


Assessment Methodologies to Enhance Qualitative TVET Programme in Nigerian Universities: Challenges and Way Forward

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Abstract

Technical and Vocational Education and Training (TVET) is an educational approach aimed at imparting knowledge, skills, and competencies essential for specific occupations to meet the demands of today's dynamic labor market. The study synthesized scholarly research works addressing issues facing assessment of TVET in Nigerian Universities. The study examined the historical context of TVET in Nigerian universities, highlighting the challenges and opportunities that exist. Noteworthy efforts have been initiated by the National Universities Commission (NUC), in the development of curricula for TVET institutions. Through an in-depth assessment of TVET measurement and evaluation in Nigerian University, the research highlighted multifaceted challenges such as corruption, ineffective planning and administration. The researchers emphasized the need for a paradigm shift from conventional assessment methods incorporating innovative assessment methodologies tailored to the unique requirements of TVET programs in Nigerian universities involving competency-based assessments, workplace simulations, industry partnerships, and technology-enhanced assessment tools. Furthermore, it was recommended that Nigerian government, industry stakeholders, employers, and regulatory bodies should regularly update program curricula to align with the evolving demands of industries in Nigeria. By prioritizing effective assessment methodologies, Nigerian universities can bolster their contributions to workforce development, economic growth, and sustainable development in the nation.

Keywords: Measurement, Evaluation, TVET, Nigerian Universities, Quality Improvement

Introduction

In an evolving world marked by technological progress, economic transformations, and shifting job markets, the significance of Technical and Vocational Education and Training (TVET) programs has greatly increased (Ayonmike, Okwelle & Okeke, 2013; Etuk & Asukwo, 2015; Richard, 2020). TVET programmes are acknowledged worldwide as a vital component of education systems that prepare individuals with the practical skills and knowledge necessary

to excel in today's ever-evolving labor market. (Salabson, 2018; Eyong, Ugada & Aminu, 2020; Hariyani, Ahmad & Marsitin, 2021; Karagoz, 2021). According to Zainal, et al. (2019), this transformation would empower recipients to become better, more valuable, and more productive members of the society. These programs offer a bridge between academia and industry, focusing on imparting practical skills and competencies that are directly applicable to various vocational and technical fields such as engineering, healthcare, agriculture, and information technology (Eicker, Haseloff & Lennartz, 2017; Daniel Uchenna & Chukwu, 2019).

Nigerian universities play a key role in the country's socio-economic development by nurturing a new generation of professionals equipped with the technical and vocational skills demanded by a rapidly changing labour market. As the country strives to meet the demands of a rapidly evolving workforce and address unemployment challenges, TVET programs in Nigeria serves the primary objectives of providing training and instil the necessary skills leading to the production of craftsmen, technicians, and skilled personnel who are entrepreneurial and self-reliant (FGN, 2013). In the Nigerian education system, universities provide TVET programs leading to the Bachelor of Science in Education (B.Sc. Ed.) degree in Technical/Industrial Technology Education (FRN, 2013). These programs cover a wide range of specializations, including automobiles, mechanical and metalwork technology, electrical/electronic technology, building, computer system maintenance, and woodwork technology with the primary objective to instil both theoretical knowledge and practical skills in students, enhancing their productivity and sustainability upon graduation (FRN, 2013; Owo & Deebom, 2020; Keijzer et al., 2021). The effectiveness and quality of these programs remain central concerns, attracting attention from policymakers, educators, industry stakeholders, and researchers.

The quality of TVET programs in Nigeria hinges not only on the curricula but also on the assessment methods employed. Traditional assessment approaches, which predominantly rely on written examinations, often fall short in capturing the depth and breadth of skills and competencies that students acquire in TVET programs. Hence, there is a pressing need for a paradigm shift towards more dynamic, holistic, and outcome-oriented assessment methodologies. According to Lawal (2014), Nduononwi, et al., (2017), in today's rapidly changing technological and economic society, the need for graduates who can seamlessly transition into the workforce with relevant skills and competencies is more critical than ever and one essential aspect of ensuring their quality is through robust measurement and evaluation mechanisms. Consequently, the measurement and evaluation of TVET programs should reflect these demands, ensuring that graduates are adequately prepared to meet industry standards and expectations. In pedagogical settings, data collection frequently serves not merely as measures of predefined educational objectives but as tools aiding educators and teachers in making informed decisions regarding literacy, numeracy, transversal skills, and citizenship skills, as integral components (UNESCO, 2015).

