation, and sustainable national development. Nkomo et al. (2021), in a systematic review also conclude that digital technologies significantly influence student engagement in higher education. This however implies that technology integration enhances teaching effectiveness and promotes student engagement in diverse learning environments and further suggests that technical education contributes so much in the form of electrical and electronics technology, metal work technology, mechanical/automobile technology, building technology, woodwork technology which are offered in College of Education (Oke and Are, 2023).

Statement of the Problem

Technologically, the world is changing faster than ever. The era of technological innovation and development is making progress but most progressive schools like Colleges of Education still teach technical education courses in pretty much the same way. It remains a teacher in front of a board using a textbook and a marker which have been resulting to Impact of Educational Technology on the Teaching and Learning of Technical Education Courses in Colleges of Education in Kogi State numerous complaints about the poor use of educational technology in most tertiary technical institution in Nigeria. In many of our institutions today, technology is not easily accessible by lecturers and students. This has also resulted in most graduates not properly prepared for work, especially for the industries and commencement.

The poor use of technologies in Colleges of Education in Kogi State towards teaching and learning of technical education courses cannot be over emphasized with respect to human resources development in Nigeria. Technical education courses are purely practical oriented courses which require technology to improve the teaching and learning. Thus, the need to investigate ways of improving the teaching and learning of technical education courses become very obvious.

Therefore, this study is designed to find out the impact of educational technology on the teaching and learning of technical education courses in colleges of education in Kogi State.

Purpose of the Study

The main purpose of the study was to determine the impact of educational technology on the teaching and learning of technical education courses in colleges of education in Kogi state. Specifically, the study will:

1. Determine the extent to which technology is available in Colleges of Education in Kogi State.
2. Determine the level to which technology are been used in the teaching and learning of technical education courses in Colleges of Education in Kogi State.
3. Find out the benefits of using technology in teaching and learning of technical education courses in Colleges of Education in Kogi State.

Research Question

The following research questions were developed to guide the study:

1. What is the extent to which technology is available in Colleges of Education in Kogi State?
2. To what levels are technology used in the teaching and learning of technical education courses in Colleges of Education in Kogi State?
3. What are the benefits of using technology in teaching and learning of technical education courses in Colleges of Education in Kogi State?

Methodology

Design of the Study

The study adopted a survey research design with the use of questionnaires titled: “Teaching and Learning of Technical Education Using Educational Technology (TLTEUET)” to get and find out information from responses. The design was suitable or appropriate for the study since information was solicited through questionnaires on issues relating to the objectives of the study.

Area of the Study

The study was conducted in two Colleges of Education in Kogi state at both Federal and State levels that offer technical education courses. The study covers 40 lecturers and 60 students from Year 1, Year 2 and Year 3 of the Federal College of Education, Okene, and Kogi State College of Education, (Technical) Mopa both in Kogi State.

Validation of the Instrument

The instrument was subjected to face-validation by seven experts, three from Federal College of Education, Okene, three from Kogi State College of Education (Technical), Mopa and one from Federal University Lokoja, all in Kogi State. Each evaluator was served with a copy of the instrument with a request to read through each item for the purpose of identifying lack of clarity or ambiguous statement and proffer suggestions to improve the instrument in a way to meet the objectives of the study. The comments and inputs of the valuator were used to improve the final draft of the instrument.

Reliability of the Instrument

The test-retest method was used to establish the reliability of the instrument. Thus, to ensure that the instrument was reliable, that is whether it will be able to elicit the same information always from the respondents, the two results were analyzed using the test-retest method to establish the reliability of the instrument.

Method of Data Collection

The research was done with permission from authority of the two Colleges of Education. The questionnaire was administered personally by the researcher and with the aid of four research assistants. The total questionnaire administered was one hundred and one hundred copies were returned representing a total of 100% was collected. The researcher and the assistants administered the instrument on the respondents at interval of one week and returned for collection of the completed instrument. This interval is necessary in order to give sufficient time to the respondents to respond to the instrument and also to ensure hundred percent return rates.

Method of Data Analysis and Presentation

The data collected from the respondents was analyzed using percentage, mean and standard deviation. Thus, Percentage was used to determine the availability and non-availability of the technology. Technology equal to 50% were considered as available while facilities below 50% were considered as not available. While the mean and standard deviation was used to determine the level to which technology used and their benefits in the teaching and learning of technical education courses in Colleges of Education in Kogi State. The items with Mean score greater than or Impact of Educational Technology on the Teaching and Learning of Technical Education Courses in Colleges of Education in Kogi State equal to 2.50 were considered as agreed while items below 2.50 were considered as disagreed.

Research Question 1

1. What is the extent to which technology are available in Colleges of Education in Kogi State?

The data for answering research question 1 are presented in table 1

Table 1: Mean Responses of the Respondents on the extent to which technology are available in Colleges of Education in Kogi State.

