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.....RESEARCH ARTICLE

Integrating Digital Technologies in Teaching (TVET) Programmes for Effective Teaching and Skills Development of Students in Tertiary Institutions in Enugu State

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Abstract

This study was set to determine the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State. Two research questions guided the study in line with two hypotheses. The study adopted descriptive survey research design. Population was 69 respondents consisting of thirty-four (34) lecturers and thirty-five (35) Instructors was sampled purposively from two universities. The instrument for data collection was a structured four point scale and weighted questionnaire with a 20-items statement developed by the researchers. The questionnaire was validated by three research experts and the reliability of the instrument was established using Cronbach Alpha which gave a reliability co-efficient result of 0.79. Mean and standard deviation were used to answer the research questions while hypotheses were tested using t-test at .05 level of significance and appropriate degree of freedom. Some of the findings include Google Classroom, Autodesk Simulation software, Mobile Learning Applications, Zoom, Online Quizlet, 3D Printing Technology, Google Workspace, and Virtual Reality among others digital technologies required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State. Also, the study showed that Lack of technical support needed to maintain digital technologies and troubleshoot issues that may occur, existing curriculum are not designed to incorporate digital technologies effectively, Epileptic power supply and Infrastructure Deficiencies among others. That student can play a fair role in making skill more effective as they actively participate in classroom activities and so on. It was afterwards recommended among others that the government should be actively involved in the affairs of technical colleges to ensure provision of needed resources and effective monitoring of project implementation.

Keywords Digital Technologies; Effective Teaching; Skills Development; Enugu State

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Introduction

Digital technologies promote innovation by allowing students and instructors to experiment with new teaching and learning methods. This creativity is essential for fostering entrepreneurial mindsets and problem-solving skills in Technology and vocational and promotes economics development. Studies focusing on developing economies demonstrate that skill development through effective teaching can significantly boost economic growth and job prospects. In Nigeria, for instance, empirical research by the National Bureau of Statistics (2020) indicates that students who have completed vocational training programs with effective teaching methods, such as digital simulations and project-based learning, are more likely to find employment in their fields. This suggests that putting an emphasis on skill development not only helps students but also helps the economy as a whole.

Skills involve manipulating of tools and equipment, ability to carry out both preventive and corrective maintenance. Ogbuanya, Akintonde and Bakare (2017) viewed that skill training is a unique aspect of technical college programme that serve as an act of doing, making, manipulating and practicing the theoretical knowledge gained with uses of materials, tools and equipment. As craftsmen and technicians, it is expected that such programme should equip them to function well in the society. The development of skills includes both "hard" and "soft" skills. Soft skills are personal traits like communication, teamwork, and problem-solving, whereas hard skills are specific, teachable abilities or knowledge like coding, machinery operation, or accounting. Policymakers and educational establishments have realized in recent years that students' success in the workforce depends on a balanced approach to skill development that emphasizes both skill sets (Rotherham & Willingham, 2009). The development of skills has emerged as an essential component of education in the context of a job market that is undergoing rapid change as a result of technological advancements. The way technical skills are taught has been greatly improved by digital technologies. According to Mavroudi & Hadzilacos (2013), training simulations, virtual labs, and augmented reality (AR) have emerged as practical tools for teaching technical skills.

These tools give students hands-on experience even when they have limited access to equipment. Students can, for instance, practice troubleshooting electrical circuits or engine mechanics in a controlled, safe setting with AR-based simulations. In addition, VET programs must adapt by incorporating newer technologies and digital tools relevant to each sector as technological advancements drive industry transformations (Cheng & Wang, 2015).

According to Powell & Powell (2015), studies also show that updated curriculum standards, industry partnerships, and teacher training are necessary for effective technical skill development in VET programs. These parts make sure that technical education meets the needs of the job market and advances in technology. Therefore, a dynamic approach that combines practical experience, exposure to industry standards, and digital technology use is necessary for the long-term relevance of vocational education programs and student employability. The hands-on, specific abilities necessary for effective performance in vocational and technical fields like electronics, mechanics, Agriculture, Building and information technology are referred to as technical skills. Because they closely match job requirements in a variety of industries, the demand for technical skills has grown in importance in modern economies. Through practical exercises, the use of tools specific to the industry, and training based on real-world scenarios, technical education places an emphasis on the development of these skills. Technical skills are important, Pachauri and Yadav (2014) say, because they allow students to perform specialized tasks that meet industry standards and prepare them directly for the workforce. Technical competencies are the foundation for complex skillbuilding and problem-solving abilities over time, so these skills are not only necessary for immediate employment but also contribute to long-term career advancement. According to the World Economic Forum (2016), educational systems must incorporate digital literacy, technical expertise, and interpersonal skills into their curricula because many jobs today require a combination of the three.