According to Umunadi (2013) and Ayonmike (2014) it is imperative that all individuals engaged in the field of education undergo comprehensive training in the principles, characteristics, attributes, and methodologies of measurement and evaluation (Appah, et al., 2021). In a comprehensive teacher's development system, Ayonmike (2013) stated that measurement and evaluation stand as pivotal components. However, these two terms, "measurement" and "evaluation," carry distinct characteristics, which we explore in this research. Often used interchangeably, they possess unique meanings and interpretations. As Ajuonuma and Oguguo (2015) assert, evaluation constitutes a deliberate and purposeful

exercise, often involving inquiries aimed at assessing the effectiveness, impact, achievements, and benefits of a program. Evaluation serves as a means to determine the extent of a student's success in learning. Thus, evaluation becomes a crucial toward the enhancement of educational programs. Nevertheless, measurement and evaluation of TVET practical skills in Nigerian tertiary institutions present a complex and multifaceted challenge yet one that is integral to ensuring the quality and relevance of the education provided. This paper explores the challenges inherent in TVET assessment in Nigerian universities and, more importantly, to provide a roadmap for enhancing the qualitative aspects of these programmes. By adopting effective assessment methodologies, Nigerian universities can bridge the gap between classroom learning and real-world application, preparing students to be highly competitive in a diverse range of industries.

Historical Context of TVET in Nigeria

The formalization of TVET in Nigeria can be traced to the colonial period when the Colonial administration introduced vocational education. During this time, Kilby (1964) Akanbi (2012), Bello and Muhammad (2021) noted that individuals acquired skills and knowledge in various trades like blacksmithing, leatherworking, building construction, weaving, subsistence farming, bead-making, and canoe-making through informal and traditional apprenticeship systems. Within this system, aspiring artisans learned from experienced master craftsmen through practical experience, observation, tutoring, and collaborative group tasks. In 1925, the Colonial government in British Tropical Africa approved a Memorandum on Education policy that mandated the provision of technical education to address the growing demand for middle-level technical workforce in the country. This emphasis on Technical and Vocational Education and Training (TVET) in Nigeria gained further recognition in the Ten-year Plan for Development and Welfare of 1946. According to Bello and Muhammad (2021), the implementation of this plan led to the establishment of various educational institutions aimed at different aspects of technical training. The first vocational schools established in Nigeria, was Hope Waddell Training Institute in Calabar, Boys' Vocational Schools in Ibiono, and Blaize Memorial Industrial School in Abeokuta, played a pivotal role in this process (Bello & Muhammad, 2021).

These institutions had foreign expatriates and missionaries as instructors, while Nigerian youths received training aimed at the labour needs of the Colonial administration, primarily in low-skilled positions (Akpan, Usoro & Ibitam, 2013). Prospective students for the trade centres were selected from among primary school graduates. Their training consisted of three years of residential instruction followed by two years of apprenticeship or industrial training with employers, for the award of City and Guilds (London) certification. Technical Institutes, on the other hand, provided full-time and evening studies for candidates pursuing an Ordinary National Certificate, comprising two years of post-secondary coursework and one year of industrial training (Kilby, 1964). To support these policies and initiatives, the Colonial administration established training programs within various government departments, including Land and Surveys, Marine, Public Works, Post and Telegraphy, Railways, Agriculture & Natural Resources, to train craftsmen and technicians essential for national development (Bello & Muhammad, 2021). Additionally, Bello and Muhammad (2021) stated that Technical Institutes were founded in Yaba, Kaduna, Ibadan, Auchi, and Enugu between 1930 and 1960, marking the inception of the first-generation tertiary technical institutions in Nigeria.

