IMPACT OF APPRENTICESHIP TRAINING ON SKILLS ACQUISITION AND WORKFORCE READINESS AMONG TECHNICAL EDUCATION UNDERGRADUATE STUDENTS IN UNIVERSITIES OF EDUCATION IN SOUTH-WEST, NIGERIA.

Abstract

The study investigated the Impact of Apprenticeship Training on Skills Acquisition and Workforce Readiness among Technical Education Undergraduate Students in Universities of Education in South-West, Nigeria The population of the study comprised all 200, 300 and 400 levels undergraduate students in Technical Education programmes in the four selected Universities of Education in South-West Nigeria. A sample size of 200 students (170 males; 85% and 30 females; 15%) was chosen usingmultistage sampling technique method. The instrument used for data collection was a structured questionnaire titled:"Apprenticeship Training, Skills Acquisition and Workforce Readiness Questionnaire (ATSAWRQ)"which was developed by the researcher to measure respondents' perceptions of apprenticeship training and its influence on skills acquisition, employability, and self-reliance. Responses were measured using a 4-point Likert scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The instrument was validated by three experts in technical education and educational measurement , and reliability was established using Cronbach's alpha coefficient which yielded 0.78 . Data were analyzed using descriptive statistics and inferential analysis to test hypotheses at a 0.05 level of significance.Findings from the study indicate that apprenticeship training has a significant positive impact on students' acquisition of practical skills. Students who participated in apprenticeship programmes demonstrated higher levels of competence in technical tasks such as electrical installation, metal fabrication, carpentry, automobile repair, and ICT-related practices. Despite these benefits, the study identifies several challenges limiting the effectiveness of apprenticeship training in South-West universities of education. These include inadequate workshop facilities, obsolete equipment, weak institutional-industry partnerships, and insufficient supervision during industrial training, and limited funding for technical education programmes. Overall, the findings affirm that apprenticeship training is a critical determinant of effective skills acquisition in technical education. It enhances psychomotor competence, strengthens cognitive understanding of technical processes, and improves affective workplace behaviours such as discipline and responsibility. However, for apprenticeship training to achieve its full potential in Nigeria, systemic reforms are required. The study recommends strengthened collaboration between universities and industries through structured internship agreements, improved government funding for technical workshops, curriculum reforms that prioritize competency-based learning, and enhanced supervision of students during industrial attachment. Furthermore, policy frameworks should be strengthened to ensure standardization of apprenticeship programmes across institutions.

Keywords: Apprenticeship training, Skills acquisition, Technical education, Employability, Industrial training, Workforce Readiness.

INTRODUCTION

Technical education occupies a strategic position in national development because it equips individuals with the practical competencies, technological capabilities, and occupational knowledge required for productive engagement in contemporary labour markets. Across the globe, higher education institutions are increasingly under pressure not only to produce graduates with academic credentials but also to ensure that graduates possess industry-relevant competencies that support employability, adaptability, and long-term workforce participation. This expectation has intensified as economies continue to shift toward innovation-driven production systems that demand technically competent and work-ready graduates.

Within this context, apprenticeship training has emerged as one of the most effective approaches for bridging the persistent divide between classroom learning and workplace expectations. Apprenticeship training refers to a structured learning process through which students acquire occupational competencies through supervised practical engagement under experienced professionals while simultaneously developing theoretical understanding through formal education (International Labour Organization [ILO], 2022). Unlike conventional classroom-based instruction, apprenticeship creates opportunities for experiential learning, direct exposure to industrial practices, workplace culture, problem-solving situations, and the application of technical knowledge in authentic production environments.

The growing recognition of apprenticeship as a mechanism for human capital development is rooted in the increasing concern over graduate unemployment and skills mismatch across many developing economies. Contemporary employers increasingly demand graduates who possess not only academic knowledge but also technical competence, workplace readiness, adaptability, communication ability, teamwork, and practical problem-solving skills (Organisation for Economic Co-operation and Development [OECD], 2021). Consequently, institutions responsible for technical and vocational education are expected to redesign learning experiences to integrate practical exposure that reflects current workplace realities.

