



A Systematic Review of Post-COVID-19 Pandemic Strategies to Improve Instruction of Technical and Vocational Education and Training in Nigeria

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ABSTRACT

In Nigeria, the impact of the COVID-19 pandemic, which has caused many economies to crumble and claimed lives, has been a drawback to the teaching and learning of technical and vocational education and training (TVET). This paper examined the strategies scholars have identified in the previous studies to reposition and make effective the instruction of technical and vocational education in Nigeria post-COVID-19. A PRISMA protocol was adopted to document the analysis method and inclusion and exclusion criteria. The authors used relevant electronic databases (Google Scholar and Scopus) to search for qualitative and quantitative journal articles published in English between 2020 and 2022 on TVET in Africa. Studies that focused on primary education level were excluded. A three-step synthesis process was used to map the literature to the study objectives. It was found that teaching and learning in TVET in the post-COVID period can be improved by providing professional training programmes for teachers or instructors on relevant skills in a disruptive situation. This paper will guide the educational stakeholders (government, school administrators, teachers, and non-governmental organisations) on the effective strategies for teaching and learning TVET in Nigeria post-COVID-19.

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INTRODUCTION

The critical roles played by technical and vocational education and training (TVET) cannot be underestimated TVET has been a primary avenue for the economic and industrial development of many nations. The development of the skilled workforce of any country needs to accelerate a giant stride of development in all spheres of life.¹ TVET, as an education sub-sector, is saddled with the

¹ Kogo Wilson Kipnetich, Moses Kapkiai, and Chumba Sammy, “Assessing the Extent of Application of Competency Based Education and Training Approach in Classroom Instruction in Technical and Vocational Education Training Institutions in Kenya,” *Journal of Education, Society and Behavioural Science*, December 13, 2021, 52–64, <https://doi.org/10.9734/jesbs/2021/v34i1230383>.

responsibility of workforce production and entrepreneurial skills development in Nigeria.² TVET, before the 21st century, especially between the 1960s and 1970s, was comatose in Nigeria as it was unable to provide for the workforce need of the country. Acknowledging this condition, the government reinvented it from a state of deterioration to a more appreciable level in the 21st century.³ Also noted is the financial and economic-related crises faced by Africa in the market contributed to the embracing of TVET in Africa.⁴ TVET, according to Mathur et al., is a tool that can enhance productivity and contribute to socio-economic development.⁵ It is credited for the success achieved in transforming Malaysia's education system.⁶ It is a special form of unique education that imparts the trainees needed occupational skills for sustainable livelihood.⁷

Criticisms keeps coming in the way of the operation of Nigerian TVET institutions from time to time.⁸ Complaints range from poor adoption of policy implementation strategies⁹ to curriculum and infrastructural inadequacy¹⁰ to poor attention from the government. Ayonmike and Okeke argue that despite the values inbuilt in TVET to improve standardised living, create jobs and promote nation-building, enrolment in these TVET institutions is still very low in Africa¹¹ despite concerted efforts by the government, individuals, and many other TVET stakeholders to remove it from a state of coma and deterioration. The outbreak of the coronavirus pandemic in 2019 has caused more harm than good to the teaching and learning of TVET in Africa. The COVID-19 pandemic has affected many economies and claimed lives¹² and put many things on hold in the teaching and learning of TVET in higher institutions in Nigeria.¹³ As a result, teachers and students began to struggle with virtual learning

² Sulaimon Adewale, *Policy Change Implementation Strategies and Goal Achievement in Technical Colleges in South-West, Nigeria*. (Ilorin: Educational Management, University of Ilorin, 2018), <https://doi.org/10.30900/kafkasegt.996019>.

³ Mutiat Titilope Oladejo, "Challenges of Technical and Vocational Education and Training in Nigerian History," *Makerere Journal of Higher Education* 11, no. 1 (January 1, 1970): 67–81, <https://doi.org/10.4314/majohe.v11i1.6>.

⁴ Temitayo A. Akinyele and Fehintola F. Bolarinwa, "Prospects, Issues and Challenges of Technical and Vocational Education and Training (TVET) In Revamping Nigeria Depressed Economy," *International Journal of Vocational and Technical Education Research* 4, no. 1 (February 28, 2018): 1–18, <https://www.eajournals.org/journals/international-journal-vocational-technical-education-research-ijvter/vol-4-issue-1-march-2018/prospects-issues-challenges-technical-vocational-education-training-tvet-revamping-nigeria-depressed-economy/>.

⁵ Arushi Mathur et al., "Technical and Vocational Education and Training: Examining Changing Conditions in India," in *ICSD 2021* (Basel Switzerland: MDPI, 2022), 31, <https://doi.org/10.3390/environsciproc2022015031>.

⁶ Chye Fern Yeap, Najibah Suhaimi, and M. Khalid M. Nasir, "Issues, Challenges, and Suggestions for Empowering Technical Vocational Education and Training Education during the COVID-19 Pandemic in Malaysia," *Creative Education* 12, no. 08 (2021): 1818–39, <https://doi.org/10.4236/ce.2021.128138>.

