

# Skills Gap Assessment Among Technical and Vocational Education and Training Educators (TVET) on Adopting Digital Technologies in Teaching at Technical Colleges

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## Abstract

The rise of information technology in the twenty-first century has altered teaching and learning activities worldwide. As a result, digital technologies have generated major transformations in schools. This study was carried out to assess the skills gap among technical and vocational education and training (TVET) educators towards the effective implementation of digital learning in technical colleges in Nigeria. Three research questions guided the study, while two null hypotheses were tested at a 0.05 significance level. A stratified random sampling technique was employed to select 80 TVET educators from four technical colleges in Niger State. The instrument for data collection was a structured questionnaire built on a 4-point Likert Scale. Mean and standard deviation were employed to answer the research questions, while the z-test was used to test the null hypotheses. The study's findings revealed that TVET educators require seventeen digital skills to implement digital learning effectively. The hypotheses tested showed no significant difference between the mean responses of Administrators and TVET educators on digital skills. It was recommended that government, through Science and Technical School Board, should provide adequate digital learning devices as well as ensure the availability of uninterrupted power supply and internet connectivity in technical colleges in Niger State. future research could focus on the area of evaluation of digital learning efficiency in technical colleges Niger state.

**Keywords:** Digital Technologies, Technical and Vocational Education and Training, Educators, Technical College

**Introduction**

The emergence of digital learning in the 21<sup>st</sup> century has transformed teaching and learning activities worldwide. Consequently, digital technologies have caused massive transformations in the education sector and other spheres of human endeavor. Digital technologies have been defined from various points of view. What is common in the definitions is that digital technology in learning revolves around using information and communication technology (ICT) to impart knowledge. It is in this regard that Lin et al (2022); Rahmawati et al (2024) defined digital technologies as teaching and learning experiences that employ the uses of a wide range of technology such as computers, mobile phones (smartphones), internet, business networks, satellite broadcasting, personal digital assistants, and various educational software to impart knowledge to learners. Digital technologies provide an innovative platform teachers can use efficiently to impart knowledge because of their flexibility in developing teaching materials. Using digital technologies in teaching involves any learning accompanied by technology or instructional practice that effectively uses technology. It encompasses the application of a broad range spectrum of practices, including blended and virtual learning. Blundell et al (2020); Hanifah et al (2023) described digital technologies as various hardware and software tools, including information and communication technology (ICT), that can be used to collect, store, process, and action data and facilitate creative and critical thinking, problem-solving, collaboration, and communication. Digital learning, on the other hand, is explained by Deiniatur et al (2024); Sousa et al (2022) as a wide range of educational opportunities made possible by digital technologies. Adopting digital technologies in technical and vocational education thus involves a planned pedagogy that uses technologies to transform the teaching and learning environment. It is an innovation in which a teacher employs ICT tools to acquire knowledge and skills in trade subjects in technical colleges.

The application of digital technology in teaching and learning in technical colleges is a convenient method that gives technical college students accurate and practical knowledge and employability skills, making them relevant in the 21<sup>st</sup>-century workplace. Ab Wahab and Ali (2022) explained that digital technologies have changed how institutions impart skills and knowledge. The authors further stressed that integrating ICT in skills development, not only in course materials but also in course delivery can make it easier for more people to deliver Technical and Vocational Education and Training (TVET). Amin et al (2020) also opined that students chose popular social media platforms as their preferred way of knowledge and information sharing in an academic context. This underscores that skills for technology-oriented trades are best acquired in a high-tech learning environment. Thus, for technical colleges to remain relevant and attractive, they must identify and introduce digital skills and competence for the changing work and utilize opportunities provided by digitalization to enhance the loft goals of establishing technical colleges.