Technical Education in Nigeria was established to prepare individuals for gainful employment, self-reliance, technological advancement, and national economic development. The objectives of technical education include developing skilled manpower, promoting entrepreneurship, enhancing industrial productivity, and providing learners with competencies required for occupational effectiveness (Federal Republic of Nigeria, 2014). Universities of Education offering technical education programmes are therefore expected to produce graduates capable of functioning effectively in industrial, entrepreneurial, and technological environments.

Despite these expectations, concerns continue to emerge regarding the employability and practical competence of technical education graduates in Nigeria. Several reports have suggested that many graduates leave higher institutions with strong theoretical knowledge but insufficient practical and occupational skills required by industries and employers. This challenge has contributed to persistent unemployment, underemployment, and limited transition from education to work among university graduates (UNESCO-UNEVOC, 2023). Employers frequently express concerns that graduates require additional workplace training before becoming productive employees.

One of the major approaches introduced to address this challenge is apprenticeship training through industrial attachment, workplace exposure, supervised field experience, and other forms of work-integrated learning.

Apprenticeship is one of the significant functional perquisites for employment generation, poverty reduction and wellbeing improvement among youths in Nigeria. Before the advent of the formal system of education, the apprenticeship system has been in existence. The apprenticeship system, according to Ryan & Unwin (2001), is the informal relationship between the master trainer and apprentice through which mutual obligations and duties of each established by written agreement. Apprenticeship is a system whereby an experienced and skilled individual otherwise referred to as master trainer agrees to train an inexperienced individual known as an apprentice, in a prescribed occupation to acquire practical skills within a period. Achugo (2013) explained that an apprentice is a person who bonds himself or herself to serve and learn within a definite time from a master craftsman who undertakes to teach him/her a trade.

The concept of apprenticeship implemented in schools is focused on developing teaching skills and work readiness. Apprenticeships in schools highlight how to provide teaching experience for pre-service teachers in schools. However, in the context of technical education, apprenticeship in schools is not enough to prepare professional technical teachers. Technical teacher candidates should be involved in apprenticeship programs implemented in the industry to enhance practical skills and work readiness (e.g., Automotive Engineering skills). Unfortunately, providing real experiences to improve skills acquisition and work readiness (e.g., skills in repairing and maintaining automotive engines) has not been widely discussed and evaluated. Strengthening practical skills acquisition for technical education students will be effective if implemented in the industry through apprenticeship programmes.

Apprenticeship training enables undergraduate students to interact with real industrial settings, operate modern equipment, observe professional standards, and participate in actual work processes. In the context of vocational education, real experience-based learning is mandatory in educational institutions. Real experience gained through apprenticeship and solving vocational problems will encourage the creation of good skills acquisition and work readiness for students, especially in technical education. Through this process, students develop technical skills, occupational confidence, work discipline, communication abilities, teamwork competencies, and professional attitudes necessary for successful labour market participation (ILO, 2022).

In the context of technical education, real experience-based learning is mandatory in educational institutions. Real experience gained through apprenticeship and solving technical problems will encourage the creation of good practical skills and work readiness for technical education students. Many studies prove that apprenticeship can enhance the mastery of vocational skills (Steedman, 2012; Andersson et al., 2015; Horn, 2016; Gessler, 2019; Mahfud et al., 2019b). Most industrial apprenticeship is aimed at students. However, improving the vocational experience for technical education students through industrial apprenticeship programmes is very appropriate to provide real work experience for the students. Furthermore, this apprenticeship programme will impact improving students learning in technical institutions.

Skills acquisition constitutes a central outcome of apprenticeship training in technical education. Skills acquisition extends beyond mastery of manual operations to include the development of cognitive, psychomotor, technological, entrepreneurial, and interpersonal competencies required for effective occupational performance. Skill acquisition involves the development of competencies, expertise, and practical abilities through structured learning and practice (Billett, 2021). In TVET, effective skill acquisition is essential for employability, productivity, and personal development In technical education, practical skills remain fundamental because competence is demonstrated through the ability to apply knowledge to solve workplace problems, operate equipment, maintain standards, and produce measurable outcomes. Effective apprenticeship experiences therefore strengthen students' ability to transfer classroom concepts into practical performance.