Digital technologies, for instance, have made it possible to use simulations and hands-on experiences that are based on real-world job scenarios to enhance skill development in fields like welding, electrical installation, and data analysis in vocational education. Tools, systems, resources, and electronic devices that generate, store, or process data are referred to as digital technologies. Software, hardware, networks, and internet-based platforms are all included in these technologies, which together make data communication, analysis, and manipulation easier. According to Castles (2009), digital technologies have significantly shaped new economic models and societal interactions by altering how information is managed, how individuals interact, and how businesses operate. Digital

technology's contribution to innovation and efficiency is a crucial aspect. Digital technologies like artificial intelligence, big data analytics, and machine learning, for instance, have changed industries like transportation, finance, education, and healthcare. Telemedicine, remote patient monitoring, and personalized medicine are all made possible by digital technologies in the healthcare industry, making patient care more efficient. Algorithms and blockchain technology are used in the financial industry to speed up transactions, increase security, and make it possible for new forms of decentralized finance (DeFi) (Pal, Tiwari & Behl, 2021). Digital educational tools like e-books, Massive Open Online Courses (MOOCs), and Learning Management Systems (LMS) make education more accessible and customizable (Voudoukis & Pagiatakis, 2022). Azubuike, Adegboye and Quadri, (2021) investigation shows that in Nigeria, digital technology has expanded access to educational and vocational resources that were once limited to urban areas or elite institutions.

Digital technologies according to the National Bureau of Statistics, online learning engagement among Nigerian youths increased significantly post-2020, driven largely by the COVID-19 pandemic and the need to adapt to digital platforms (NBS, 2021). Recent studies have shown that digital technology can address long-standing disparities in education by providing affordable and scalable options. Adedoyin and Soykan (2020) found that digital technology improved the accessibility and quality of education in Nigerian tertiary institutions, with students reporting improved engagement and retention of material. Similarly, virtual training platforms allow users to learn on demand, at their own pace, reducing barriers related to time, transportation, and cost. Salami (2023) affirmed that government and non-governmental organizations in Nigeria have increasingly promoted digital literacy through various initiatives, such as the Digital Nigeria Program, which provides online courses and certifications in digital skills for free. This initiative aims to equip Nigerian youth with skills in fields like coding, digital marketing, and data science, aligning with the national goal of creating a digitally literate workforce. Dick (2021) proved that in his study, it found that digital technology offers significant advantages in delivering hands-on, interactive, and immersive learning experiences. Technologies such as virtual simulations, digital laboratories, and industry-specific software have shown to be effective in developing technical skills that closely mirror real-world applications.

Additionally, digital tools for communication, collaboration, and data analysis are essential for developing students' cognitive and analytical skills, enabling them to think critically and adapt quickly to new challenges. Such skills are indispensable for TVET students who must navigate rapidly evolving work environments, particularly as automation and digital processes continue to redefine traditional roles in the vocational sectors. Omotayo, Adeyemi and Adebanjo-Adenugba (2020) showed that digital technology also plays a critical role in reducing unemployment and fostering entrepreneurship in Nigeria. With the advent of remote work and digital freelancing platforms, Nigerian youth are accessing global markets and income opportunities from their local communities. Platforms like Upwork, Fiverr, and LinkedIn have enabled Nigerian freelancers to secure contracts and employment with companies worldwide, helping them overcome local job scarcity. This shift not only provides income opportunities but also equips individuals with in-demand skills that boost their employability in various sectors.

Furthermore, Ochinanwata and Ochinanwata (2023) affirmed digital platforms offer young Nigerians the resources to become entrepreneurs. E-commerce, digital marketing, and social media platforms enable individuals to start businesses with low initial capital by providing easy access to a large audience. A survey conducted by the Nigerian Bureau of Statistics in 2022 revealed that 40% of young Nigerians see digital entrepreneurship as a viable career option, and nearly half of them have used online platforms to launch small businesses.