⁷ Chinyere Shirley, Ven Okeke, and Benjamin Chukwumaijem, "Making Technical and Vocational Education and Training First Career Choice in Africa: What Can Stakeholders Do Differently?," *Journal Of The Nigerian Academy Of Education* 15, no. 2 (August 1, 2020):200-210, <https://www.journals.ezenwaohaetorc.org/index.php/JONAED/article/view/1291>.

⁸ Adam Dasmani, "Challenges Facing Technical Institute Graduates in Practical Skills Acquisition in the Upper East Region of Ghana," *Asia-Pacific Journal of Cooperative Education* 12, no. 2 (2011): 67–77.

⁹ Adewale, *Policy Change Implementation Strategies and Goal Achievement in Technical Colleges in South-West, Nigeria*.

¹⁰ Reko Okoye and Maxwell Onyenwe Arimonu, "Technical and Vocational Education in Nigeria: Issues, Challenges and a Way Forward," *Journal of Education and Practice* 7, no. 3 (2016): 113–19.

¹¹ Ayonmike, Okeke, and Chukwumaijem, "Making Technical and Vocational Education and Training First Career Choice in Africa: What Can Stakeholders Do Differently?" 200-210.

¹² Yeap, Suhaimi, and Nasir, "Issues, Challenges, and Suggestions for Empowering Technical Vocational Education and Training Education during the COVID-19 Pandemic in Malaysia."

¹³ Abdullahi Abubakar Yunusa et al., "The Impact of the COVID-19 Pandemic on Higher Education in Nigeria: University Lecturers' Perspectives," *IjEDict - International Journal of Education and Development Using Information and Communication Technology* 17, no. 4 (2021): 43–66, <http://urn.kb.se/resolve?urn=urn:nbn:se:ltu:diva-88636>; Osamudiamen Ebohon et al., "Evaluating the Impact of COVID-19 Pandemic Lockdown on Education in Nigeria:

necessitated by compulsory lockdown measures.¹⁴ In their study, Omodan and Ige acknowledged that university students in South Africa witnessed a compromised education quality during the COVID-19 teaching and learning activities.¹⁵ Knowing fully that TVET is majorly hands-on training which encompasses the use of laboratory, workshop, and tools, to mention but few, to gain hands-on self-reliance skills. However, practical sessions were put on hold while other teaching and learning went on virtually, as observed by Omodan and Ige, who contend that universities' operational style changed to keep the flag of education flying.¹⁶

Having overcome the COVID-19 pandemic challenges and subsequent return to teaching and learning activities, scholars have also conducted studies on the situation of TVET instruction post-COVID-19, especially on strategies to reposition it and guard against future disruption during emergencies. Thus, this paper presents an overview of the initial studies conducted to determine what TVET teaching and learning during the COVID lockdown is like in Nigeria, the challenges it faces, and the strategies that can be employed to improve it in the post-COVID era. Against this background, the systematic review of post-COVID-19 pandemic strategies to enhance the teaching and learning of TVET in Nigeria addressed the challenges faced by teaching and learning TVET during COVID-19 in Nigeria and the identification of the strategies to improve the teaching and learning of TVET in Nigeria.

RESEARCH METHOD

A systematic review attempts to gather all available empirical studies using clearly defined, concise and systematic methods to obtain relevant answers to specific research questions. The preferred reporting items for systematic review (PRISMA) was used.¹⁷ PRISMA was used because it provides standard guidelines followed in this study to check for quality control and quality assurance. It helped develop a review protocol highlighting article search and selection criteria, quality assessment, data extraction and analysis procedures. Before creating the main dataset, a protocol was designed to describe the analysis and inclusion parameters. The research questions addressed in this study are:

- Q1. What are the challenges faced by teaching and learning TVET during COVID-19 in Nigeria?
Q2. What are the identified strategies to improve the teaching and learning of TVET in Nigeria?

Insights from Teachers and Students on Virtual/Online Learning,” *Bulletin of the National Research Centre* 45, no. 1 (December 20, 2021): 76, <https://doi.org/10.1186/s42269-021-00538-6>; Thomas Achoda Omang and Pius U. Angioha, “Assessing the Impact Covid-19 Pandemic on the Educational Development of Secondary School Students,” *JINAV: Journal of Information and Visualization* 2, no. 1 (January 16, 2021): 25–32, <https://doi.org/10.35877/454RI.jinav261>.

¹⁴ Madu Chika Madu and James Edomwonyi Edokpolor, “Issues and Challenges Facing The Teaching and Learning of Tvet in The Covid-19 Pandemic Era,” *Journal of Vocational Education Studies* 4, no. 2 (December 25, 2021): 188–95, <https://doi.org/10.12928/joves.v4i2.4921>.