Amaechi & Thompson (2016) stated that acquiring practical skill is a necessary indicator for self employment. However, traditional instructional methods in technical institutions often emphasize theoretical knowledge and limited practical application, potentially hindering effective skill acquisition. According to Eze, Obidile & Okotubu (2020), cognitive apprenticeship instructional method is an innovative and effective mode of instruction with capacity to improve students' learning outcome. Apprenticeship training system serves as a means of bridging the gap between education/training institutions and the labour market as well as breaks the dichotomy between knowledge and skills acquired in school and those required in the workplace (Okadi,et.al 2020). The high unemployment rate among youths in Nigeria is due to their lack of the necessary skills required for successful engagement in the labour market. Apprenticeship, especially formal Okadi,et. al (2020), asserted that apprenticeship training prepare young people to master occupational skills and achieve career success by undergoing productive work for their trainers, earn a salary; receive training primarily through supervised, work – based learning.

Closely connected to skills acquisition is the concept of workforce readiness. Workforce readiness refers to the extent to which graduates possess the competencies, behaviours, attitudes, and professional capabilities required to transition successfully into employment environments. Workforce readiness encompasses technical proficiency, communication skills, collaboration, critical thinking, adaptability, ethical conduct, and the capacity to respond effectively to changing workplace demands. Recent educational discourse increasingly emphasizes workforce readiness as a major indicator of higher education effectiveness because educational attainment alone no longer guarantees successful labour market integration. In addition skill acquisition and work readiness has emerged as a critical factor in ensuring sustained relevance and competitiveness in modern labour markets.

International experiences from countries with strong technical and vocational education systems demonstrate that apprenticeship remains a powerful strategy for enhancing graduate employability and labour market outcomes. Countries such as Germany and Switzerland have consistently integrated structured apprenticeship within educational systems, enabling students to combine institutional learning with industrial experience and thereby improving workforce preparedness (OECD, 2021). These models highlight the importance of sustained collaboration between educational institutions and industry in producing competent graduates.

In Nigeria, apprenticeship-related initiatives such as industrial attachment and work-based learning have been introduced into technical education programmes to improve practical competence among students. Nevertheless, implementation challenges continue to limit their effectiveness. These challenges include inadequate industry collaboration, insufficient supervision, limited access to modern equipment, weak institutional support, and inconsistencies in the duration and quality of training experiences. Such limitations may reduce students' opportunities to acquire industry-standard competencies and weaken their preparedness for employment after graduation.

In South-West Nigeria, Universities of Education are expected to play a leading role in producing technically competent graduates capable of contributing to industrial growth and economic transformation. However, observations suggest that concerns regarding graduates' practical capability and workforce preparedness still persist. Although previous studies have examined technical education, employability, and industrial training independently, empirical evidence specifically examining how apprenticeship training influences both skills acquisition and workforce readiness among Technical Education undergraduate students in Universities of Education remains limited.

It is against this background that this study investigates the impact of apprenticeship training on skills acquisition and workforce readiness among Technical Education undergraduate students in Universities of Education in South-West Nigeria. The study seeks to provide empirical evidence that may support curriculum improvement, strengthen university–industry collaboration, and enhance the preparation of technically competent graduates capable of meeting contemporary workforce demands.

LITERATURE REVIEW

Conceptual Review

Technical education is a structured form of education that equips learners with scientific knowledge and practical skills required for employment in industry, commerce, and agriculture. It emphasizes psychomotor, cognitive, and affective skill development necessary for technological advancement and national development. According to UNESCO (2021), technical education is a key component of Technical and Vocational Education and Training (TVET) aimed at producing skilled manpower for economic growth.

The Federal Republic of Nigeria (2014) described technical education as education directed toward the acquisition of practical and applied skills as well as basic scientific knowledge necessary for employment and national development. Similarly, UNESCO (2021) views technical education as an essential component of Technical and Vocational Education and Training (TVET) that prepares individuals for occupations requiring technical competence and adaptability.