Technical Vocational Education and Training (TVET) is used as comprehensive term referring to those aspects of educational process involving, in additional to general education, the study of technologies and related sciences and acquisition of practical skills, attitudes, understanding, and knowledge relating to occupation in various sectors of economic and social life. The evolution of TVET in Nigeria reflects a gradual shift from traditional skills transfer methods to a more organized and structured education and training system aimed at fostering economic growth and empowering youth (Okorafor & Nnajiofo, 2017; Zite & Deebom, 2017; Oviawe, 2018; Ayentimi, Burgess & Dayaram, 2018). TVET equips students with practical skills and technical knowledge to meet industry demands. In fields like engineering, manufacturing, health sciences, and information technology, TVET programs aim to develop job-specific skills. Because they help students gain the practical experience, hands-on skills, and certifications they need to enter the workforce right after graduation, these programs are especially relevant for educational establishments and schools. TVET involves a diverse array of institutions, organizations, and stakeholders, including

Technical Colleges (TCs), Vocational Enterprise Institutions (VEIs), Innovation Enterprise Institutions (IEIs), Monotechnics, Specialized Institutions, Polytechnics, Colleges of Education (Technical), Universities, non-formal and informal TVET providers, Nigerian Skills Qualification Framework (NSQF) training providers, industry players, regulatory bodies, funding agencies and investors (Ogwo & Ezekoye, 2020). UNESCO (2015) highlighted the importance of Technical and Vocational Education and Training (TVET) institutions in leveraging digital technologies to develop skills that enable learners to identify and solve problems using computing techniques, methods, and technologies. In this setting, Digital technologies acts as a disruptive force, transforming teaching and learning methodologies, enhancing skill acquisition, and promoting digital literacy among TVET learners (Rosyadi et al., 2023).

The way technical skills are taught has been greatly improved by digital technologies. According to Mavroudi & Hadzilacos (2013), training simulations, virtual labs, and augmented reality (AR) have emerged as practical tools for teaching technical skills. These tools give students hands-on experience even when they have limited access to equipment. Students can, for instance, practice troubleshooting electrical circuits or engine mechanics in a controlled, safe setting with AR-based simulations. In addition, VET programs must adapt by incorporating newer technologies and digital tools relevant to each sector as technological advancements drive industry transformations (Cheng & Wang, 2015). According to Powell & Powell (2015), studies also show that updated curriculum standards, industry partnerships, and teacher training are necessary for effective technical skill development in VET programs. These parts make sure that technical education meets the needs of the job market and advances in technology.

Therefore, a dynamic approach that combines practical experience, exposure to industry standards, and digital technology use is necessary for the long-term relevance of vocational education programs and student employability. The hands-on, specific abilities necessary for effective performance in vocational and technical fields like Electrical and electronics, mechanics, Agriculture, Building and information technology are referred to as technical skills. Because they closely match job requirements in a variety of industries, the demand for technical skills has grown in importance in modern economies. Through practical exercises, the use of tools specific to the industry, and training based on real-world scenarios, technical education places an emphasis on the development of these skills. Technical skills are important, Pachauri and Yadav (2014) say, because they allow students to perform specialized tasks that meet industry standards and prepare them directly for the workforce. Technical competencies are the foundation for complex skill-building and problem-solving abilities over time, so these skills are not only necessary for immediate employment but also contribute to long-term career advancement.

Statement of the Problem

By reshaping traditional systems, digital technologies hold the promise of creating more inclusive, efficient, and innovative societies, yet their rapid evolution also requires societies to be vigilant in managing both their positive and potentially harmful effects. Effective teaching and skill development are intertwined components essential for preparing students for modern workforce demands. By incorporating interactive, experiential, and collaborative methods, educators can cultivate both hard and soft skills that are critical in today's job market. Empirical evidence underscores that when these practices are applied, students not only excel academically but also gain the practical skills necessary for success. In developing economies like Nigeria, enhancing skill development through effective teaching is key to bridging the skills gap and fostering sustainable economic growth.

