REVOLUTIONIZING INDUSTRIAL WORKFORCE THROUGH TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) IN NIGERIA

BY

Dr. ADAMEJI, J. O.
Department of Vocational and Technical Education
Ekiti State University, Nigeria
adamejiolusola@gmail.com | (+234) 8137836836

ABSTRACT

This paper examines the potential of Technical and Vocational Education and Training (TVET) to revolutionize the industrial workforce in Nigeria. It explores the concept of TVET and analyzes its future impact on transforming Nigeria's workforce. The study is based on a bibliographical review of journals, textbooks, and online materials, focusing on the role of TVET in developed countries and how similar approaches can address Nigeria's economic challenges. By fostering positive attitudes toward work among the nation's youth and integrating career education across all educational levels, TVET can develop a skilled and productive workforce. The findings indicate that revolutionizing Nigeria's workforce through TVET will lead to advancements in modern technology, economic growth, improved educational standards, and enhanced living conditions, alongside increased employment opportunities.

Keywords: *Technical and Vocational Education and Training, Workforce Revolution, Globalization, Employment*

Introduction

Technical and Vocational Education and Training (TVET) provides individuals with the knowledge and skills necessary for employment through formal, non-formal, and informal learning methods. TVET is widely recognized as a critical tool for promoting social equity, inclusion, and sustainable development. It plays a significant role in equipping and empowering young people by developing their knowledge, dexterity, and practical skills, similar to indigenous education systems. Institutions offering TVET include polytechnics, monotechnics, and innovation enterprise institutions, among others.

Globally, the importance of TVET in developing the industrial workforce is well acknowledged, particularly in developed countries such as the USA, Canada, China, and Singapore. TVET programs are designed to provide individuals with the skills needed to establish and operate small or large-scale industries. These programs facilitate the acquisition of practical and applied skills alongside basic scientific knowledge. TVET is a planned sequence of courses and learning experiences that begin with career exploration, support foundational academic and life skills, and enable achievement of high academic standards, leadership qualities, industry readiness, and opportunities for advanced and continuing education (CTE, 2009).

In Nigeria, TVET is embedded in the National Policy on Education (NPE, 2004) and guided by the National Board for Technical Education (NBTE, 2011), focusing on quality technological human resource development aimed at creating a skilled, self-reliant workforce of craftsmen, technicians, and technologists in technical and vocational fields. As Osogwa and Diogu (2007) assert, there

is an urgent need to redirect public attention toward self-reliant and sustainable livelihoods through technical education.

Concept of Revolutionizing and Technical and Vocational Education and Training (TVET)

Revolutionizing refers to making a major transformative change, similar to the 1990s internet revolution that drastically altered communication, information access, and work practices. When something revolutionizes an activity, it brings significant improvements or shifts in how that activity is performed. TVET is a type of education focused on preparing a skilled workforce to support sustainable national development through the provision of employable skills, poverty reduction, and the application of scientific and technological knowledge to enhance national productivity (Obadara and Oyebolu, 2013). According to Okoye and Okwelle (2013), TVET emphasizes a pragmatic attitude for both individual and community development. They describe TVET as fostering the development of the "3Hs": the head (knowledge), the hand (dexterity), and the heart (conscientiousness and perseverance). Umar (2016) adds that TVET aims to address critical issues such as poverty and unemployment.

Training, as defined by Onalu (2011), involves teaching specific skills or behaviors through consistent practice and instruction to perform a job. Okoye and Okwelle (2013) view TVET as a broad and diversified educational system that significantly contributes to economic growth by producing sustainable manpower aligned with the needs of industries, society, and evolving technological environments. TVET develops the knowledge, skills, and attitudes necessary to perform specific tasks in the workplace. Ekpenyong (2011) explains TVET as the study, mastery, and application of manufacturing and industrial methods, as well as the systematic use of knowledge for practical industrial tasks. Similarly, CTE (2009) describes TVET as a program designed to equip individuals with skills needed to establish and run small or large-scale industries.