Recognizing the need to address the deficit in technical manpower, both before and after Nigeria's independence from the Colonial administration, the Ashby Commission of 1960 was established (Bello & Muhammad, 2021). Among its significant recommendations was the expansion of vocational and technical education to cater to both Nigerian youth and adults. This was seen as a means to accelerate economic growth, technological development, industrial expansion, and equal access to opportunities (Bello & Muhammad, 2021). The Ashby Commission report also proposed the introduction of pre-vocational and pre-technical subjects and training at the secondary school level, craftsman training at Technical Colleges (TCs), trade centres, and vocational schools, while incorporating technical training into Polytechnics and Colleges of Technology education (Anibueze, 2013; Akpan, Usoro & Ibritam, 2013; Ogwo & Ezekoye, 2020).

After gaining independence, the federal governments upgraded existing Technical Institutes to Polytechnics. Notable institutions included Yaba College of Technology (1963), Kaduna Polytechnic (1968), Auchi Polytechnic (1972), and the Institute of Management and Technology (IMT), Enugu in 1973. To expand access to formal TVET, the Federal Polytechnic Act was enacted in July 1979, subsequently amended to establish more Federal Polytechnics across Nigeria (Akpan, Usoro, & Ibritam, 2013). State governments also established Polytechnics, technical colleges, and vocational institutions to train technical personnel, particularly during the second republic when education became a concurrent responsibility according to the Nigerian Constitution. TVET involves various 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, investors, and more (Ogwo & Ezekoye, 2020).

Lawal (2014) stated that the history of TVET in Nigeria reflects a gradual shift in emphasis from traditional skills transfer to a more formalized and structured system of education and training. While challenges persist, including issues related to infrastructure, curriculum development, and public perception, Nigeria's commitment to TVET as a means of fostering economic growth and youth empowerment remains progressive (Kilby, 1964).

Importance of Measurement and Evaluation in TVET

Measurement and evaluation are integral components of any education system, including Technical and Vocational Education and Training (Sephokgole & Makgato, 2019; Lee, Lim & Lai (2020). Their relevance in TVET cannot be overemphasized, as they serve several critical purposes that contribute to the effectiveness of TVET programs (Njoku, Isigwe & Paulinus, 2019). According to Ratnam-Lim and Tan (2015), some of the relevance of measurement and evaluation in TVET are:

- 1. Assessment of Learning Outcomes:** Measurement and evaluation in TVET provide a systematic means of assessing the learning outcomes and achievements of students. This includes evaluating their mastery of technical skills, knowledge, and competencies in specific vocational areas. It helps instructors and institutions determine whether students have acquired the skills and knowledge required to excel in their chosen careers (Appah & Adeleke, 2021).
- 2. Alignment with Industry Requirements:** Effective measurement and evaluation ensure that TVET programs remain aligned with the evolving needs of industries, making graduates more employable and responsive to labor market demands. By assessing the relevance of

curriculum and skill development, institutions can better prepare students for the workforce. Industry stakeholders can also provide input on assessment criteria to ensure that graduates possess the skills and competencies required by employers.

3. **Quality Assurance and Accountability:** Measurement and evaluation play a crucial role in accountability and accreditation processes. TVET institutions must demonstrate their effectiveness and adherence to quality standards through assessment data. Accreditation bodies use evaluation results to determine whether institutions meet the necessary criteria for certification, which, in turn, enhances the credibility and reputation of TVET programs (Ajuonuma & Oguguo, 2015).
4. **Resource Allocation:** Efficient resource allocation is facilitated by measurement and evaluation. Institutions can identify areas where additional resources are needed, such as equipment, materials, or qualified instructors. This ensures that TVET programs have the necessary resources to deliver high-quality education.
5. **Employability and Job Placement:** TVET graduates with well-evaluated skills and competencies are more likely to secure meaningful employment, contributing to reduced youth unemployment rates and economic development. This includes evaluating soft skills, work ethics, and problem-solving abilities in addition to technical competencies. Enhanced employability assessments can help TVET graduates secure jobs that match their skills, contributing to reduced unemployment rates.