¹⁵ Bunmi Isaiah Omodan and Olugbenga A. Ige, “University Students’ Perceptions of Curriculum Content Delivery during COVID-19 New Normal in South Africa,” *Qualitative Research in Education* 10, no. 2 (June 2021): 204–27, <https://doi.org/10.17583/qre.2021.7446>.

¹⁶ Omodan and Ige, “University Students’ Perceptions of Curriculum Content Delivery during COVID-19 New Normal in South Africa.”

¹⁷ Alessandro Liberati et al., “The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Healthcare Interventions: Explanation and Elaboration,” *BMJ* 339 (2009), <https://doi.org/10.1136/bmj.b2700>.

Search Strategy and Selection Criteria

The researchers conducted a comprehensive and extensive search for relevant and appropriate articles was conducted. The search terms were TVET, Post COVID 19, Strategies, teaching and learning, Nigeria, and Education. They made use of Google Scholar and Scopus databases to search for the selected articles containing the keywords and phrase such as technical and vocational education and training, TVET in COVID-19 pandemic, TVET in Africa, TVET in post-COVID-19, strategies for teaching and learning TVET, and TVET teaching and learning challenges in Nigeria. In the course of this, the disagreement among the authors was resolved by discussion and mediation made by the third author based on preset criteria for eligibility assessment, as shown in Table 1. The article must have been published between the years 2020 and 2022.

Table 1: Inclusion and Exclusion Criteria

Inclusion

Journal articles
Available as full text
Focus only on TVET
Must be written in English

Exclusion

dissertations and conference proceedings
not available in full text
articles on other types of education
articles in other languages

Quality Assessment

In order to evaluate the quality of the articles, the review excluded all articles published before the year 2020, non-journal articles, articles not concentrating on TVET in secondary and higher education, and articles not published in English. The search was focused on studies conducted in Nigeria and other African countries. Studies outside the continent of Africa were excluded. The authors exported the title, abstract, keywords, authors' names, journals' names, and publication years of the identified records to an MS Excel spreadsheet. Articles' abstracts were thoroughly checked for purification, sanity and compliance with the set criteria.

RESULTS

After a thorough search of the database, the search yielded 226 articles. After removing duplicated papers by document filter, 173 were removed to remain 53. Using articles and abstracts screening, 35 articles were removed for failing inclusion criteria. The remaining papers were assessed as full text. Therefore, only 18 articles qualified for inclusion in this systematic review. Details of this are presented in Figure 1 PRISMA protocol.

Ethics

This study did not require special ethical consideration because all the included articles were freely available in the public domain and acknowledged accordingly.