Key features of TVET include competency-based skill acquisition and a foundation in sound scientific knowledge. It focuses on developing a pool of skilled, self-reliant craftsmen, technicians, and technologists who act as initiators, facilitators, and implementers of a nation's technological progress. Based on these definitions, it is evident that technical education is vital for training personnel who will drive technological development and foster technological literacy among youth. However, TVET faces significant challenges such as inadequate funding, poor facilities, and qualitative and quantitative constraints, which will be further discussed in this paper.

Challenges Facing the Implementation of TVET

The challenges confronting the implementation of the TVET curriculum in Nigerian educational institutions largely mirror the broader problems facing both TVET and the general education system in Nigeria. Egwu (2009) identified several key challenges within the Nigerian university system that affect TVET implementation:

i. **Institutional Challenges:** These include unstable academic calendars, weak collaboration between tertiary institutions and the organized private sector, inadequate and outdated infrastructure and equipment (such as poorly equipped workshops and libraries), dilapidated classrooms, and insufficient support for programs like the Student Industrial Work Experience Scheme (SIWES).
ii. **Human Resource Challenges:** The sector suffers from brain drain, staff shortages, unattractive working conditions for teachers, and a general flight of skilled human capital.

iii. **Government-Related Challenges:** Chronic underfunding of tertiary institutions hampers the growth and quality of TVET programs.
iv. **Student-Related Challenges:** Issues such as cultism, examination malpractice, and other social and academic vices further undermine the effective implementation of TVET (Egwu, 2009).

Funding is widely regarded as the most critical challenge. Udoka (2010) and Yusuf and Soyemi (2012) emphasize that inadequate financing is a major barrier to the successful delivery of the TVET curriculum. Okoroafor (2010) further highlights specific problems, including:

- **Lack of Sponsorship:** Educational managers often struggle to sponsor TVET lecturers to attend seminars, conferences, and short courses due to limited funds, hindering lecturers' professional development.
- **Inadequate Infrastructure:** Without proper facilities, TVET lecturers cannot effectively translate theoretical knowledge into practice.
- **Insufficient Time for Upgrading Skills:** Heavy workloads prevent TVET lecturers from engaging in research and skill enhancement activities.
- **Lack of Recognition and Rewards:** There is often no system to reward excellence among TVET practitioners.

Other scholars, including Nwogu and Nwanoruo (2011), Olaitan (1994) as cited in Odu (2011), and Okebukola (2012), echo these concerns, citing inadequate human and material resources (both in quality and quantity), poor funding, infrastructural deficiencies, substandard lesson preparation by teachers, and social vices as additional obstacles. Mohammed (2005), cited in Ayonmike (2013), points to low teacher motivation as a significant problem, largely caused by the low esteem in which TVET teachers are held. Onjewu (n.d.) adds that insufficient funding also affects the provision of teaching aids, furniture, laboratories, workshops, and basic infrastructure such as classrooms and seating arrangements. For example, architecture students often share tables due to inadequate facilities, which is particularly problematic given the technical nature of their courses.

Ekpenyong (2011), as referenced by Ayonmike (2013), identifies multiple factors that have impeded the smooth implementation of TVET's goals. The National Board for Technical Education (NBTE, 2011) highlights critical sector challenges, including:

- Low societal recognition of TVET, leading to poor enrollment and an insufficient skilled workforce.
- Obsolete instructional facilities.
- Inadequate funding and staffing.
- Weak linkages between TVET institutions and industry.
- Overall quality deficiencies.

Moreover, the evaluation methods across all education sectors rely heavily on conventional examinations, which often fail to adequately assess practical skills essential for industry readiness.

Revolutionizing Industrial Workforce Through TVET

The application of Technical and Vocational Education and Training (TVET) in the country's education sector will revolutionize the workforce, improving it in several key areas such as:

i. Curriculum Modification

Curriculum modification involves making changes to existing modules or programs at both undergraduate and postgraduate levels. To establish and effectively manage TVET, it is crucial to revisit the existing system to enhance the overall TVET ecosystem. This includes improvements in governance and management, teacher training, curriculum design and pedagogy, collaboration with social partners, and fostering innovation through both private and public sector engagement. This paper has previously discussed some of the challenges Nigeria faces in reforming TVET for the world of work. Furthermore, it covers strategic planning and

recommendations that could benefit Nigeria's TVET development.