Technical colleges are institutions established to produce a workforce for national development. It is one of the institutions established by the Nigerian government that enable students to acquire relevant skills to be self-reliant and fit into the 21<sup>st</sup>-century workplace, with the view to check the unemployment rate in the country (FRN, 2014). Akanbi (2023) described technical colleges as institutions where students are trained in various occupations or trades to acquire saleable skills that enable them to function better. The main goal of

technical colleges in Nigeria, as contained in the national education policy, is to provide a trained workforce in the applied sciences, technology, and business, particularly at craft, advanced, and technical levels. Upon graduation, the students of technical colleges are expected to secure employment either at the end of the whole course or after completing one or more modules of employable skills or setting up their own business and become self-employed and be able to employ others or pursue further education in advance craft/technical program in post-secondary (tertiary) technical institutions such as Polytechnics, Colleges, and universities (FRN, 2014).

The success of implementing this training program in technical colleges largely depends on the quality of technical and vocational educators, especially regarding their digital skills. Implementing digital technology training programs for teachers in technical colleges will significantly improve teachers' digital literacy (Olanrewaju & Afolabi, 2022). Comprehensive training will enable educators to become competent in using digital tools and technologies, enhancing their teaching approaches. This capacity will allow them to incorporate digital resources into their curriculum, making classes more engaging and interactive for learners (Bassey & Ayeni, 2022). Teachers who are conversant with digital platforms may also handle classroom activities, assessments, and communications more efficiently, resulting in increased overall productivity.

Technical and vocational educators are trained individuals who provide instruction or education in teaching technical or vocational subjects. According to Bacsa-Bán (2020), technical and vocational educators are called technical teachers, vocational instructors, technician teachers, or engineer teachers. A technical educator is a teacher who recognizes the value of technology in the classroom, possesses the knowledge to teach students about the use of technology and digital resources, and has the ability and desire to use technology (Yisa et al., 2021). To serve students, technical educators must know what the business, industry, and workplace require and ensure they train students accordingly (Subrahmanyam, 2022; Yisa et al., 2021). Technical and vocational educators are technical teachers qualified to convey the essential knowledge and skills using digital technology to teach technical students to become contributing members of society and to meet the challenges of the modern world. The efficient implementation of digital technology in technical colleges depends on technical and vocational educators having the required digital skills, knowledge, and expertise. It also depends on the availability and adequacy of digital technology and the appropriateness of the existing curriculum in technical colleges, among other factors. Okwori et al. (2021) and Polit & Duktur (2022) stated that the capacity of TVET institutions to implement digital technology depends on their curricula and the readiness of trainers and teachers.

The readiness of technical and vocational educators to adopt the digital learning approach depends on whether a skills gap exists in their performance (Nwauzi & Chiorlu, 2021). This also reflects on the level of digital literacy acquired by the educators. Maisamari et al (2018); Olanrewaju et al (2022) revealed that many teachers in our schools are unfamiliar and are not taught to use computers and the internet. As such, they found it challenging to embrace the use of technologies in teaching and learning processes in schools. With this situation, it won't be easy to implement digital technology effectively in technical colleges. Alam and Sharmin (2023); Ismail and Mohammed (2015) reported that because of the inability of TVET

educators to utilize technologies in classroom teaching, technical college graduates lack the necessary employability skills needed in the 21<sup>st</sup>-century workplace. Such graduates are unfit for the present workplace and remain idle or restive. Efforts to harness the benefits of digital technologies in teaching technical skills, aimed at improving students' academic performance and equipping them with employability skills for the 21st-century workplace, will fail if there is a skills gap among teachers. Acquisition of employability skills by students will be impossible without TVET educators possessing the skills to implement digital technology in technical colleges. Hence, the rationale to assess the skills gap of technical vocational education and training educators towards effective implementation of digital learning in technical colleges in Niger State, Nigeria.

### **Research Questions**

The following research questions were raised to guide the study:

1. What are the skills required by Technical and Vocational Education and Training Educators for effective implementation of digital learning in technical colleges in Niger State, Nigeria?
2. What are the skills acquired by technical and vocational education and training educators towards effective implementation of digital learning in Technical Colleges in Niger State, Nigeria?
3. What are the strategies for improving the level of skills of Technical and Vocational Education and Training Educators towards effective implementation of digital learning in Technical Colleges in Niger State, Nigeria?