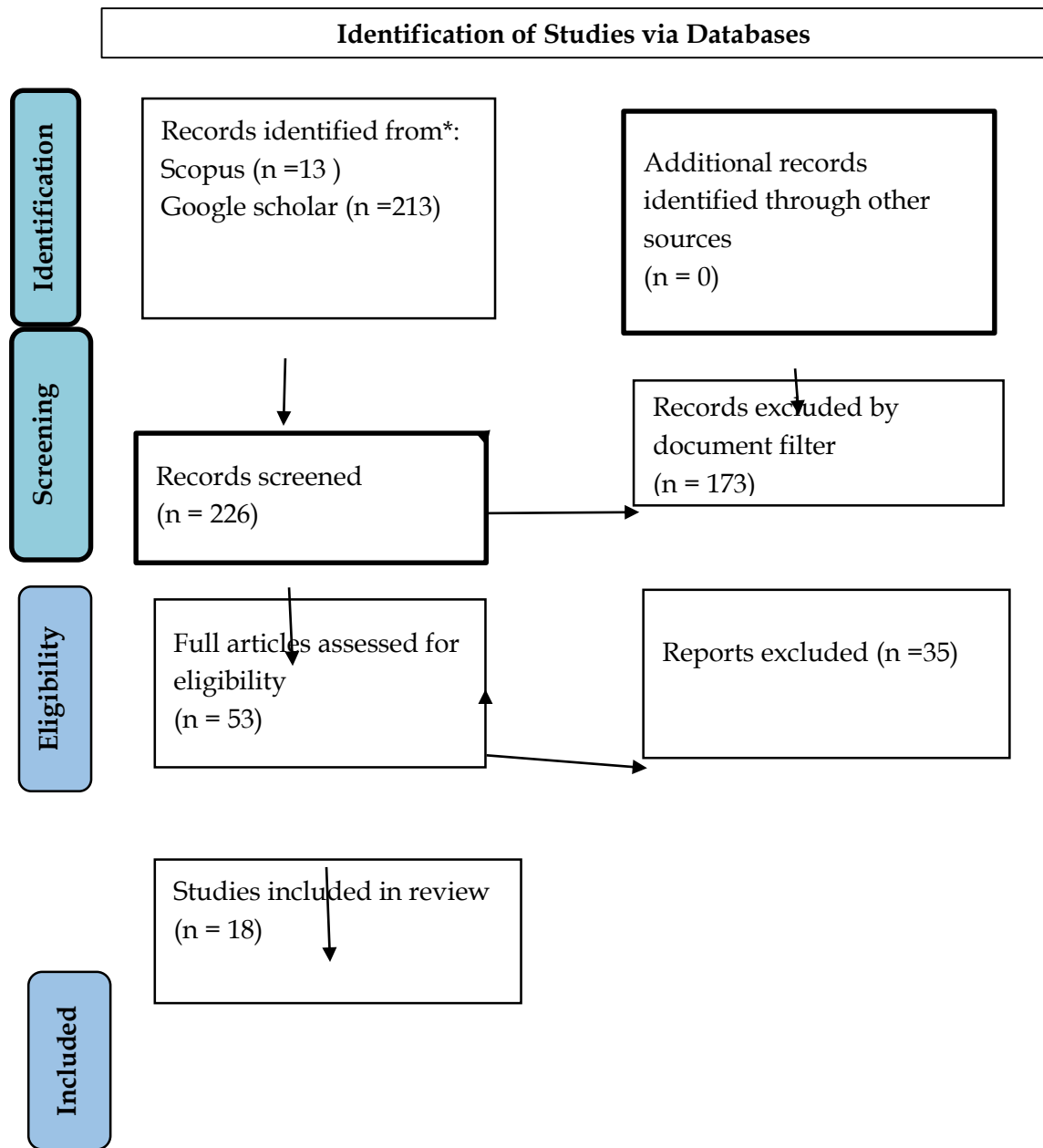


Figure 1: PRISMA of the Review

Table 2: General Characteristics of the Studies on TVET Included in the Review

S/n	Authors	Title	Method	Findings
1	Atukunda and Maja. ¹⁸	Computer practice module lecturers' experiences internal continuous assessment at Technical Vocational and Training Colleges	Qualitative	<ul style="list-style-type: none"> i. Inconsistencies of the implementation of staff training policy, appointment and the use of computers. ii. Minimum compliance standards should be set for TVET institutions by the ministry of education. iii. Allocation more time to the teaching and learning of computer
2	Edeh et al. ¹⁹	Extending technology acceptance model in learning-management-systems in TVET institutions: The impact of vocational educators' gender, experience and perception	Mixed	<ul style="list-style-type: none"> i. Teachers' characteristics (gender, experience, institutional culture) determine the level of adoption of technology to teach in TVET institutions. ii. Facilities upgrade, training, and adoption of learning management system (LMC), which is the software for the administration, documentation, tracking, reporting, automation and delivery of educational courses, training programmes, materials or learning and development programmes are strategies for TVET teaching and learning in the 21st century.
3	Njura, Kubai, Taaliu, and Khakame. ²⁰	The Relationship between agricultural teaching approaches and food security in Kenya	Mixed	<ul style="list-style-type: none"> i. The method of teaching adopted in TVET institutions affects the teaching and learning of TVET. ii. Problem-solving methods should be prioritised by TVET teachers

¹⁸ Jackline Atukunda and Margaret Malewaneng Maja, "Computer Practice Module Lecturers' Experiences of Internal Continuous Assessment at Technical Vocational Education and Training Colleges.," *International Journal of Educational Methodology* 8, no. 1 (2022): 151–62, <https://doi.org/10.12973/ijem.8.1.151>.

¹⁹ Nathaniel Ifeanyi Edeh et al., "Extending the Technology Acceptance Model in the Impact of Vocational Educators' Gender, Experience and Perception," *Journal of Technical Education and Training* 13, no. 3 (May 19, 2021): 93–107, <https://doi.org/10.30880/jtet.2021.13.03.009>.

²⁰ Hellen Joseph Njura et al., "The Relationship between Agricultural Teaching Approaches and Food Security in Kenya," ed. Christos Troussas, *Education Research International* 2020 (2020): 8847864, <https://doi.org/10.1155/2020/8847864>.

4	Allais et al. ²¹	Rethinking ‘supply and demand of technical and vocational education and training: insights from a company survey in three manufacturing sectors in South Africa	Quantitative	<ul style="list-style-type: none"> i. Combination of formal, informal and on-the-job training improves TVET knowledge. ii. Companies that train staff regularly prefer to employ TVET qualification holders.
5	Zulu & Mutereko ²²	Exploring the causes of student attrition in South African TVET colleges: A case of one KwaZulu-Natal technical and vocational education and training college	Mixed	<ul style="list-style-type: none"> i. Dissatisfaction with the programmes offered, and inadequate induction cum work placement caused student attrition. ii. Multi-pronged strategies from stakeholders can solve the problem.
6	Zinn, Raisch , and Jennifer ²³	Analysing training needs of TVET teachers in South Africa: An empirical study	Mixed	<ul style="list-style-type: none"> i. inadequate implementation of professionalisation policy for lecturers ii. Further training of lecturers on professionalisation of TVET teaching
7	Kintu, Kitainge and Ferej ²⁴	An exploration of strategies for facilitating graduates’ transition to the world of work: A case of technical, vocational education	Qualitative	Strategies like active labour market information, increased apprenticeship programme, and graduate with inadequate training should be recalled for further training ad project-based teaching

²¹ Stephanie Allais et al., “Rethinking ‘Supply and Demand’ of Technical and Vocational Education and Training: Insights from a Company Survey in Three Manufacturing Sectors in South Africa,” *Journal of Education and Work* 34, no. 5–6 (August 18, 2021): 649–62, <https://doi.org/10.1080/13639080.2021.1967302>.