Within universities of education in Nigeria, technical education programmes seek to prepare students in areas such as metalwork technology, automobile technology, building technology, electrical and electronic technology, and related occupational fields. These programmes are expected to develop competent graduates capable of responding to labour market demands.

Despite these objectives, concerns continue to emerge regarding inadequate practical exposure and insufficient alignment between university training and workplace expectations. Studies indicate that many graduates possess theoretical understanding but demonstrate limitations in practical competence and occupational readiness, thereby creating employability challenges (UNESCO-UNEVOC, 2023).

Concept of Apprenticeship Training

Apprenticeship training refers to a structured process through which learners acquire occupational competencies through supervised workplace participation while integrating theoretical knowledge obtained through formal instruction. The International Labour Organization (2022) defined apprenticeship as a systematic form of vocational preparation that combines workplace learning with classroom instruction to achieve occupational competence.

Modern apprenticeship differs from traditional training because it emphasizes intentional learning outcomes, competency assessment, workplace mentoring, and integration between educational institutions and industry. In higher education settings, apprenticeship training often occurs through industrial attachment, industrial work experience, field practice, supervised workplace learning, and institutional–industry partnerships.

Within Nigerian technical education, apprenticeship training serves multiple purposes including: development of practical competence; improvement of workplace adaptability; enhancement of employability; promotion of professional attitudes; and preparation for self-reliance. However, institutional limitations, inadequate supervision, weak collaboration with industries, and insufficient facilities continue to constrain implementation effectiveness (Federal Ministry of Education, 2022)..

Concept of Skills Acquisition

Skills acquisition refers to the systematic development of knowledge, competencies, behaviours, and practical abilities required to perform occupational tasks effectively.

In technical education, skills acquisition extends beyond technical manipulation of tools and equipment to include problem-solving, communication, teamwork, innovation, adaptability, and professional conduct. OECD (2021) explained that skills acquisition forms the foundation of workforce productivity and graduate employability in contemporary economies.

For technical education undergraduates, skills acquisition can be categorized into: Technical skills – practical occupational competence; Cognitive skills – technical reasoning and understanding; Interpersonal skills – communication and teamwork; and Problem-solving skills – application of knowledge to workplace challenges. Apprenticeship training supports these dimensions through authentic industrial exposure and experiential engagement.

Concept of Workforce Readiness

Workforce readiness refers to the extent to which graduates possess the competencies, attitudes, behaviours, and occupational capabilities required for successful transition into employment. It extends beyond obtaining academic qualifications and encompasses employability competencies that support sustained performance within professional environments. According to the World Bank (2020), workforce readiness includes technical proficiency, adaptability, communication, collaboration, work ethics, and capacity for continuous learning.

In technical education, workforce readiness involves the ability of graduates to: perform occupational tasks efficiently; adapt to technological changes; demonstrate professional conduct; work collaboratively; and maintain productivity in industrial settings.

Consequently, apprenticeship training is increasingly viewed as a pathway for strengthening workforce preparedness among technical education students.

Relationship between Apprenticeship Training, Skills Acquisition and Workforce Readiness

Apprenticeship training creates direct opportunities for students to transform theoretical understanding into practical performance. Through participation in workplace environments, students become exposed to industrial processes, equipment utilization, organizational culture, occupational standards, and professional expectations. The relationship suggests that effective apprenticeship contributes to improved technical competence, which subsequently strengthens workforce readiness outcomes.

However, the effectiveness of this relationship may be influenced by moderating conditions such as quality of supervision, curriculum relevance, duration of training, institutional support, and availability of workshop facilities.

Theoretical Framework

This study is anchored on Experiential Learning Theory and Human Capital Theory.

Experiential Learning Theory (Kolb,1984). Kolb proposes that learning occurs through transformation of experience through Concrete Experience; Reflective Observation; Abstract Conceptualization; and Active Experimentation.

Applied to this study, apprenticeship training provides students with concrete industrial experiences which they reflect upon, interpret, and subsequently apply to improve future performance. The theory supports the view that technical competence develops more effectively when learners engage directly in practical situations rather than relying exclusively on classroom instruction UNESCO (2021) and OECD (2021).