### **Research Hypotheses**

The following research hypotheses were postulated and tested at a 0.05 level of significance:  
**HO<sub>1</sub>:** There is no significant difference between the mean responses of Administrators and TVET educators on the skills required for effective implementation of digital learning in Technical Colleges in Niger State, Nigeria.

**HO<sub>2</sub>:** There is no significant difference between the mean responses of Administrators and TVET educators on the strategies for improving the level of skills of TVET for effective implementation of digital learning in technical colleges in Niger State, Nigeria.

### **Methodology**

A descriptive survey research design was adopted for the study. The targeted population was 210, which comprised 24 directors and principals of Technical Colleges who are the administrators of Technical Education and 186 TVET educators from technical colleges in Niger State. A stratified random sampling technique was employed to select 80 TVET Educators from 4 technical colleges in Niger State (Government Technical College Minna, Government Technical College Eyagi Bida, Sulaiman Barau Technical College, Suleja, Government Technical College Kotangora). All 24 administrators were used because of the manageable size. Altogether, a total of 105 respondents participated in the study.

The instrument for data collection was a structured questionnaire with four sections. The first section contained the bio-data of the respondents, while the second, third, and fourth sections contained items on digital skills required by TVET educators, digital skills acquired by TVET Educators, and the strategies for improving the level of digital skills of TVET Educators

towards effective implementation of digital learning in technical colleges. The instrument was built on the Likert Scale modified into a 4-point interval scale with the corresponding values of 4,3,2 and 1. The modified scale was used to avoid using the middle scale, which was a neutral position. According to Abranovic (1997), the neutral or undecided position creates a problem in deciding the opinion or the stand of a respondent on issues of investigation. Cohen (2013) further suggested that the researchers should avoid using it. The draft copy of the instrument was subjected to both face and content validation by three lecturers from the Department of Industrial Technology Education, Federal University of Technology Minna, Niger State, Nigeria. The instrument was trail tested on 10 Administrators and 20 TVET Educators in Government Technical Colleges in Kaduna State, Nigeria. This yielded a reliability coefficient of 0.87 using the Cronbach Alpha method. The instrument was administered with the aid of four research assistants. Out of 105 questionnaires administered, 103 were retrieved, which resulted in a 98.1% return rate.

The Statistical Package for the Social Sciences (SPSS) version 27 was used to analyze the data. Mean statistics and standard deviation were employed to answer the research questions with index scores of 2.5 and above as the benchmark for Required, Acquired, or Agreed and below 2.49 for Not required, Not acquired, or disagreed. The z-test was used to test the null hypotheses. Where the calculated z-value was less than the table value at 0.05 level of significance for the given degree of freedom, the null hypothesis was not rejected, and if otherwise rejected. The standard deviation was used to decide on the closeness or otherwise of the respondents to the mean in their responses.

## **Results**

**Research Question 1:** What are the skills required by Technical and Vocational Education and Training Educators for effective implementation of digital learning in Technical Colleges in Niger State, Nigeria?

In Table 1, there are 13 items with mean responses ranging between 3.54 to 3.84, which indicated that the respondents agreed that TVET educators highly require the skills for effective implementation of digital learning in technical colleges in Niger State. Meanwhile, 4 items had mean responses ranging between 2.85 and 3.43, which indicated that the skills were moderately required. Only item 11 had a mean of 2.35, which fell below the benchmark mean of 2.50, which showed that the respondents didn't consider the ability to work in a team as a digital skill required for effective implementation of digital learning in technical colleges. The standard deviation was between 0.58 and 1.16, which shows that the respondents' opinions were not far apart. The grand mean of 3.50 obtained indicated that TVET educators require the skills to implement digital learning in technical colleges effectively.