²² Wiseman V. Zulu and Sybert Mutereko, “Exploring the Causes of Student Attrition in South African TVET Colleges: A Case of One KwaZulu-Natal Technical and Vocational Education and Training College,” *Interchange* 51, no. 4 (December 1, 2020): 385–407, <https://doi.org/10.1007/s10780-019-09384-y>.

²³ Bernd Zinn, Kevin Raisch, and Jennifer Reimann, “Analysing Training Needs of TVET Teachers in South Africa: An Empirical Study,” *International Journal for Research in Vocational Education and Training* 6, no. 2 (August 29, 2019): 174–97, <https://doi.org/10.13152/IJRVET.6.2.4>.

²⁴ Denis Kintu, Kisilu Mashtakh Kitainge, and Ahmed Ferej, “An Exploration of Strategies for Facilitating Graduates’ Transition to the World of Work: A Case of Technical, Vocational Education and Training Graduates in Uganda,” *International Journal of Vocational Education and Training Research* 5, no. 1 (2019): 1–9, <https://doi.org/10.11648/j.ijvetr.20190501.11>.

		and training graduates in Uganda		methods adopted by TVET institutions.
8	Chinengundu ²⁵	Four Strategies for Blended Learning in TVET: A South African Post-Pandemic Perspective	Systematic review	The study proposed blended learning for TVET, which must consider planning, preparation, adaptation and appropriate learning space
9	Singh and Shawa ²⁶	Lecturers' experiences of massification at a Technical and Vocational Education and Training College in South Africa and the development agenda: A Social Identity Theory	Qualitative	<ul style="list-style-type: none"> i. Low quality of enrolled students. ii. Inadequate resources to cater for the high student's number iii. Overhaul of the socio-political ethos of the country
10	Hondonga and Ramaligela ²⁷	Comparing financing models for vocational education and training in Botswana, South Africa, and Zimbabwe	Book section	There is a need for the management to rebrand TVET in order to attract more funding.
11	Munyaradzi, Arko-Achemfuor,	An Exploration of Comprehensive Student Support	Qualitative	Students' support system should be fortified for disabled students with state-of-the-art facilities.

²⁵ Tawanda Chinengundu, "Four Strategies for Blended Learning in TVET," in *New Models for Technical and Vocational Education and Training*, ed. Moses Makgato and George Afeti (IGI Global, 2021), 74–90, <https://doi.org/10.4018/978-1-7998-2607-1.ch005>.

²⁶ Vashnee Singh and Lester Brian Shawa, "Lecturers' Experiences of Massification at a Technical and Vocational Education and Training College in South Africa and the Development Agenda: A Social Identity Theory | African Journal of Development Studies (Formerly AFFRIKA Journal of Politics, Economics and Society)," *African Journal of Development Studies (Formerly AFFRIKA Journal of Politics, Economics and Society)* 11, no. 3 (2021), <https://journals.co.za/doi/abs/10.31920/2634-3649/2021/v11n3a6>.

²⁷ Jerald Hondonga and Sylvia Manto Ramaligela, "Comparing Financing Models for Vocational Education and Training in Botswana, South Africa, and Zimbabwe," in *Socio-Economic Perspectives on Vocational Skill Development: Emerging Research and Opportunities*, ed. U. Okolie (IGI Global, 2020), 56–79, <https://doi.org/10.4018/978-1-5225-4145-5.ch003>.

	and Quan-Baffour ²⁸	Systems in Technical Vocational Education and Training Colleges for Students with Disability		
12	Rudhumbu ²⁹	Implementation of the technical and vocational education and training curriculum in colleges in Botswana: challenges, strategies and opportunities	Quantitative	<ul style="list-style-type: none"> i. Synergy between TVET colleges and industries will improve funding of TVET programmes. ii. Government should make policies allowing flexibility in curriculum implementation.
13	Ayonmike and Okeke, ³⁰	Making technical vocational education and training the first career choice in Africa: What can stakeholders do differently?	Quantitative	Public-private partnerships (PPP) and aggressive provisions and upgrades of learning facilities in TVET institutions
14	Anee-Okeakwa, Chukwurah, and Ikenga ³¹	Policy Reforms in Technical and Vocational Education and Training (TVET): Lessons for the Nigerian	Qualitative	embracing the new learning technology for relevant digital knowledge acquisition and general curriculum change were suggested as strategies

²⁸ Muchineripi Munyaradzi, Akwasi Arko-Achemfuor, and Kofi Quan-Baffour, “An Exploration of Comprehensive Student Support Systems in Technical Vocational Education and Training Colleges for Students with Disability,” *Community College Journal of Research and Practice*, July 21, 2021, 1–17, <https://doi.org/10.1080/10668926.2021.1952914>.