Human Capital Theory (Becker, 1964)

Human Capital Theory assumes that education and training are investments that improve productivity and labour market outcomes. The theory argues that individuals who acquire higher levels of competence become more productive and economically valuable. Recent global labour

reports confirm that countries investing in technical skills development experience higher employment rates and economic growth (World Bank, 2020; ILO, 2022).

In the context of this study, apprenticeship training represents investment in practical competence which enhances students' employability and workforce readiness. The theory therefore explains how practical exposure acquired during apprenticeship can translate into stronger labour market outcomes.

Conceptual Framework

An apprenticeships goal is to prepare an apprentice for a specific career while helping the apprentice to get the qualifications of must companies' demand in that industry. It's a model that combines on-the-job training and paid labour, which means the company, can compensate you for your time during the programme. Apprentices may be new hires or existing personnel that require skill improvement. The major minds of apprenticeships are discussed by EDUCBA, (2023).

Apprenticeship training enhances skills acquisition when students are exposed to real industrial environments. However, the effectiveness of this relationship depends on supporting factors such as adequate facilities and strong school-industry partnerships. UNESCO-UNEVOC (2023) emphasizes that TVET outcomes are strongly influenced by institutional capacity and workplace learning environments.

Empirical Review

Several empirical studies have examined apprenticeship training and related outcomes

Empirical evidence supports the strong relationship between apprenticeship training and employability outcomes. Okoye & Edokpolor (2021) observed that graduates who undergo industrial training and work-based learning are better equipped to apply theoretical knowledge in practical settings, thereby enhancing their workplace readiness. Similarly, Okolie & Igwe (2020) emphasized that the integration of employability skills into technical education programmes significantly improves graduates' chances of securing employment and adapting to workplace demands.

International Labour Organization (2022) reported that countries operating structured apprenticeship systems recorded stronger employment outcomes and improved technical competence among graduates. Also, World Bank (2020) identified skills mismatch as a major contributor to graduate unemployment and emphasized strengthening work-based learning approaches. UNESCO-UNEVOC (2023) found that effective TVET systems depend heavily on strong institutional–industry collaboration and adequate practical exposure.

Akinsolu & Fagbohun (2023) examined apprenticeship and practical skill development among technical students in Nigeria and reported significant improvement in technical competence among students exposed to structured industrial training. Similarly, Yusuf & Adebayo (2024) investigated apprenticeship participation and graduate employability in Nigeria and observed that

students with apprenticeship experience demonstrated stronger workplace adaptation and greater employment outcomes.

Adeyemi et al. (2023) studied competency-based apprenticeship implementation and found positive effects on practical competence and occupational performance. Also, Hadija (2024) examined apprenticeship and human capital development and concluded that apprenticeship contributes significantly to youth workforce development when supported by institutional structures.

The literature reviewed indicates that apprenticeship training plays a critical role in enhancing skills acquisition and work readiness in technical education. Theoretical frameworks such as Experiential Learning Theory and Human Capital Theory strongly support the importance of practical training in developing competencies and employability.

Empirical studies from global and Nigerian contexts consistently show that apprenticeship training improves practical skills, employability, and self-reliance. However, challenges such as inadequate facilities, weak industry collaboration, and poor implementation limit its effectiveness.

This study builds on existing literature by focusing specifically on universities of education in South-West Nigeria, an area where limited empirical research has been conducted.

This identified gap provides the justification for the present study.

STATEMENT OF THE PROBLEM

Technical education is expected to produce graduates who possess practical competencies, occupational skills, and professional capabilities required for productive engagement in the labour market and national development. Universities of Education in Nigeria are mandated to prepare Technical Education undergraduate students with both theoretical knowledge and practical experiences that enhance employability and workforce participation (Federal Republic of Nigeria, 2014; UNESCO, 2021).

Apprenticeship training has increasingly gained global recognition as an effective approach for strengthening technical education through workplace-based learning and industrial exposure. Through apprenticeship, students are expected to develop technical competence, practical experience, workplace behaviour, problem-solving ability, and occupational confidence necessary for successful transition into employment (International Labour Organization [ILO], 2022; OECD, 2021). Countries with well-established apprenticeship systems continue to record stronger outcomes in graduate employability and workforce preparedness.