For example, mathematics and science have been incorporated into the new curriculum, distinguishing it from the old one. This modified curriculum aims to realize the national goal of building a united, strong, and self-reliant nation, as outlined in the National Policy on Education (NPE, 2004). TVET is used as a tool to develop individuals with appropriate skills and to nurture mental, physical, and social abilities and competencies, equipping individuals to live effectively and contribute to societal development. The curriculum is expected to bring noticeable changes by fostering the acquisition of the right skills, attitudes, competences, as well as critical, creative, and reflective thinking. Indeed, Onopounu (2016) considered TVET indispensable for empowering citizens of any nation. Curriculum modifications are designed to enable Technical College graduates to secure employment either upon completing the entire course or after finishing one or more modules of employee skills, set up their own businesses, become self-employed, and employ others.

ii. Mode of Training:

The quality of output from teachers in colleges has recently been poor, which may be attributed to ineffective quality assurance measures within these institutions. Instruction and training must emphasize core values, and promote physical, emotional, and psychological development alongside acquiring competencies necessary for self-reliance. Hence, the curriculum outlines a training pattern that includes general education, theory and related courses, workshop practice, industrial training/production work, and entrepreneurial training. This holistic approach is intended to increase the workforce's technical knowledge and enhance the application of appropriate technical measures within individual and subsector activities.

However, poor implementation of the curriculum remains common. Infrastructure and physical facilities are inadequate and often deteriorating, which fails to motivate students to acquire practical skills. Therefore, effective participation in skill acquisition development programs requires maintaining a teacher-to-student ratio of 1:20 (NPE, 2014). This ratio should become a focus for TVET as it relates to the labor market, specifically the supply side, i.e., the supply of workers.

Inadequacies in teaching, laboratory, and workshop facilities have significantly contributed to the decline in the quality of technical education graduates. Uwaifo (2005) lamented that only a small proportion of students benefit from the current system used in technical and vocational education.

Virtual Reality: A Tool for Improving the Teaching and Learning of Technology Education

Uwaifo (2005) further noted that due to inadequacy of instructional facilities, only a few students benefit from the pedagogical systems currently used in developing countries like Nigeria, especially in technical and vocational education. The unavailability of facilities has led to ineffective teaching and learning methods. Therefore, it is highly recommended that TVET employ the European Training Foundation (ETF) system to revolutionize TVET. The ETF approach prioritizes continuous improvement of core quality assurance measures related to context, input, process, output, and outcome standards. It takes into account emerging needs driven by changing economies and labor markets, the growing need to support lifelong learning, and the internationalization of TVET, which may require renewed quality assurance approaches (Elizabeth Watters and European Training Foundation, 2015).

Moreover, the ETF defines quality assurance as composite measures established to verify that processes and procedures are in place, ensuring the quality and continual improvement of TVET, thereby bringing

about its revolutionization. This revolutionizing is achievable because the ETF aims to guide quality assurance in TVET policies and approaches so that they:

- Are fit for purpose and context, emphasizing relevance and cost-effectiveness;
- Acknowledge that quality assurance is a dependent variable influenced by context and other VET policy themes;
- Address VET inputs, processes, outputs, and outcomes;
- Apply the quality cycle: plan, implement, monitor and evaluate, review, and renew;
- Make visible strengths, weaknesses, and improvements;
- Promote quality improvement through a pervasive quality culture;
- Take into account internationally accepted quality assurance concepts and European policies and models.

The ETF promotes quality assurance policies and approaches that ensure VET:

- Responds to labor market needs;
- Leads to nationally or internationally recognized qualifications or credentials;
- Provides access to decent jobs and sustainable employment;
- Is inclusive and accessible, allowing all citizens access to TVET and fostering capabilities that enable progression to further learning (Elizabeth Watters and European Training Foundation, 2015).