Measurement and Evaluation in Nigerian Universities TVET Programs

Educational measurement and evaluation involve various methods and approaches to assess student learning, instructional effectiveness, and program quality. Measurement and evaluation practices in Nigerian Universities TVET programs are multifaceted, emphasizing both practical skills and theoretical knowledge. They are designed to align with industry needs, provide feedback to students and educators, and ensure that graduates are well-prepared to meet the demands of the job market. The current measurement and evaluation assessment practices in Nigerian Universities TVET programs involves:

1. **Formative Assessment:** Formative assessment is a systematic and ongoing assessment process used in education, program development, and various projects to gather feedback, insights, and information during the early stages of development and implementation. Its primary purpose is to inform and improve the design and delivery of the program or project before its full-scale implementation or completion (Levanova, 2020).
2. **Summative Assessment:** Summative assessment is a systematic and comprehensive assessment process used in education, program evaluation, and various fields to evaluate the overall effectiveness, outcomes, and impact of a program, project, or educational initiative after its completion (Nzembe, 2018). Unlike formative evaluation, which occurs during the early stages of development and implementation, summative evaluation takes place at the conclusion of the program or project to assess the extent to which its objectives and goals have been met. Examples include final exams, standardized tests, and end-of-course projects.
3. **Diagnostic Assessment:** Diagnostic assessment is a systematic and in-depth assessment process used in education, healthcare, and various fields to identify specific strengths, weaknesses, problems, or conditions in individuals, systems, or processes (Ibrahim, 2017). This type of evaluation is designed to provide detailed information and insights to guide decision-making, planning, and intervention.
4. **Norm-Referenced Assessment:** Norm-referenced assessment is a type of assessment or evaluation process used to compare an individual's performance or scores to a reference

group or a predefined set of standards, often referred to as norms. The primary purpose of norm-referenced evaluation is to determine how an individual's performance or abilities compare to those of a larger population or group (Sephokgole, 2019).

- 5. Criterion-Referenced Assessment:** Criterion-referenced assessment is a type of assessment or evaluation process used to determine whether an individual or a group of individuals has achieved specific predetermined criteria or objectives (Hegarty, 2019). Unlike norm-referenced evaluation, which compares an individual's performance to that of a reference group, criterion-referenced evaluation focuses on assessing performance based on established criteria or standards.

Challenges Encountered in Measuring and Evaluating TVET Programs in Nigerian Universities

According to Lawal (2014) Technical and Vocational Education and Training (TVET) programs place a significant emphasis on the development and assessment of practical skills. While TVET skill measurement and evaluation are crucial for ensuring the quality and relevance of TVET, several challenges exist in tertiary institutions (Ayentimi, Burgess & Dayaram, 2018; Ogwo & Ezekoye, 2020). This section addresses the multifaceted challenges associated with assessing practical skills in TVET programs within Nigerian universities. Some of the challenges in TVET practical skill measurement and evaluation are:

- 1. Corruption:** Corruption appears to have deeply infiltrated every sector of the Nigerian economy. Issues such as a lack of dedication, purpose, contract manipulation, extortion, nepotism, favoritism, and other forms of misconduct are prevalent. This creates an environment that hinders institutions from becoming centres of learning, character development, and integrity (Ogunraku, 2016; Okorafor & Nnajiifo, 2017; Ayentimi, Burgess & Dayaram, 2018).
- 2. Ineffective Planning and Administration:** Employers of potential TVET graduates are not adequately involved in planning, formulating, and evaluating training programs. TVET programs lack clear priorities and are not developed based on market viability (Muwaniki & Wedekind, 2018; Dokubo, 2013; Oluwale, Jegede, & Olamide, 2013).
- 3. Insufficient Funding:** Achieving the objectives of TVET requires adequate allocation of human, physical, material, and financial resources to support intended activities. Many TVET departments in Nigerian higher institutions lack well-equipped laboratories, workshops, and usable infrastructure. In instances where these facilities exist, they are often grossly insufficient, outdated, and in a state of disrepair. Some TVET departments continue to rely on engineering workshops with obsolete equipment and machinery to teach TVET courses, which impacts negatively on the quality of education provided (Oluwale, Jegede, & Olamide, 2013; Okoye & Okwelle, 2013; Ayonmike, Okwelle, & Okeke, 2015; Okwelle & Deebom, 2017; Zite & Deebom, 2017; Ogbunaya & Udoudo, 2015; Agu & Kaduhur, 2016; Oviawe, 2018).
- 4. Quality Assessment Gap:** The absence of strong quality assurance mechanisms can result in variations in the quality of TVET programs across universities, affecting measurement and evaluation consistency. A significant gap exists between the qualifications of job seekers and the skill requirements of employers. This gap arises because some TVET institutions teach skills that do not align with the needs of the industrial sector and the labor market (Ogbunaya & Udoudo, 2015; Zite & Zeedom, 2017). Many students acquire narrow skills using outdated machinery in schools, rendering them unemployed or relegated to