Table 1

*Responses of Administrators and Educators on the Skills Required by TVET Educators Towards Effective Implementation of Digital Learning in Technical Colleges in Niger State, Nigeria*

S/N	Items	Mean	SD	Decision
1	Ability to use word processing for teaching and learning	3.64	.85	HR
2	Ability to use PowerPoint presentations for teaching and learning	3.42	1.02	MR
3	Ability to use computers for teaching and learning	3.78	.94	HR
4	Ability to use screen recorder for live streaming teaching and learning	3.74	.86	HR
5	Ability to use interactive digital learning resources	3.84	.97	HR
6	Ability to use Google Meet for teaching and learning	3.59	.97	HR
7	Ability to use the projector for teaching and learning	3.67	.97	HR
8	Ability to use augmentation/virtual reality for teaching and learning	3.75	.95	HR
9	Ability to use portable media players for teaching and learning	3.59	1.05	HR
10	Ability to communicate effectively using electronic communication devices	3.72	.75	HR
11	Ability to work in a team	2.35	1.16	NR
12	Ability to manage time effectively	2.85	1.00	MR
13	Ability to use Zoom for teaching and learning	3.66	1.02	HR
14	Ability to use Automatic Computer-Aided Design (AUTOCAD) for technical/building/engineering drawings	3.73	.58	HR
15	Ability to monitor learning process and activities	2.91	1.09	MR
16	Ability to choose and use the right digital technology tools for teaching	3.43	1.05	MR
17	Ability to use e-books when sourcing academic information	3.54	1.13	HR
18	Ability to effectively use screen recorder for video and audio and edit the recorded video and audio for teaching purposes	3.80	.88	HR
	<b>Grand Mean</b>	<b>3.50</b>	<b>.96</b>	<b>HR</b>

**KEY:** SD = Standard Deviation, HR = Highly Required, MR = Moderately Required, SNR = Somewhat Not Required, and CNR = Completely Not Required.

**Research Question 2:** What are the skills acquired by Technical and Vocational Education and Training Educators towards effective implementation of digital learning in Technical Colleges in Niger State, Nigeria?

Table 2 revealed that six (6) items had a mean range between 2.50 and 3.25, indicating that the respondents agreed with the items as the digital skills were moderately acquired for implementing digital learning in technical colleges. The remaining twelve (12) items had a mean ranging between 0.55 and 1.51, which fell below the benchmark mean of 2.50. This indicated that the respondents agreed that the skills were either somewhat or entirely not acquired. The standard deviation was between 0.62 and 1.19, which shows that the respondents' opinions are not far apart. The grand mean of 1.72 obtained indicated that TVET

educators did not acquire the skills, which though are necessary for the implementation of digital learning in technical colleges in Niger state.

Table 2

*Responses of Administrators and Educators on the Skills Acquired by TVET Educators Towards Effective Implementation of Digital Learning in Technical Colleges in Niger State, Nigeria*

S/N	Items	Mean	SD	Decision
1	Ability to use word processing for teaching and learning	2.50	1.07	MA
2	Ability to use PowerPoint presentations for teaching and learning	1.32	.62	CNA
3	Ability to use a personal computer for teaching and learning	1.25	1.04	CNA
4	Ability to use screen recorder for live streaming teaching and learning	0.95	.93	CNA
5	Ability to use interactive digital learning resources	1.03	.82	CNA
6	Ability to use Google Meet for teaching and learning	0.76	.77	CNA
7	Ability to use a projector for teaching and learning	1.22	.82	CNA
8	Ability to use augmentation/virtual reality for teaching and learning	0.55	.91	CNA
9	Ability to use portable media players for teaching and learning	1.51	.99	SNA
10	Ability to communicate effectively using electronic communication devices	2.72	1.02	MA
11	Ability to work in a team	2.97	.83	MA
12	Ability to manage time effectively	2.92	.96	MA
13	Ability to use Zoom for teaching and learning	1.33	1.03	CNA
14	Ability to use AUTOCAD for technical/building/engineering drawings	1.38	.78	CNA
15	Ability to monitor learning process and activities	2.92	1.05	MA
16	Ability to choose and use the right digital technology tools for teaching	1.00	1.16	NA
17	Ability to use e-books when sourcing academic information	3.25	.93	MA
18	Ability to effectively use screen recorder for video and audio and edit the recorded video and audio for teaching purposes	1.02	1.19	CNA
Grand Mean		1.71	.93	HR