²⁹ Norman Rudhumbu, “Implementation of the Technical and Vocational Education and Training Curriculum in Colleges in Botswana: Challenges, Strategies and Opportunities,” *International Journal of Training Research* 20, no. 2 (May 4, 2022): 160–77, <https://doi.org/10.1080/14480220.2021.1990106>.

³⁰ Ayonmike, Okeke, and Chukwumaijem, “Making Technical and Vocational Education and Training First Career Choice in Africa: What Can Stakeholders Do Differently?”

³¹ Josephine E. Anene-Okeakwa, M. O. Chukwurah, and E.E. Ikenga, “Policy Reforms in Technical and Vocational Education and Training (TVET): Lessons for the Nigerian Government towards Sustainable Industrial Growth,” *Vocational and Technical Education Journal* 2, no. 2 (2020): 316–22, <https://acjol.org/index.php/votej/article/view/818>.

		Government towards Sustainable Industrial Growth		
15	Zwane and Setlalentoa, ³²	Investigating factors hindering the implementation of e-learning at Motheo technical and vocational education and training (TVET) college: A case study of the national vocational certificate (NCV) programme	Mixed	Consideration of policy that promotes effective e-learning in TVET institutions
16	Katam and Otieno ³³	a review of technical and vocational education and training institutions' online learning as a response to corona-virus disease 2019 in Kenya	Qualitative	The long-term expansion of ODeL will help to overcome TVET teaching and learning disruption during emergencies.
17	Kipngetich, Kapkiai, and Sammy ³⁴	Assessing the Extent of Application of Competency Based Education and Training Approach in Classroom Instruction in Technical and Vocational	Mixed	Approach and method of teaching were not learners friendly.

³² Mmatau Zwane and Wendy N. Setlalentoa, "Investigating Factors Hindering the Implementation of E-Learning at Motheo Technical and Vocational Education and Training (TVET) College: A Case Study of the National Vocational Certificate (NCV) Programme," in *Education and New Developments 2020* (inScience Press, 2020), 363–65, <https://doi.org/10.36315/2020end077>.

³³ E. Katam and D. Otieno, "A Review of Technical and Vocational Education and Training Institutions' Online Learning as a Response to Corona-Virus Disease 2019 in Kenya," *The Kenya Journal of Technical and Vocational Education and Training* 4 (2021): 96–105.

³⁴ Kipngetich, Kapkiai, and Sammy, "Assessing the Extent of Application of Competency Based Education and Training Approach in Classroom Instruction in Technical and Vocational Education Training Institutions in Kenya."

		Education Training Institutions in Kenya		
18	Adewale. ³⁵	Assessment of Public-Private Partnership in technical colleges in Nigeria: A case of Lagos State.	Quantitative	Poor exploring of public-private partnerships as means of funding TVET programmes in TVET institutions.

DISCUSSION

Challenges faced by teaching and learning TVET during COVID-19 in Nigeria

Studies have revealed that most of the tutors/instructors to teach TVET are not academically and professionally qualified.³⁶ In fact, some of the appointed instructors have not undergone in-service training.³⁷ The issue of incompetence and inadequate TVET staff was a big clog in the wheel of effective teaching and learning during the period under review.³⁸ Some schools used to hiring teaching personnel for a fixed period were at crossroads during COVID-19.³⁹ Furthermore, a study conducted by Zwane and Setlaltoea at Motheo TVET college revealed that despite the global embrace of ICT and eLearning, many instructors are either reluctant or not using it because of lack of knowledge, lack of technical support, individual resistance to change and administrative problem.⁴⁰

Policy inconsistency has also been found to be a challenge to the teaching and learning of TVET in Africa. Policy inconsistency confuses the education system, and it makes it difficult to plan for oneself and predict or project the future of education. In Nigeria, for instance, many policies such as the digitisation of teaching and learning and compulsory industrial attachment training, have evolved but got either abandoned or poorly implemented for ridiculous reasons.⁴¹

³⁵ Sulaimon Adewale, "Assessment of Public-Private Partnership in Technical Colleges in Nigeria: A Case of Lagos State," *International Journal of Innovation in Teaching and Learning (IJITL)* 7, no. 2 (December 31, 2021): 36–51, <https://doi.org/10.35993/ijitl.v7i2.1948>.