unskilled positions. Investments in digital infrastructure and access to digital resources are essential for this transformation.

- 5. Insufficient Professional Development:** Insufficient training and professional development opportunities for faculty members in assessment techniques and evaluation practices can impede effective measurement. In many TVET programs, especially specialized areas, there is a noticeable deficiency of qualified TVET teachers. Without quality TVET teachers, the practical components of TVET programs, which are crucial, become challenging to implement (Ayonmike, 2014; Okoye & Okwelle, 2013; Zite & Deebom, 2017; Oviawe, 2018).

Strategies to Enhance effective Measurement and Evaluation of TVET Programs in Nigerian Universities

Ensuring the effectiveness of measurement and evaluation of TVET programs in Nigerian universities is crucial for improving the quality and relevance of vocational education in Nigeria. To achieve this, the researchers recommend the following measures:

1. The Nigerian government, industry stakeholders, employers, and regulatory bodies should establish a well-defined, measurable learning outcomes for each TVET program, specifying the knowledge and skills students should acquire by program completion.
2. Regulatory bodies should regularly update program curricula to align with the evolving demands of industries in Nigeria by engaging industry representatives to identify relevant skills and knowledge areas.
3. Universities should employ only qualified and competent lecturers to teach TVET courses in Nigeria.
4. Universities should incorporate competency-based assessments, workplace simulations, industry partnerships, and technology-enhanced assessment tools, to monitor student progress throughout the program.
5. The Nigerian government, industry stakeholders, employers, and regulatory bodies should develop long-term strategic plans for TVET programs, setting clear objectives and goals and regularly evaluating progress toward these goals.
6. Institutions should invest in the continual professional development of assessors to enhance their competence in evaluating practical skills. Assessors should also undergo training on assessment criteria.
7. Nigeria Universities should engage in international collaborations and partnerships with countries that have strong TVET systems. Sharing best practices, experiences, and resources can promote the development of TVET measurement and evaluation practices.

Conclusion

The transformation of Technical and Vocational Education and Training (TVET) programs in Nigerian universities through the adoption of innovative and effective assessment methodologies is a mission of paramount importance in the pursuit of a skilled, adaptable, and globally competitive workforce. The study explored a range of assessment methodologies tailored to the unique requirements of TVET programs. Competency-based assessments, workplace simulations, industry collaborations, and technology-enhanced tools emerged as promising avenues. These methodologies offer students the opportunity to apply their knowledge in real-world contexts, thereby bridging the gap between theory and practice. Recognizing that the success of these transformative changes in TVET programs depends on a well-trained, motivated teaching staff for implementing and sustaining innovative assessment

methodologies. Therefore, investments in staff training and support are critical to the long-term implementation of TVET programs.

By prioritizing the adoption of effective assessment methodologies, Nigeria can position itself at the forefront of global workforce development. This transition is not only a strategic imperative for the nation's economic growth but also a moral obligation to empower its citizens with the skills and knowledge needed to thrive in an ever-evolving world. As policymakers, educators, and stakeholders in the TVET sector come together to embrace the recommendations of this study, the potential for transformative change is immense. By enhancing the qualitative aspects of TVET programs, Nigeria can unlock a new era of prosperity, innovation, and sustainable development, ultimately realizing the aspirations of a skilled and empowered nation that can compete on a global stage.

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