However, the study also underscored several challenges that must be addressed to fully realize the potential of digital technology in VET programs. One key issue is the lack of adequate infrastructure, including reliable internet access, sufficient hardware, and consistent electricity, which are often limited in developing regions. Furthermore, many TVET instructors lack the digital literacy or training necessary to effectively integrate technology into their teaching methods, limiting the overall impact of these tools. Bridging this gap requires targeted investments in both infrastructure and teacher training, as well as ongoing support to ensure that digital solutions are sustainable and accessible for all students. The study also revealed that technological tools must be adapted to the local context to address language, cultural, and technical barriers, ensuring that digital technology complements rather than complicates the learning process. In other word, this current study, intended to contribute to the literature by identifying digital technologies needed for effective teaching of TVET programmes and skills development of students in tertiary institutions in Enugu State.

Significant of the Study

The integration of digital technologies can help to improved learning by enabling interactive and engaging learning experiences. This can help students understand difficult concepts more easily and develop practical skills more effectively. In a rapidly changing job market, there is a critical need for graduates to possess modern skills that align with industry demands. The study can identify how digital tools can help equip students with relevant skills, thereby bridging the gap between education and employment. By identifying the required digital technologies in teaching TVET programmes, the study can provide insights into how teaching methodologies can be improved, making them more relevant and effective in skill. The findings can guide professional development programs for TVET educators, helping them to effectively incorporate digital technologies into their teaching practices, thus enhancing their pedagogical skills.

Utilizing digital technologies can increase student engagement and motivation, as many learners are more receptive to digital forms of education, making the learning process more enjoyable. The integration of digital technologies in TVET can significantly influence teaching and learning processes, contributing to skill development and preparing students for the demands of the modern workforce.

Purpose of the Study

This study was aim to determine the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State. Specifically, the study determines to identify:

- i. Digital technologies required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.
- ii. Challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

Research Questions

The following research questions is used to direct the study

- i. What are digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State?
- ii. What are the Challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State?

Research Hypotheses

The following research hypothesis were used for the study

Ho1: There is no significant relationship between the mean responses of TVET Lecturers and Instructors on digital technologies required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

H₀₂: There is no significant relationship between the mean responses of TVET Lecturers and Instructors on the challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

Research Methods

The researcher adopted a descriptive survey research design. This study covered two (2) government own Universities offering TVET programs in Enugu State, Nigeria. These universities are; University of Nigeria Nsukka (UNN) and Enugu States University of Science and Technology (ESUT). Population was 69 respondents consisting of thirty-four (34) lecturers and thirty-five (35) Instructors was sampled purposively from two universities. The instrument for data collection was a structured four-point scale and weighted questionnaire with a 20-items statement developed by the researchers.

The questionnaire had two sections, namely: A and B. Part A comprised the respondents; data while B had the questionnaire items with response options of Very highly required (VHR), Highly Required (HR), moderately Required (MR) and Not Required (NR) assigned numerical values of 4, 3, 2 & 1 respectively. The instrument was validated by three research experts with the reliability index of 0.79 established using Cronbach's Alpha.

In analyzing the data collected, mean and standard deviation were used to answer the research questions. Upper and lower limits of the mean were used as the basis for decision making, thus; Very highly required (VHR): 3.50 -4.00, Highly Required (HR): 2.50 - 3.49, Moderately Required (MR): 1.50 - 2.49, Not Required (NR): 1.00 - 1.49. The null hypotheses were tested at .05 level of significance and appropriate degree of freedom using t-test. The null hypotheses were rejected when t-calculated was greater than t-critical value and were not rejected when tcalculated value was less than t-critical

Results

The results in line with the research questions and corresponding null hypotheses that guided the study are presented below.

Research Question 1

What are digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State?

Table 1: Mean and standard deviation of respondents regarding the digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State

S/N	The following are the	Instructors (25)		Locturors (24)		Total		Decision
	resources required for teaching TVET programmes	X	SD1	X	SD ₂	X	SD₃	Decision
1	Google Classroom	3.13	1.429	3.61	1.617	3.35	1.552	HR
2	Autodesk Simulation software	3.34	1.099	3.90	1.394	3.46	1.296	HR
3	Zoom	3.73	1.311	3.88	1.450	3.85	1.397	VHR
4	Google Workspace	4.21	1.543	3.90	1.411	4.07	1.448	VHR
5	3D Printing Technology	3.69	1.241	4.00	1.311	3.73	1.282	VHR
6	Mobile Learning Applications	3.69	1.690	3.75	1.571	3.77	1.600	VHR
7	Adobe Creative Cloud	3.78	1.550	3.81	1.559	3.71	1.545	VHR
8	Online Quizlet	4.43	1.444	3.68	1.506	4.04	1.475	VHR
9	Online Resource Libraries	3.95	1.199	3.84	1.493	4.73	1.418	VHR
10	Virtual Reality	4.13	1.459	3.18	1.768	3.98	1.676	VHR
	Cluster Mean/ SD	3.44	1.396	3.75	1.508	3.86	1.468	VHR