S/N	Technologist	Respondents (Availability)%	Respondents (Non-Availability)%	Remarks
1	Internet Access	17.38%	82.62%	Not available
2	Presentation application	20.80%	79.20%	Not available
3	Personal computer	77.52%	22.48%	Available
4	Flash Drive	95.88%	4.12%	Available
5	Scanner	29.99%	75.01%	Not available
6	Interface Drive	13.81%	86.19%	Not available
7	Software	30.13%	69.87%	Not available
8	Printer	34.57%	65.43%	Available
9	Projector	36.76%	63.24%	Not available
10	Camcorder	23.50%	76.50%	Not available
11	Monitor	11.26%	88.74%	Not available
12	Video Camera	57.63%	19.42%	Available
13	Video Camera	57.63%	19.42%	Available

14	Disk Drive	75.99%	25.01%	Available
15	Slides	41.31%	58.69%	Not available
16	Audio file	84.64%	16.36%	Available

The data presented in table1 revealed that seven technologies among others happened to be available with respondents' percentage above 50%. This showed that the percentage of the technologies was above the cut-off point of 50%, while nine technologies among others happened to be non-available with respondents' percentage below 50%.

Research Question 2

To what levels are technology used in the teaching and learning of technical education courses in Colleges of Education in Kogi State?

The data for answering research question 2 are presented in table 2

Table 2 Mean Responses of the Respondents on the extent to what levels are technology used in the teaching and learning of technical education courses in Colleges of Education in Kogi State.

S/N	Items	X	SD	Dec.
1	Computer is used in the teaching and learning of technical education courses.	3.26	0.65	Agree
2	Technical education lecturers/ students in college make use of computer added instruction during the teaching and learning process	3.11	0.62	Agree
3	The technical education lecturers/ students use projectors and video camera for teaching and learning	2.11	0.42	Disagree
4	Technical education lecturers/ students in college make use of internet for teaching and learning process	1.32	0.26	Disagree
5	Technical education lecturers/ students in college make use of Camcorder and monitor for teaching and learning	2.33	0.46	Disagree
6	Technical education lecturers/ students in college make use of Engineering software applications for teaching and learning	2.40	0.48	Disagree
7	Technical education lecturers/ students in college make use of Multimedia system and slides for teaching and learning	2.52	0.50	Agree

8	Technical education lecturers/ students in college make use of presentation application for teaching lad learning process.	2.75	0.55	Agree
9	Technical education lecturers/ students in college make use of Computer and Disk Drive for teaching and learning			
10	Technical education lecturers/ students in college make use of internet for teaching and learning process for teaching lad learning process.	2.83	0.57	Agree

Key: X = Mean, S.D= Standard deviation

The data presented in table 2 revealed that 6 item statements have their mean value ranged from 2.51 to 3.26. This showed that the mean value of each item was above the cut-off point of 2.50, indicating that all 6 technologies are used in Colleges of Education. While 4 item statements fell below the cut-off point Impact of Educational Technology on the Teaching and Learning of Technical Education Courses in Colleges of Education in Kogi State of 2.50, indicating that all 4 technologies are not used in Colleges of Education. The table also showed that the standard deviations (SD) of the items are within the range of 0.26 to 0.65.

Research Question 3

3. What are the benefits of using technology in teaching and learning of technical education courses in Colleges of Education in Kogi State?

The data for answering research question 3 are presented in table 3

Table 3: Mean Responses of the Respondents on the benefits of using technology in the teaching and learning of technical education courses in Colleges of Education in Kogi State.

S/N	Items	X	SD	Remark
1	Use of Technology for learning is student-centered and provides useful feedback through various interactive features.	3.26	0.74	Agree
2	Technology promotes an integrative approach to teaching and learning.	3.11	0.92	Agree
3	Technological development have become great success for teachers to help students grasp a concept easily	3.03	0.75	Agree
4	Technology promotes the manipulation of existing information and to create ones own knowledge to produce a tangible product.	3.32	0.76	Agree

5	Technology seeks to contribute positively to the teachers and learners total scientific and technological literacy.	2.93	0.83	Agree
6	Technology improves the quality of education through a systematic and organized process.	2.90	0.74	Agree
7	Technology reduces isolation during the teaching and learning process.	3.39	0.73	Agree
8	Technology enables teachers and students gain access to knowledge.			
9	Technology equips teachers and students to deal with the future and social change.	3.21	0.63	Agree
10	Students though with technology perform better than those though with traditional method.	3.08	0.74	Agree

Key: X = Mean, S. D= Standard deviation

The data presented in table 3 revealed that 10 item statements have their mean value ranged from 2.90 to 3.39. This showed that the mean value of each item was above the cut-off point of 2.50, indicating that all 10 technologies are used in Colleges of Education. The table also showed that the standard deviations (SD) of the items are within the range of 0.63 to 0.92, this indicated that the mean values of the respondents were not far from one another in their responses.