According to the Organisation for Economic Co-operation and Development (2005), ICT facilities for student training are limited. Affordable and reliable internet connectivity is only available in a few institutions, faculties, and offices. Additionally, power fluctuations and deficient bandwidth have considerably reduced the reliability of access, making technological integration difficult.

Admission Requirement: In Nigeria, the basic minimum admission requirement for TVET is the Junior Secondary School (J.S.S) 3 result, although students who have attempted Senior Secondary School are generally more eligible. This policy aims to attract more youths into the program and reduce dropout rates. The admission process is publicized through jingles on radio, television, print media, and other channels to raise awareness about the program. Admission forms are sold along with information about the dates for entrance examinations and interviews. Candidates who meet the cutoff marks (successful candidates) are issued admission letters and given instructions on when to resume studies. According to Mar (2009) and Adawo, the nation's economy largely depends on the performance of such programs. In other countries, admission requirements may include age (usually 16, considered adulthood in many foreign countries) and no formal education prerequisite, but candidates must possess essential skills such as analytical and non-cognitive abilities—critical thinking, problem-solving, creativity and innovation, collaboration, communication, entrepreneurship, as well as tolerance, ethics, flexibility, and a positive attitude. These skills are necessary to produce not only competent workers but also individuals with the right attitudes. Salleh, Sulaiman, and Gloeckner (2015) define competency as the ability to perform tasks combining knowledge, skills, and attitudes. Similarly, the Organisation for Economic Co-operation and Development (OECD, 2005) defines competency as a worker's capability to apply skills in specific contexts.

Prospects and Benefits of TVET to the Nigerian Workforce: It is essential to understand the prospects and benefits that Nigeria can derive from TVET in revolutionizing its workforce, both academically and in manufacturing. Mertineit (2013) highlights that TVET plays a central role in developing and implementing sustainable development, especially in green economies. The benefits and prospects of Technical and Vocational Education and Training (TVET) include significant contributions

to economic development, as noted by Kwami, Yaduma, and Onuh (2014). One key benefit of TVET is economic development, achieved when individuals are gainfully employed and also become employers of labor, contributing to national growth.

Entrepreneurship, as defined by Ugiagbe and Umunna (2002), is the process of combining innovative and creative ideas with appropriate management strategies to mobilize resources to meet needs and create wealth. Entrepreneurship enhances self-employment (Fenemigbo, 2008), which is a vital aspect of revolutionizing TVET.

Employment Creation: According to the International Labour Organization (2010) and Inyiagu (2014), TVET is a skill-based approach that prepares workers for various occupations and trades. It promotes highly skilled workers, both men and women, who can enter the job market early and support themselves with decent, sustainable work and wealth creation. Tiong (2002) concurs that TVET prepares recipients for employment by exposing them to job-specific and employability skills, giving them a foundation in business environment functions. He further states that business naturally grows from technical and vocational skills, producing graduates who are not only gainfully employed but also become business owners and employers of labor. UNESCO-UNEVOC (2016), an international TVET center, defines TVET as "the acquisition of knowledge and skills for the world of work."

Skills Acquisition and Development: The Partnership for 21st Century Skills (2008) emphasizes TVET's role in human resource development as a determinant of growth industries and job opportunities globally, elevating TVET's significance worldwide. Enahoro (2008) argues that because individuals have diverse natural gifts and talents, TVET should train people for the broad range of opportunities available.

Ekpenyong (2008) identifies the broad areas of TVET as follows:

1. Technical Education
   a) Engineering Technology and related subfields
   b) Electrical/Electronic Technology and related subfields
   c) Building Technology and related subfields
   d) Automobile Engineering and related subfields
2. Business Education
   a) Office/Secretarial Studies/Office Technology Management
   b) Accounting Studies
   c) Distributive or Marketing Studies
   d) General Business Studies
3. Agricultural Education
   a) Agronomy
   b) Soil Science
   c) Agricultural Engineering
4. Home Economics
   a) Home Science
   b) Food Science
   c) Clothing and Textiles
   d) Hotel and Catering Management

If these broad areas are adequately addressed, they can propel the nation toward growth and development. These sectors can reduce poverty and unemployment by developing the skills and knowledge of the workforce in various industries, achieving high added value and economic prosperity, ultimately improving the standard of living for all individuals.