³⁶ U.C. Okolie, et.al. "Does PhD qualification improve pedagogical competence? A study on teaching and training in higher education. *Journal of Applied Research in Higher Education*," 12(5), (2020): 1233–1250. <https://doi.org/10.1108/JARHE-02-2019-0049>

³⁷ G.W. Kennedy, U.S. Udoetuk, S.I. & Ufot, "Challenges of Technical Vocational Teacher Education and Teaching in Nigeria: The Need for Intervention." *International Journal of Education and Evaluation*, 3(7), (2017): 71–82.

www.iiardpub.org; Okolie, et.al. "Does PhD qualification improve pedagogical competence?" 1233-1250; Okoye, & Arimonu, "Technical and Vocational Education in Nigeria: Issues, Challenges and a Way Forward." 113-118.

³⁸ Kennedy et.al. "Challenges of Technical Vocational Teacher Education and Teaching in Nigeria," 71-82; Okolie, et.al. "Does PhD qualification improve pedagogical competence?" 1233-1250.

³⁹ Yeap, Suhaimi, and Nasir, "Issues, Challenges, and Suggestions for Empowering Technical Vocational Education and Training Education during the COVID-19 Pandemic in Malaysia."

⁴⁰ Zwane and Setlaltoea, "Investigating Factors Hindering the Implementation of E-Learning at Motheo Technical and Vocational Education and Training (TVET) College: A Case Study of the National Vocational Certificate (NCV) Programme."

⁴¹ Anene-Okeakwa, Chukwurah, and Ikenga, "Policy Reforms in Technical and Vocational Education and Training (TVET): Lessons for the Nigerian Government towards Sustainable Industrial Growth."

Similarly, lack of access to virtual learning devices and poor internet services were also identified as challenges. It is obvious that learning remotely during the time of emergency demands some level of preparedness in terms of creating enabling environment for all students. Many students cannot access online learning devices like personal computers and internet connections. During the compulsory lockdown, both instructors and students faced this challenge. Many did not have why others complained about poor internet networks during the lockdown. Madu and Edokpolor argued that TVET teaching and learning became ineffective because teachers found it difficult to provide virtual practical training. This problem was aggravated by poor and lack of access to the internet and devices.⁴² Virtual learning infrastructure germane to the success of online learning was not available during COVID-19⁴³ and thus, made TVET teaching and learning ineffective.

The intentions of lecturers to teach online have a significant influence on their actual online teaching behaviour. Lecturers are not using online mediums to teach due to poor exposure to new technologies reason.⁴⁴ The choice of teaching method used by TVET instructors also posed a great challenge to the teaching and learning of TVET in Nigeria. Many instructors do not consider students' backgrounds and individual differences in their choice of teaching method. This is because some students are not used to online teaching and learning remotely. Adewale found that language is a great barrier to effective communication in TVET classrooms as many trainees could not express themselves or understand the English language.⁴⁵ In agriculture classes, lectures, class discussions, projects, problem-solving, and tours and field trips were commonly used methods. The study conducted by Kipngetich et al. found that trainees were not satisfied with the use of lecture methods for instruction because it affected their competency.⁴⁶

Identified Strategies to Improve Teaching and Learning of TVET in Nigeria

Prioritising professional training programmes by the department/ministry of education for TVET instructors is a strategy that can enhance the teaching and learning of TVET in the post-COVID-19 period in Nigeria. TVET instructors need further training in the areas of online learning and the use of 21st Century technologies.⁴⁷ TVET educators should embrace innovative teaching practices that are learner-centred, and improve learners' engagement and creativity.

The minimum standards and qualifications for the appointment of lecturers by the Department of Education. Lecturers who are degree holders without teaching qualifications in education should be encouraged to enrol in a postgraduate degree in education to be professionally

⁴² Madu and Edokpolor, "Issues and Challenges Facing The Teaching and Learning of Tvet in The Covid-19 Pandemic Era."

⁴³ Yeap, Suhaimi, and Nasir, "Issues, Challenges, and Suggestions for Empowering Technical Vocational Education and Training Education during the COVID-19 Pandemic in Malaysia."

⁴⁴ Zwane and Setlalo, "Investigating Factors Hindering the Implementation of E-Learning at Motheo Technical and Vocational Education and Training (TVET) College: A Case Study of the National Vocational Certificate (NCV) Programme."

⁴⁵ Adewale, *Policy Change Implementation Strategies and Goal Achievement in Technical Colleges in South-West, Nigeria.*

⁴⁶ Kipngetich, Kapkiai, & Sammy, "Assessing the Extent of Application of Competency Based Education."