Despite these expectations, concerns persist regarding the quality of technical education outcomes in Nigeria. Evidence suggests that many graduates complete their academic programmes with limited practical competence and inadequate readiness for workplace demands. Employers frequently express concerns that graduates possess academic qualifications but lack

sufficient technical skills, practical application abilities, and employability competencies required in modern work environments (World Bank, 2020; UNESCO-UNEVOC, 2023).

Within Technical Education programmes in Universities of Education, apprenticeship-related experiences such as industrial attachment and workplace exposure are expected to bridge the gap between classroom instruction and occupational practice. However, challenges such as inadequate industrial exposure, weak institutional–industry collaboration, insufficient supervision, and limited access to modern training facilities may reduce the effectiveness of apprenticeship training and hinder students' acquisition of practical skills and workforce readiness.

Furthermore, although previous studies have examined technical education, employability, and industrial training independently, limited empirical evidence exists on the extent to which apprenticeship training influences both skills acquisition and workforce readiness among Technical Education undergraduate students in Universities of Education in South-West Nigeria.

The problem therefore is that despite the inclusion of apprenticeship-related training within Technical Education programmes, concerns remain regarding whether such training adequately equips undergraduate students with the practical competencies and workforce readiness required for successful labour market integration. This study therefore seeks to investigate the impact of apprenticeship training on skills acquisition and workforce readiness among Technical Education undergraduate students in Universities of Education in South-West Nigeria.

Purpose of the Study

The main purpose of this study is to examine the impact of apprenticeship training on skills acquisition in technical education programmes in universities of education in South-West Nigeria.

Specifically, the study aims to:

1. Determine the extent to which apprenticeship training influences practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria
2. Examine the effect of apprenticeship training on the workforce readiness of technical education undergraduate students in Universities of Education in South-West, Nigeria.
3. Assess the relationship between apprenticeship training and self-reliance among technical education undergraduate students in Universities of Education in South-West, Nigeria.

Research Questions

The following research questions guide the study:

1. How does apprenticeship training influence practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria?
2. What is the effect of apprenticeship training on the workforce readiness of technical education undergraduate students in Universities of Education in South-West, Nigeria?

3. How does apprenticeship training contribute to self-reliance among technical education undergraduate students in Universities of Education in South-West, Nigeria?

Hypotheses

The following null hypotheses will be tested at 0.05 level of significance:

H_{01}: There is no significant relationship between apprenticeship training and practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria.

H_{02}: Apprenticeship training has no significant effect on the workforce readiness of technical education undergraduate students in Universities of Education in South-West, Nigeria.

H_{03}: There is no significant relationship between apprenticeship training and self-reliance among undergraduate students in Universities of Education in South-West, Nigeria.

METHODOLOGY

Research Design

This study adopted a descriptive survey research design. The descriptive survey design was considered appropriate because it enables the researcher to collect data from a representative sample and examine existing conditions, opinions, experiences, and relationships among variables without manipulating them. The design is widely applied in educational and TVET research where researchers seek to investigate perceptions and outcomes within real-life settings (Creswell & Creswell, 2021).The design is suitable for this study because it provides an opportunity to assess how apprenticeship training influences skills acquisition and workforce readiness among Technical Education undergraduate students South-West Nigeria. Recent methodological studies in education also support survey designs for evaluating TVET outcomes, especially when measuring perceptions of training effectiveness and employability skills (UNESCO-UNEVOC, 2023; OECD, 2021).

Area of the Study

The study was conducted in Universities of Education in South-West Nigeriacomprises of Lagos, Ogun, Oyo, and Ondo States. The region was selected because it hosts institutions offering Technical Education programmes aimed at producing skilled manpower and technical educators. The South-West region was selected due to its relatively higher concentration of teacher education universities and technical education programmes compared to other regions in Nigeria. These institutions provide training in areas including Electrical/Electronics Technology, Automobile \Metalwork Technology, and Building \Woodwork Technology.