**KEY: SD=Standard Division, HA= Highly Acquired, MA= Moderately Acquired, SNA= Somewhat Not Acquired, CNA = Completely Not Acquired**

**Research Question 3:** What are the strategies for improving the level of skills of Technical and Vocational Education and Training Educators towards effective implementation of digital learning in Technical Colleges in Niger State, Nigeria?

Table 3 shows the responses of administrators and educators to the techniques for improving TVET educators' digital skills for effective implementation of digital learning at technical

colleges in Niger State, Nigeria. The data indicates a strong consensus on several critical points. Firstly, the mean scores for most items exceed the benchmark of 3.50, signifying strong agreement among respondents. Specifically, the mean score of 3.67 for the item “Training program for re-skilling and up-skilling TVET educators on digital skills” (SD = 0.91) suggests that there is a significant endorsement for continuous training programs aimed at enhancing digital competencies among educators. Similarly, “Professional development workshop focusing on digital learning skills for TVET educators” received a mean score of 3.52 (SD = 0.69), underscoring the importance of ongoing professional development.

The item “The government should ensure that infrastructure that supports ICT is available in technical colleges” received one of the highest mean scores at 3.69 (SD = 1.14), highlighting the critical need for adequate ICT infrastructure. This is further supported by the mean score of 3.74 (SD = 1.03) for “TVET educators should have access to digital resources for teaching in technical colleges,” indicating strong agreement on the necessity for readily available digital resources. The mean score of 3.64 (SD = 1.08) for “Encouraging TVET educators to engage in online learning platforms” suggests that promoting engagement with digital learning environments is also crucial. Additionally, the recommendation that “The government should subsidize the cost of digital devices for TVET educators for digital learning” was strongly supported, with a mean score of 3.71 (SD = 0.92).

However, there was a notable deviation in agreement concerning the item “TVET educators should be encouraged to make financial contributions for the purchase of ICT tools in technical colleges,” which received a mean score of 2.33 (SD = 0.99). This lower score indicates a lack of support for placing the financial burden of ICT tools on the educators themselves. The highest mean score was observed for “Availability of uninterrupted internet connectivity in technical colleges” at 3.84 (SD = 1.04), underscoring the importance of reliable internet access for digital learning implementation.

Finally, the items “Incorporating digital tools and technologies into the curriculum to familiarise TVET educators with their uses” and “Incentive packages for TVET educators who demonstrate improvement in their digital skills” received mean scores of 3.55 (SD = 1.07) and 3.59 (SD = 0.94) respectively, indicating strong support for curriculum integration. The overall grand mean of 3.53 suggests a general agreement among respondents that the proposed strategies are essential for enhancing the digital skills of TVET educators, which are necessary for the successful implementation of digital learning in technical colleges in Niger State, Nigeria.