Increased Production and Service Capacity Improvement: UNESCO (2003) notes that effective use of technology increases production and service capacity in society, thus reducing the need for importation and boosting exports of brainpower, goods, and services that bring honor and prosperity to the nation.

Improved Standard of Living: Mertineit (2013) states that TVET plays a central role in sustainable development, which improves the standard of living in any society. TVET helps develop workers' knowledge and skills, empowering them with not only technical competencies but also entrepreneurial mindsets and thinking skills linked to sustainable

development, access to further education, and job creation. It also empowers individuals to become employers of labor and achieve financial freedom. Sustainable development involves economic, social, and environmental progress, and TVET is significant in this respect. Through job creation, TVET can drastically improve people's living standards, serving as a blessing to society.

Intellectual Development: According to the Asian Development Bank (2015), quality skills, access to education, and occupational profiles are critical trends in TVET. Intellectual development is enhanced when institutions introduce non-conventional courses using Massive Open Online Courses (MOOCs), blended or hybrid learning, online platforms, and similar technologies. These platforms support personal and professional development through short courses, upskilling, workforce training, and lifelong learning offered by TVET institutions, thus increasing human knowledge and development.

Increased Student Interest in TVET: Student interest in TVET can be significantly increased by employing the Production-Based Learning (PBL) model. This model creates an environment where students are encouraged to be more creative, adventurous, and to engage in critical thinking about their activities. It also provides scientific and financial value, which helps students gain acceptance in society. The PBL model enhances students' experiences and deepens their understanding and competencies in areas such as entrepreneurial skills, cognitive, affective, and psychomotor domains. Ultimately, this approach helps produce a revolutionized and skilled workforce.

Funding: Revolutionizing TVET is unattainable without adequate funding, which is essential across all areas of TVET. The Education Trust Fund (ETF), a government agency, was established to provide funding for innovative and technology-based research due to the general scarcity of funds for specialized education (Gabadeen & Raimi, 2012; Idris et al., 2012). However, the government's education budget is divided among several agencies and parastatals, including the Ministry of Education, universities, polytechnics, colleges of education, government colleges, and technical schools. This fragmented allocation has proven ineffective. Therefore, a separate and dedicated budget for TVET should be considered to address the hindered circulation of funds.

The current distribution of funds contradicts the effective utilization of limited resources. Learning from China's successful TVET funding model could provide useful insights for Nigeria. TVET policymakers in Nigeria must study and adapt key elements of China's funding policies, which have allowed China to successfully navigate global trends and develop a robust TVET system. Despite interventions by ETF and TETFUND, funding for TVET in Nigeria remains insufficient and inadequate (Ladipo, Akhuemonkhan, & Raimi, 2013).

Monitoring Strategies: According to the Ethiopia Ministry of Education (2008), monitoring strategies are crucial for revolutionizing the workforce. The TVET executive bodies, together with their stakeholders, should establish a monitoring system that translates strategic objectives into measurable indicators and identifies ways to verify these indicators. The system must align with national development indicators and ensure relevant information is collected by appropriate bodies. If necessary, baseline studies should be commissioned and data updates overseen regularly. The TVET executive bodies should compile the monitoring results into an annual TVET Progress Report that is submitted and published to track advancement. If Nigeria adopts similar monitoring strategies, institutionalizing an effective TVET workforce system will be achievable.