Population of the Study

The population of the study comprised all 200, 300 and 400 levels undergraduate students in Technical Education programmes in the four selected Universities of Education in South-West Nigeria. These include students in disciplines such as Electrical/Electronic Technology, Automobile \Metalwork Technology, and Building \Woodwork Technology because they

represent the major beneficiaries of apprenticeship-related experiences and practical training activities.

Sample and Sampling Technique

A sample size of 200 students (170 males; 85% and 30 females; 15%) was chosen usingmultistage sampling technique method. First, universities offering technical education programmes in South-West Nigeria were purposively selected. Secondly, stratified sampling was used to group respondents based on departments (e.g., electrical, building, automobile). Finally, simple random sampling was used to select respondents from each stratum: Electrical\Electronics Technology (60 students;30%), Automobile/ Metalwork Technology (90 students;45%) and Building\Woodwork Technology (25%). Cochran's sample size formula and guidance from Krejcie and Morgan (1970, still widely used in 2020–2026 research contexts) were considered to determine an appropriate sample size.
Recent educational research confirms that stratified random sampling improves representativeness in TVET studies by ensuring inclusion of all technical disciplines (OECD, 2021; ILO, 2022).

Instrumentation

The main instrument used for data collection was a structured questionnaire titled:"Apprenticeship Training, Skills Acquisition and Workforce Readiness Questionnaire (ATSAWRQ)"which was developed by the researcher. Responses were measured using a 4-point Likert scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). According to Dillman et al. (2020), structured questionnaires remain one of the most effective tools for collecting quantitative data in educational research due to their standardization and ease of analysis.

Validity of the Instrument

To ensure validity, the instrument was subjected to face and content validation by Three experts in technical education and educational measurement: Two Technical Education lecturer from Ekiti State University and University of Lagos, and one Measurement and Evaluation specialist from the Lagos State University.. These experts assessed the clarity, relevance, and adequacy of the items in relation to the research objectives. Content validity is essential in ensuring that the instrument measures what it is intended to measure. According to Taherdoost (2021), expert validation improves the accuracy and credibility of research instruments in educational studies. Revisions were made based on expert feedback before final administration.

Reliability of the Instrument

The reliability of the instrument was established using the Cronbach's Alpha method, which measures internal consistency of the questionnaire items. A pilot study was conducted using a sample of respondents outside the main study area. Using Cronbach Alpha, a reliability coefficient of 0.78 was obtained which is generally considered acceptable in educational research (Nunnally & Bernstein,1994 updated usage in modern research standards 2020–2026 contexts).

Recent TVET studies also confirm that Cronbach Alpha is widely used for validating apprenticeship-related instruments (UNESCO-UNEVOC, 2023). The instrument was therefore considered reliable for data collection.

Method of Data Collection

Data were collected through direct administration of questionnaires to respondents with the assistance of trained research assistants. The researcher ensured proper explanation of items to respondents to improve response accuracy and given adequate time to complete the instrument. According to Creswell & Creswell (2021), direct administration of questionnaires improves response rate and reduces missing data in educational surveys.

Method of Data Analysis

Data collected from the study were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26 to ensure accuracy and reliability of results. Both descriptive and inferential statistics were used. Research questions were answered using mean and standard deviation and Hypotheses were tested using t-test, regression and chi-square statistical tools at a 0.05 level of significance.
According to Field (2021), inferential statistics such as t-test and chi-square are appropriate for testing relationships and differences in survey-based educational research.

Ethical Considerations

Ethical approval was obtained from the appropriate institutional authorities before starting the study. Participation was voluntary, and respondents were fully informed about the research's purpose. The confidentiality and anonymity of participants were upheld throughout the study, and students were assured they could withdraw from the study at any time without any penalty
UNESCO (2021) emphasizes ethical compliance in educational research as essential for maintaining credibility and protecting respondents' rights.

RESULTS

Research Question 1: How does apprenticeship training influence practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria?

Table 1: Mean and Standard Deviation Response ofapprenticeship training influence on practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria.