Table 3

*Responses of Administrators and Educators on the Strategies of Improving the Level of Skills of TVET Educators Towards Effective Implementation of Digital Learning in Technical Colleges in Niger State, Nigeria*

S/N	Items	Mean	SD	Decision
1	Training program for re-skilling and up-skilling TVET educators on digital skills	3.67	.91	SA
2	Professional development workshop with a focus on digital learning skills for TVET educators	3.52	.69	SA
3	The government should ensure that infrastructure that supports ICT is available in technical colleges	3.69	1.14	SA
4	TVET educators should have access to digital resources for teaching in technical colleges	3.74	1.03	SA
5	Encouraging TVET educators to engage in online learning platform	3.64	1.08	SA
6	The government should subsidize the cost of digital devices for TVET educators for digital learning.	3.71	.92	SA
7	TVET educators should be encouraged to make financial contributions for the purchase of ICT tools in technical colleges	2.33	.99	D
8	Availability of uninterrupted internet connectivity in technical colleges	3.84	1.04	SA
9	Incorporating digital tools and technologies into the curriculum to familiarise TVET educators with their uses	3.55	1.07	SA
10	Incentive packages for TVET educators who demonstrate improvement in their digital skills	3.59	.94	SA
	<b>Total mean</b>	<b>3.53</b>		<b>SA</b>

KEY: SD=Standard Division, SA= Strongly Agreed, D= Disagreed

### Hypothesis One

**HO<sub>1</sub>:** There is no significant difference in the mean responses of Administrators and TVET educators on the skills required for effective implementation of digital learning in technical colleges in Niger State, Nigeria.

Table 4 revealed that at a 0.05 significance level, the z-calculated (0.04) is less than the z-critical of 1.96. Hence the null hypothesis was accepted, which showed that there is no significant difference between the mean responses of Administrators and TVET Educators on the skills required for effective implementation of digital learning in technical colleges in Niger state.

Table 4

*z-test analysis of mean responses of Administrators and TVET educators on the skills required for effective implementation of digital learning in Technical Colleges in Niger State, Nigeria*

Respondents	X	SD	N	df	z-cal	z-cri	Remark
Administrators	3.07	0.87	25	101	0.04	1.96	Accepted
TVET Educators	3.01	0.72	78				

### Hypothesis Two

**HO<sub>2</sub>:** There is no significant difference in the mean responses of Administrators and TVET educators on the strategies for improving the level of skills of TVET educators towards effective implementation of digital learning in Technical Colleges in Niger State, Nigeria

Table 5 revealed that at a 0.05 significance level, the z-calculated (0.06) is less than the z-critical of 1.96. Hence the null hypothesis was accepted, which showed that there is no significant difference between the mean responses of Administrators and TVET Educators on the strategies for improving the level of skills of TVET educators towards the effective implementation of digital learning in technical colleges in Niger state.

Table 5

*z-test analysis of mean responses of Administrators and TVET educators on the strategies for effective implementation of digital learning in Technical Colleges in Niger State, Nigeria. State, Nigeria*

Respondents	X	SD	N	Df	z-cal	z-cri	Remark
Administrators	3.16	0.86	25	101	0.06	1.96	Accepted
TVET Educators	3.10	0.75	78				

### Major Findings of the Study

1. The study revealed that TVET educators highly required the majority of the skills identified for effective implementation of digital learning in technical colleges in Niger State.
2. It also revealed that TVET educators did not acquire the majority of skills needed for proper implementation of digital learning skills in technical colleges in Niger State.
3. The respondents strongly agreed with the proposed strategies for improving the skills level of TVET educators for proper implementation of digital learning in technical colleges in Niger State.

4. There is no significant difference in the mean responses of Administrators and TVET Educators on the skills required for effective implementation of digital learning in technical colleges in Niger State.
5. There is no significant difference in the mean responses of Administrators and TVET educators on the strategies for improving the level of skills of TVET educators towards the effective implementation of digital learning in technical colleges in Niger State.