Summary

This paper has examined the impact of Technical and Vocational Education and Training (TVET) in developed countries and explored how Nigeria can address its economic challenges by improving its workforce. The development of a positive attitude toward TVET and the creation of a conducive environment for youths will help produce a skilled and productive workforce. The study highlights the benefits of TVET for Nigeria, emphasizing that revolutionizing the workforce through TVET will drive improvements in modern technology adoption, boost the nation's economic and educational standards, improve living conditions, and increase employment rates.

Conclusion

In conclusion, modern technologies such as ICT, advanced equipment, and new methods of doing things are best adapted through technical and vocational education. To meet the demands of the new economy, Nigeria must improve its workforce by providing technical and vocational education and retraining across all levels of education. This will revolutionize the workforce, improve living standards, raise employment, and make the country economically resilient and viable. It is crucial to face the realities and challenges of development through TVET; otherwise, Nigeria risks remaining backward, continuing as a consumer rather than a producer, and subject to new forms of colonial influence.

Recommendations

To effectively revolutionize Nigeria's workforce through TVET and meet global demands, the following recommendations are made:

i. Government and educational stakeholders must recognize TVET as vital to national development and its role in producing labor-market-ready graduates that contribute to economic growth.
ii. The government should allocate a separate budget for TVET annually to ensure adequate funding for tools, equipment, infrastructure, instructional facilities, and welfare packages for teachers and students.
iii. Technical education should be introduced and promoted from the primary level, with particular emphasis on ages 14–16 for a significant portion of pupils, followed by widespread vocational education for those 16 and above, to help youth master skills and professionalism.
iv. The Education Trust Fund (ETF) allocation for TVET should be increased, complemented by funding from international organizations (e.g., UNDP, UNESCO, DFID, ADB, World Bank) and local groups (PTAs, churches, NGOs, philanthropists), recognizing that TVET is capital intensive.
v. Effective monitoring strategies should be implemented by bodies like the National Board for Technical Education (NBTE) to oversee TVET activities in technical colleges, colleges of education, polytechnics, and universities.
vi. Barriers to progression in employment should be removed, and a comprehensive national technical/vocational qualification framework should be developed to improve the quality and socio-economic status of skilled technical workers, expanding the role of NABTEB.
vii. Continuous training, retraining, and welfare support for TVET teachers should be prioritized to reduce teacher attrition and maintain quality instruction. Research units should be established to innovate and improve curriculum delivery for effective workforce preparation.
viii. The TVET system in Nigeria must be realigned to meet the evolving requirements of the

economy and the workforce effectively.

.

References

Abubakar, M. S., Kazaure, M. A., & Yusuf, S. M. (2013). Introducing the NVQF for more open and flexible skills domain in Nigeria (Working paper). National Board for Technical Education, Kaduna, Nigeria.

Agbede, O., & Ajagbe, W. (2004). Solid waste management in South Western Nigeria. *International Journal of Environmental Studies, 2*(1), 92–97.

Ajayi, I. A., Arogundade, B. B., & Ekundayo, H. T. (2007). Assessing the realities and challenges of technical education in Imo State secondary school education system in Nigeria. *Journal of Educational Administration and Planning, 7*(1), 12–25.

Ajibade, E. A. (2001). Cooperation between educationists, educational institutions and stakeholders at home and abroad. In O. Nnoli & I. Sulaiman (Eds.), *Reassessing the future of education in Nigeria* (pp. 34–47). ETF Publication.

Aina, O. (2000). Nigerian technical and vocational education in the war future. Paper presented at the National Seminar on Technical Education in Nigeria, Abuja, Nigeria.

Akpan, B. B. (2008). *Nigeria and the future of science education*. Ibadan: Oluseyi Press Ltd.

Alfred, S. B. (2014). Vocational training of rural women: A strategic option for ensuring household food security in Nigeria. *Nigeria Vocational Association Journal, 19*(1), 208–216.

Andural, S. I., & Ikymen, M. I. (2006). The use of information technology in the teaching/learning of vocational and technical education in Nigeria. *Benue State University Journal of Education, 7*, 53–59.

Apagu, V. (2003). Entrepreneurship development in vocational/technical teacher education for transforming Nigerian democratic government to self-reliant economy: Paradigm for small-scale industry. *Journal of Vocational and Technology Education, 1*(1), 81–90.