Data presented in Table1 showed that the respondents agree that all the items presented with the grand mean ranging from 3.55 to 4.73 are the digital technological resources required for teaching TVET programmes for effective teaching and skill development. The standard deviation ranged from 1.282 to 1.676 the values is low and this shows that the responses are clustered around the mean. It can be deduced from the mean values that all the identified items are the digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

Hypothesis One

There is no significance difference between the mean ratings of TVET Lecturers and TVET Instructors regarding the identified digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

Table 2: t-test analysis between TVET Lecturers and TVET Instructors regarding the digital technologies required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State

Respondent	Ν	X	SD	DF	Ρ.	t.cal	t.tab	Decision
Instructors TVET Lecturers	35 34	3.44 3.75	1.396 1.508	76	0.5	-0.886	1.980	NS

NB: NS: Not Significant. SD: Standard deviation. DF: Degree of freedom.

Table 2 revealed that t-calculated value is -0.8864 while t-critical is 1.96. Therefore, since the calculated value is less than the critical t-value, the null hypothesis is not rejected. This implies that there is no significance difference between the mean ratings of TVET Lecturers and TVET Instructors regarding the identified digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

Research Question 2

What are the Challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State?

Table 3: Mean and standard deviation of respondents regarding the Challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State

S/N	The following are the								
	challenges affecting the	Instructors (35)		Lecturers (34)		Total		Decision	
	integration of digital technologies in teaching TVET programmes	X ₁	SD ₁	X ₂	SD ₂	Х.	SD		
1	Lack of technical support needed to maintain digital technologies on troubleshot issues that may occur	4.08	1.311	3.88	1.450	3.95	1.397	Strongly Agree	
2	Disparities in accessing digital technology among student, especially those from low income background	3.37	1.543	3.90	1.411	3.85	1.448	Strongly Agree	
3	Insufficient funding to acquire new technologies and maintain existing equipment	4.21	1.241	4.00	1.311	4.07	1.282	Strongly Agree	
4	Existing curriculum are not designed to incorporate digital technologies effectively	3.69	1.550	3.81	1.559	3.77	1.545	Strongly Agree	
5	Resistance to change among TVET educators	3.69	1.550	3.81	1.559	3.78	1.546	Strongly Agree	

6	Lack of Training for educators and student	3.78	1.444	3.68	1.493	3.71	1.475	Strongly Agree
7	Infrastructure deficiencies	4.43	1.199	3.84	1.768	4.04	1.418	Strongly Agree
8	Traditional assessment methods may not align with digital learning environments	3.69	1.459	3.18	1.547	3.35	1.676	Strongly Agree
9	Poor network connectivity	3.13	1.459	3.18	1.547	3.35	1.676	Agree
10	Epileptic power supply Cluster Mean/ SD	3.34 3.78	1.191 1.381	3.52 3.71	1.517 1.511	3.46 3.73	1.396 1.465	Agree Agree

In addition, the data presented in Table 3 revealed that the mean responses of respondents on the items number 1, 2, 3, 4, 5, 6, and 7 range from 3.71 to 4.07 and indicating strongly agree responses while items number 8, 9 and 10 were agree as the challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State aggregate scores range of 3.35 to 3.46.

Hypothesis Two

There is no significant relationship between the mean responses of TVET Lecturers and Instructors on the challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

Table 4: T-test analysis between TVET Lecturers and TVET Instructors regarding the challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State

Respondent	Ν	x	SD	DF	Ρ.	t.cal	t.tab	Decision
TVET Instructors	35	3.78	1.381	76	0.5	0.131	1.980	NS
TVET Lecturers	34	3.71	1.511					

Table 4 revealed that t-calculated value is 0.1313 while t-critical is 1.96. Therefore, since the calculated value is less than the critical t-value, the null hypothesis is not rejected. This implies that there is no significance difference between the mean ratings of TVET Lecturers and TVET Instructors regarding the challenges affecting the implementation of teaching of TVET programme with the use of virtual learning strategy for effective lesson delivery in the tertiary institutions in Enugu state.