### **Discussion of Findings**

The analysis of research question one revealed that all the listed skills are required by TVET educators to effectively implement digital learning in technical colleges, except for one item. The mean scores above the benchmark affirm this, except for one of the items, as seen in Table 1. Some of the skills are the ability to use word processing for teaching, the ability to use PowerPoint presentation, the ability to use a projector for teaching and learning, the ability to use electronics to communicate effectively for teaching and learning, the ability to use augmentation/virtual reality for teaching and learning; ability to use portable media players, AutoCAD and many more. These skills are digital learning and 21<sup>st</sup>-century skills required by TVET educators to impact meaningful and practical skills acquisition among technical college graduates to meet current trends in the technology and digital world. Subrahmanyam (2022); Yisa et al (2021) similarly enumerated the skills required for the digital transformation of TVET by technical educators, including the ability to use ICT tools and various educational software for teaching and learning in TVET. Effective communication using electronic means (digital) will assist in achieving the aims and objectives of TVET education in this 21<sup>st</sup> century. The world is moving towards digitalization and needs to align with the current trend. Therefore, there is a need for TVET educators to acquire these skills for effective implementation of digital learning in technical colleges in Niger State.

In research question two, the analysis showed that TVET educators do not acquire most of the digital skills needed to implement digital learning effectively. The mean scores in the twelve items were below the benchmark mean scores, as seen in Table 2. Some of these skills that are not acquired are the ability to use word processing for teaching, the ability to use PowerPoint presentations for teaching and learning, the ability to use a screen recorder for video and audio recording and editing, the ability to use a projector for teaching and learning, the ability to teach via e-conferencing, that is using Google Meet, Zoom, and other media, ability to use augmented/virtual reality for teaching, ability to use AUTOCAD for teaching technical/building/engineering drawings, among others. The study of Nwauzi and Chiorlu (2021), as well as Polit and Duktur (2022), are in agreement with this finding, stating that the significant hindrance facing technical vocational educators in the emerging field of e-learning in Nigeria is the inability to acquire digital skills that will enable them to fit into the modern technological era of the digital age. Therefore, since the world is moving fast towards digitalization, TVET educators must keep up with the times by acquiring the digital skills necessary to implement digital learning in technical colleges.

Furthermore, the result of the analysis of research question three showed that as part of strategies for improving the level of skills of TVET educators towards effective implementation of digital learning in technical colleges, there is a need for training programs for re-skilling and up-skilling the TVET educators on digital learning skills; Professional

development and workshops with a focus on digital skills; provision of adequate infrastructure that support ICT; availability of uninterrupted internet connectivity, among others. As strongly agreed by the respondents, the above strategies are affirmed by the mean scores above the acceptable mean in all but one item, as shown in Table 3. This will develop TVET educators' skills that will help them effectively implement digital learning in technical colleges. This finding agrees with the study of Olanrewaju and Afolabi (2022), which posited that staff training in hardware and software is needed to enrich professional practice with digital skills. Bassey and Ayeni (2022) also corroborated the above finding by stating the need for retraining to integrate technology in the classroom for career and technical educators. Hence, TVET educators need to be retrained to have the knowledge to choose the right digital tool for teaching in technical colleges.

### **Conclusion and Recommendations**

The study revealed seventeen digital learning skills that TVET educators required to implement digital learning in technical colleges effectively. The findings also showed twelve digital skills that TVET educators have not acquired, which are necessary to implement digital learning in technical colleges. In addition to this, the findings also suggested nine strategies for improving the level of digital skills of TVET educators for effective implementation of digital learning in technical colleges in Niger state. When achieved, this will enhance the quality of teaching and learning in technical colleges and the students will fit into the 21<sup>st</sup> century workforce.

Based on the findings of this study, the following recommendations are made for effective implementation of digital learning in technical colleges in Niger State.

1. Niger State government, through Science and Technical School Board, should provide adequate and up-to-date digital learning devices in the technical colleges in Niger State.
2. The Niger State government should give TVET educators in technical colleges the opportunity to acquire new or improved skills needed for the adoption of digital technology in teaching through re-skilling and up-skilling.
3. The government should reduce taxes on ICT-related tools so that technical colleges will easily assess them.
4. Government should provide infrastructure that supports ICT, including internet connectivity and uninterrupted electricity supply in technical colleges in Niger state.
5. Digital tools and technologies should be incorporated into the TVET curriculum to familiarise educators with their uses.

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