Ardyanfitri, H., & Wahyuningtyas, R. (2016). The influence of job career development opportunities, training, occupational safety and health on the job satisfaction of employees in the Telkom University. *Journal of Administrative and Business Studies, 2*(5), 231–240. https://doi.org/10.20474/jabs-2.5.3

Arolasafe, G. (2005). Computer application and use of ICT for teaching and learning. In *East workshop on capacity building*, Adamawa State Polytechnic, Yola, Nigeria.

Awe, O. I. W. (2002). *Entrepreneurship development*. Lagos, Nigeria: Gilgal Publishing.

Baba, N. M. (2007). *Basic principles and methods of teaching*. Kaduna, Nigeria: Joyce Publishing, Inc.

Badung, D. M. (2007). Problems of realization of vocational and technical national objectives: An overview of NCET technical programme in Nigeria. *Journal of Educational Review, 6*(6), 37–39.

Bart, V. B. (1992). Vocational education and productivity in the Netherlands and Britain. *National Institute Economic Review, 140*(1), 34–42.

Danda, E. (2002, November 6). Business newspaper, p. 14.

Dike, V. E. (2009). Addressing youth unemployment and poverty in Nigeria: A call for action, not rhetoric. *Journal of Sustainable Development in Africa, 11*(3), 129–151.

Diraso, D. K., John, A. C., & Manabete, S. S. (2012). Overview of selected African experiences. *World Bank Discussion Papers* (Vol. 82).

Ekpenyong, L. E. (2001). *Foundations of technical and vocational education: Practice for Nigerian students in TVE and adult education, policymakers & practitioners*. AMBIK Press Limited, Benin City, Nigeria.

Ezeh, D. O. (2004). Security and maintenance of school plants and equipment. Paper presented at the workplace for principals and vice principals of secondary schools, Abakaliki, September 7–9.

Federal Ministry of Education Nigeria. (2007). *Federal Ministry of Education 10-year strategic plan*. Abuja, Nigeria: Federal Ministry of Education.

Federal Ministry of Education Nigeria. (2009a). *Report of the Vision 2020 National Technical Working Group on Education Sector*. Abuja, Nigeria: Federal Ministry of Education.

Federal Ministry of Education Nigeria. (2009b). *Roadmap for the Nigerian education sector*. Abuja, Nigeria: Federal Ministry of Education.

Federal Republic of Nigeria. (2004). *National policy on education*. Lagos: NERDC Press.

Gabadeen, B., & Buntat, Y. Bin. (2012). Implementation of technical and vocational education in post-primary schools in Nigeria: A qualitative approach. *International Journal of Humanities and Social Science Invention, 1*(1), 30–40. http://www.ijhssi.org/papers/v1(1)/Version-2/E113033.pdf

Gyuse, E. Y., & Adejobi, M. J. (2010). Science teachers' perception of the global economic crisis. *Science Teachers Association of Nigeria; 51st Annual Conference*. HEBN Publishers Plc Nigeria.

Hollander, A., & Mar, N. Y. (2009). Towards achieving TVET for all. In R. M. Maclean & D. Wilson (Eds.), *International handbook of education for the changing world of work* (pp. 523–539). Springer.

ILO. (2015). *Binding constraints to inclusive and job-rich growth in Nigeria: A review of macro and sector policies and strategies*. Nigeria: International Labour Organization. https://www.ilo.org/publns

Inyiagu, E. E. (2014). Challenges facing technical and vocational education in Nigeria. *Journal of Educational Policy and Entrepreneurial Research, 1*(1), 40–45. https://www.iiste.org

Johanson, R. (2009). Review of National Training Fund (No. 0922). Social Protection Discussion Paper. World Bank.