Discussion of Findings

With respect to the findings in Table 1 it was revealed that the digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State. Some of these digital technological resources required include; Google Classroom, Autodesk Simulation software, Mobile Learning Applications, Zoom, Online Quizlet, 3D Printing Technology, Google Workspace, and Virtual Reality among others. The above findings are in support of Babalola, Dambo, & Bupo (2019) which state that computers, software, and online applications have led to the use of modern machines in teaching and learning and these machines, including desktops, computers, laptops, tablets, iPhones, Androids, and various mobile phones, equipped with software programs, have made education less stressful and more engaging for both teachers and students. This is further supported Mavroudi & Hadzilacos (2013), stated that training simulations, virtual labs, and augmented reality (AR) have emerged as practical tools for teaching technical skills. Similarly, the hypothesis test of no significant difference revealed that there here is no significance difference between the mean ratings of TVET Lecturers and TVET Instructors regarding the identified digital technological resources required for teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State.

However, the findings on Table 2, it was found that there are Challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu. Some of the challenges include the following: Lack of technical support needed to maintain digital technologies and troubleshoot issues that may occur, existing curriculum are not designed to incorporate digital technologies effectively, Epileptic power supply and Infrastructure Deficiencies among others. The findings tally with the report of Raimi and Akhuemonkhan (2014) opined that for TVET to stimulate employability and promote national development there is need for policy makers and other stakeholders to improve the level of funding, participation, expertise, policy implementation and curriculum harmonization in TVET programs. Also, Ugwoke, et al. (2020) opined that as at today, TVET programs that require skills are being taught using lecture methods due to lack of equipment, lack of knowledge of how to use the digital resources, or no power supply etc. Also, in another development, the result of the corresponding hypothesis shows There is no significant relationship between the mean responses of TVET Lecturers and Instructors on the challenges affecting the integration of digital technologies in teaching TVET programmes for effective teaching and skill development students in tertiary institutions in Enugu State. This shows that the t-calculated value gotten was low against the t-tabulated value at the appropriate degree of freedom and significance level.

Conclusion

Digital technology's incorporation into vocational and education training (TVET) programs in developing nations is a significant step toward modernizing skill training, increasing accessibility, and enhancing educational outcomes for workforce-entry students. Digital tools can support effective teaching and foster the development of essential skills in a variety of ways, as this study has shown, highlighting both the resources and challenges associated with technology adoption in resource-constrained settings. Digital technologies have the potential to transform the teaching and learning experience by fostering practical skills that are in line with the demands of the modern job market, supporting personalized learning, and increasing student engagement. Because TVET programs aim to produce a skilled workforce prepared to effectively contribute to the economy and maintain national development goals, these benefits are especially important.

In addition, incorporating digital technologies into TVET programs in developing nations has enormous potential to transform technical education and improve workforce readiness. A comprehensive strategy that incorporates infrastructure investment, educator professional development, and the adaptation of digital resources to meet local requirements are essential for realizing this potential. By making these efforts, TVET programs can make use of the power of digital technology to provide students with a high-quality, current, and long-lasting education that equips them with the skills they need to succeed in the global workforce and make a meaningful contribution to their communities. The journey toward effective digital integration in TVET is complex, as this study demonstrates. However, if existing obstacles are resolved and technological advancements are utilized, it can transformatively shape a workforce that is more skilled, innovative, and resilient in developing countries.

Recommendation

- i. Administrators in TVET programmes should encourage ongoing technical training for instructors. Establishing training programs that help instructors become proficient with digital tools and technologies central to their subject areas.
- ii. Students should encourage in self-directed learning using e-learning modules thereby developing selfpaced online modules that allow students to build independent learning skills. E-learning resources can help students strengthen their ability to learn autonomously, assess their progress, and cultivate a mindset of continuous learning essential in fast-changing vocational fields.
- iii. Implement digital assessment systems to track student progress in real time and provide immediate feedback. Such systems allow educators to identify individual learning needs, enabling a more adaptive teaching approach that helps students strengthen their skills at their own pace.

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