⁴⁷ Madu and Edokpolor, "Issues and Challenges Facing The Teaching and Learning of Tvet in The Covid-19 Pandemic Era" 188-195; Yeap, Suhaimi, and Nasir, "Issues, Challenges, and Suggestions for Empowering Technical Vocational Education and Training Education during the COVID-19 Pandemic in Malaysia."

qualified to teach. Policymakers should also ensure management of TVET institutions provides specialised in-service training to enhance the professional development of teaching personnel.⁴⁸

As a matter of fact, TVET should be fully integrated into general education to eliminate societal relegation of those that learn TVET and their institutions. Muhammad, Jaji, and Wakili suggested that the national education policy of African countries, especially Nigeria, should emphasise the need and how to integrate TVET into all secondary and higher education curricula. This suggestion can be considered by the education planners in the ministry of education and make it reflect in the curriculum modification.⁴⁹ A financial improvement strategy is also germane. TVET institutions should be allowed to independently determine the staff's salary and other financial requirements.⁵⁰ TVET institutions should use other financing mechanisms like public-private partnerships, and donations from non-governmental organisations, among others, to reposition TVET teaching and learning in Nigeria, especially after the COVID-19 pandemic period.⁵¹

TVET should be more practical. As such, paperwork should be reduced or de-emphasised. Another strategy that can reduce absenteeism is to set internal policies on absenteeism. This will check both the lecturers and students and as well assist in focusing on effective teaching cum TVET curriculum coverage. Anee-Okeakwa et al. emphasised that strengthening TVET policies will not only develop the workforce but contribute to sustainable development. The policy must ensure equal access, and support teachers and trainers' continuous professional development, embracing the new learning technology for relevant digital knowledge acquisition and general curriculum change.⁵² The Department of Higher Education needs to set guidelines that will help students achieve learning outcomes irrespective of individual characteristics. This can be achieved by embracing differentiated instruction and competency-based education and training as learning approaches.⁵³

The Counselling unit of TVET institutions should be fortified to provide services ranging from vocational counselling and support for individual students and personnel. Qualified personnel should be appointed by the management of TVE institutions to manage physical, emotional and other related issues affecting teaching and learning in the institutions.

Furthermore, with the government's support, the school management should restore learning infrastructure and equipment aggressively and ensure their maintenance from time to time. Enough time should be set for teaching activities to enhance. Public-private partnership is an effective strategy to enhance teaching and learning of TVET. Studies have shown that PPP will help to provide facilities, equipment and learning environments.⁵⁴ Adopting this approach will not only restore learning facilities but also make the institutions attractive to learners.

⁴⁸ Madu and Edokpolor, "Issues and Challenges Facing The Teaching and Learning of Tvet in The Covid-19 Pandemic Era, 188-195."

⁴⁹ Hassan N Muhammad, Mursali Mohammed Jaji, and Bala Adamu Wakili, "Exploring Strategies for Integrating Technical Vocational Education and Training (TVET) into Almajiri Schooling System for Sustainable National Development in North Eastern Nigeria," *International Journal of Innovative Social & Science Education Research* 7, no. 2 (2019): 96–105.

⁵⁰ Hondonga and Ramaligela, "Comparing Financing Models for Vocational Education and Training in Botswana, South Africa, and Zimbabwe."

⁵¹ Adewale, "Assessment of Public-Private Partnership in Technical Colleges in Nigeria: A Case of Lagos State," 36-51.

⁵² Anene-Okeakwa, Chukwurah, and Ikenga, "Policy Reforms in Technical and Vocational Education and Training (TVET): Lessons for the Nigerian Government towards Sustainable Industrial Growth."

⁵³ Kipngetich, Kapkiai, and Sammy, "Assessing the Extent of Application of Competency Based Education and Training Approach in Classroom Instruction in Technical and Vocational Education Training Institutions in Kenya."

⁵⁴ Adewale, "Assessment of Public-Private Partnership in Technical Colleges in Nigeria: A Case of Lagos State."

Digital knowledge of the students and lecturer must be updated for effective online learning when needed, especially during emergencies like the COVID-19 pandemic. The implementation of eLearning will be achieved through policy consideration that supports it, provision of new technological gadgets and motivation of both the trainers and the trainees.⁵⁵

Higher institutions should also invest in acquiring learning technologies, ICT tools that support teaching TVET courses, and imparting TVET skills to students and developing policies that address virtual learning. Lack of state-of-the-arts facilities and equipment are common challenges facing the teaching and learning of TVET in Nigeria, as it is common to many other African countries. To resolve this huge amount of money must be sacrificed to acquire all these training resources.

CONCLUSION

Based on this study, it is clear that TVET teaching and learning in Nigeria face many challenges. The major challenges are schools' inability to hold practical sessions and the lack of e-learning facilities during COVID-19. Drawing from the strategies other African TVET institutions used, the challenges can be managed as indicated in the various studies conducted on the continent on the same issue. The study found that TVET institutions in Nigeria must fortify teaching and learning with technology, embrace virtual learning, and upgrade learning facilities. Further studies on the challenges of TVET could cover Africa, while the improvement strategies could be extended to the whole world to see how TVET teaching and learning is being managed so as to adopt or adapt their strategies.

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⁵⁵ Zwane and Setlalentoa, "Investigating Factors Hindering the Implementation of E-Learning at Motheo Technical and Vocational Education and Training (TVET) College: A Case Study of the National Vocational Certificate (NCV) Programme."

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