Kahirol Mohd Salleh, Ph.D., & Nor Lisa Sulaiman, Ph.D. (2015). The development of competency model perceived by Malaysian human resource practitioners' perspectives. *Asian Social Science, 11*(16), 74–79. http://www.unevoc.unesco.org

Ladipo, M., Akhuemonkhan, I., & Raimi, L. (2013). Challenges in funding technical and vocational education in Nigeria. *Journal of Vocational Education and Training, 65*(2), 170–186.

Mertineit, K. D. (2013). *TVET for a green economy*. Bonn, Germany: GIZ.

Mohd Salleh, K. (2012). Human resource development practitioners' perspectives on competencies: An application of ASTD Workplace Learning and Performance competency model in Malaysia (Doctoral dissertation, Universiti Tun Hussein Onn Malaysia). ProQuest Dissertations and Theses. (UMI No. 3551639)

Mohd Salleh, K., & Sulaiman, N. L. (2019). The impact of organizational and professional development on human resource development practitioners in Malaysian organizations. *The Journal of Social Sciences Research, 15*(1), 24–38.

National Board for Business and Technical Education. (n.d.). State government technical colleges. Retrieved May 31, 2014, from

http://www.nbte.gov.ng/inst_09.html

National Board for Technical Education. (2011). *The development of national vocational qualifications framework (NVQF) for Nigeria: A report of the national steering committee*. NBTE Press.

Nuru, A. (2007). The relevance of National Vocational Education Qualifications (NVQs) in TVE in Nigeria. Unpublished conference paper.

Odu, K. O. (2011). Human capital development in science and technology education: Challenges and new responsibilities for the teacher. *Contemporary Educational Technology, 2*(3), 238–249.

Okafoafor, C. (2010). Human capital development and vision 20:10: A perspective on tertiary education. *SBMT Nekede Conference Journal, 1*(2), 71–73.

Okoro, O. M. (2006). *Principles and methods in vocational and technical education*. Nsukka: University Trust Publishers.

Partnership for 21st Century Skills. (2008). *21st century skills, education and competitiveness: A resource and policy guide*. Partnership for 21st Century Skills.

Radwan, I., & Pellegrini, G. (2010). Knowledge, productivity and innovation in Nigeria. The World Bank. https://doi.org/10.1596/978-0-8213-8196-0

Salleh, K. M., Sulaiman, N. L., & Gloeckner, G. W. (2015). The development of competency model perceived by Malaysian human resource practitioners' perspectives. *Asian Social Science, 11*(16), 74–79.

Uddin, P. S. O., & Uddin, O. O. (2013). Causes, effects and solutions to youth unemployment problems in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences, 4*(4), 397–402. http://reference.sabinet.co.za/webx/access/electronic_journals/sl_jetems/sl_jetems_v4_n4_a4.pdf

Udoka, S. I. (2010). The global economic crisis: A challenge to curriculum implementation in technical and vocational education technology in Nigeria. Retrieved August 20, 2013, from http://www.icidr.org/...2010/The%20Global%20Economic%20Crisis%20a%20

United Nations Educational, Scientific and Cultural Organization. (2009). *Global education digest*. Abuja, Nigeria: UNESCO.

UNESCO-IIEP. (1996). Financing technical and vocational education: Modalities and experiences. Paris: UNESCO.

UNESCO. (2012). ESD + TVET: Promoting skills for sustainable development. Retrieved from https://www.unesco.org/education

UNESCO. (2016). *Strategy for Technical and Vocational Education and Training (TVET) (2016–2021)*. Paris: UNESCO.

United Nations Educational, Scientific and Cultural Organization. (2009). *Global education digest*. Abuja, Nigeria: UNESCO.

WEF, AFDB, & World Bank Group. (2017). *The Africa Competitiveness Report 2017: Addressing Africa's demographic dividend*. Geneva: World Economic Forum. http://www.weforum.org/en/initiatives/gcp/GlobalCompetitivenessReport/index.htm

Yusuf, M. A., & Soyemi, J. (2012). Achieving sustainable economic development in Nigeria through technical and vocational education and training: The missing link. *International Journal of Academic Research in Business and Social Sciences, 2*(2), 71–77.