Discussion of Findings

The findings of this study revealed that technology is important as it improves teaching and learning of technical education courses but some of these technologies are still poorly used in most Colleges of Education.

Seven out of sixteen technologies pointed out in table 1 of the study were available in the Colleges of Education. The respondents agreed that some of these technologies like Computer aided instruction, Multimedia System and Slides, Flash Drive and Audio file, Presentation application, Computer and Disc Drive are only used for the teaching and learning of Technical education courses as a result of some challenges like non-availability of other technologies due to inadequate funding and inadequate facilities.

The data presented in table 2 revealed that 6 item statements have their mean value ranged from 2.51 to 3.26. This showed that the mean value of each item was above the cut-off point of 2.50, indicating that all 6 technologies are used in Colleges of Education. While 4 item statements fell below the cut-off point of 2.50, indicating that all 4 technologies are not used in Colleges of Education.

The data presented in table 3 revealed that 10 item statements have their mean value ranged from 2.90 to 3.39. This showed that the mean value of each item was above the cut-off point of 2.50, indicating that all 10 technologies are used in teaching and learning of technical education courses in Colleges of Education. These findings were

in line with the opinion of Oke and Are (2024) stating that Technology promote teaching and learning of technical education courses but most of these technologies are still poorly utilized in some schools as a result of inadequate Impact of Educational Technology on the Teaching and Learning of Technical Education Courses in Colleges of Education in Kogi State funding, inadequate facilities, brain drain, poor staff training and retention.

Implications of the Study

The study has important implications for engineers, teachers, and policymakers. If adequately integrated, educational technology will enhance the scientific and technological literacy of teachers and students, improve instructional delivery, and contribute positively to national manpower development

Conclusion

Based on the findings of the study, the following conclusions were drawn: Technical education courses are purely practical oriented courses which require technological skills. In order to promote and improve ways of teaching and learning of these technical education courses Technology is needed to be fully integrated into all Colleges of Education curriculum as it promotes an integrative approach to teaching and learning. From the findings, it also shows that some technologies are available but are poorly used in some Colleges of Education that offers Technical education courses as a result of either poor funding or poor staff training. It is thus time for the introduction of a more technologically equipped educational sector for today and future.

Recommendations

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

1. State or federal government should organize training and re-training for Technical education teachers in colleges of education in Kogi State on the use of educational technologies.
2. State or federal government should equip the colleges of education with all educational technologies in order to promote teaching/learning of Technical education courses.
3. Modern equipment, machines and tools for teaching/learning of Technical education courses should also be provided by State or federal government for practical in colleges of education Kogi State.
4. Well qualified teachers should be employed by State or federal government only to teach Technical education courses in college of education in Kogi State.
5. All the educational technologies identified in this study should be incorporated into the curriculum of all Colleges of Education in Nigeria.

References

- Bola, S (2024). *The importance of educational technology in teaching*. International Journal of Cognitive Research in Science, Engineering and Education. Vol. 3, No.1
- Danladi, I.K (2022) The Role of ICT in Ensuring Quality Instructions Delivery by Technical Teachers. First ICT Conference and Exhibition on “ICT”, Volume 1, No 1.
- Idris, N., & Al Dabbagh, M. A. (2021). The effectiveness of incorporating technology in the classroom as an attractive tool to teach the clothing and textile curriculum and the concept of sustainability. Open Journal of Social Sciences, 9(3), 1–14.
- Nkomo, L. M., Daniel, B. K., & Butson, R. J. (2021). Synthesis of student engagement with digital technologies: A systematic review of the literature. International Journal of Educational Technology in Higher Education, 18, Article 34.
- Ohi, F. & Eli, I.K (2024) The Role of ICT in Ensuring Quality Instructions Delivery by Technical Teachers. First ICT Conference and Exhibition on “ICT”, Volume 1, No 1).
- Okafor, S (2022). *The importance of educational technology in teaching*. International Journal of Cognitive Research in Science, Engineering and Education. Vol. 3, No.1
- Oke, R., & Are, M. O. (2024). Technical and vocational education in Nigeria: Issues, challenges and a way forward. Journal of Education and Practice, 7(3), 1–10.
- Oke, V.O & Are (2023), “Technical Education and its Challenges in Nigeria in the 21st Century. International NGO Journal Vol 5.(2)Pp. 40-44.
- Rela, M., & Naga, L. (2023). Facilitating learning. In A. Januszewski & M. Molenda (Eds.), Educational technology: a definition with commentary (2nd ed., pp. 15–48). Routledge. Retrieved 18 March 2023.
- Robbert, M. (2022). Facilitating learning. In A. Januszewski & M. Molenda (Eds.), Educational technology: a definition with commentary (2nd ed., pp. 15–48).
- Uwaifo, V. O. (2010). Technical education and its challenges in Nigeria in the 21st century. International NGO Journal, 5(2), 40–44.