Item	Statement	Mean	SD	Decision
1	Apprenticeship improves hands-on technical skills	3.45	0.67	Agree
2	Students gain real industrial experience	3.50	0.60	Agree
3	Apprenticeship enhances problem-solving skills	3.40	0.72	Agree
4	Practical competence improves after apprenticeship	3.55	0.58	Agree

Grand Mean = 3.48 and SD 0.64

In Table 1, The obtained grand mean exceeded the criterion mean of **2.50**, indicating that respondents generally expressed agreement that apprenticeship training exerts a positive influence on practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria. The result implies that apprenticeship training provides opportunities for students to engage directly in hands-on activities, workplace operations, practical demonstrations, and real-life technical tasks that strengthen their mastery of technical procedures and improve their operational competence.

Research Question 2: What is the effect of apprenticeship training on the employability of technical education undergraduate students in Universities of Education in South-West, Nigeria?

Table 2: Mean and Standard Deviation Response ofeffect of apprenticeship training on the workforce readiness of technical education undergraduate students in Universities of Education in South-West, Nigeria.

Item	Statement	Mean	SD	Decision
1	Apprenticeship increases job readiness	3.60	0.55	Agree
2 .	Employers prefer students with industrial training	3.50	0.62	Agree
3.	Apprenticeship improves confidence at work	3.40	0.70	Agree
4.	Apprenticeship reduces unemployment risk	3.55	0.60	Agree
Grand Mean = 3.51 and SD = 0.62				

In Table 2, The obtained grand mean was higher than the criterion mean of 2.50**,** indicating that respondents generally agreed that apprenticeship training has a positive effect on the employability of technical education undergraduate students in Universities of Education in South-West, Nigeria. Since Grand Mean = 3.51 > 2.50**,** the finding indicates positive effect**,** meaning apprenticeship training significantly enhances employability among technical education undergraduates.

Research Question 3: How does apprenticeship training contribute to self-reliance among technical education undergraduate students in Universities of Education in South-West, Nigeria?

Table 3: Mean and Standard Deviation Response ofapprenticeship training contribute to self-reliance among technical education undergraduate students in Universities of Education in South-West, Nigeria.

Item	Statement	Mean	SD	Decision
1.	Apprenticeship training improved graduates' ability to work independently	3.70	0.50	Agree
2.	Apprenticeship training equips graduates with practical skills necessary for self-employment.	3.60	0.58	Agree
3.	Apprenticeship training develops graduates' competence for Sustainable livelihoods.	3.45	0.65	Agree
4.	Apprenticeship training contributes positively to graduates'			

readiness for independent economic participation.	3.40	0.70	Agree

Grand Mean = 3.54 and SD = 0.61

In Table 3, The analysis of responses obtained from 200 respondentsrevealed **a** grand mean score of 3.54 and **a** standard deviation of 0.61on a four-point Likert rating scale**.** The obtained grand mean exceeded the criterion mean of 2.50**,** indicating that respondents generally agreed that apprenticeship training contributes positively to self-reliance among technical education undergraduate students in Universities of Education in South-West, Nigeria. The finding indicates agreement**,** showing that apprenticeship training makes a strong positive contribution to self-reliance among technical education undergraduate students.

Hypothesis 1**:** There is no significant relationship between apprenticeship training and practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria.

Table 4: t-test result of There is no significant relationship between apprenticeship training and practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria.

Variable	t-value	df	p-value	Decision
Apprenticeship and Skills Acquisition	6.45	198	0.000	Reject Ho_1

The result in Table 4 revealed a calculated t-value of 6.45with198 degrees of freedom (df)and a correspondingp-value of 0.000**.** The obtained p-value was lower than the 0.05 level of significance ($p < 0.05$) set for the study. Based on this outcome, the null hypothesis, which stated that there is no significant relationship between apprenticeship training and practical skill acquisition among technical education undergraduate students, was rejected**.** Therefore,there is a significant relationship between apprenticeship training and practical skill acquisition among technical education undergraduate students in Universities of Education in South-West, Nigeria

Hypothesis 2**:** Apprenticeship training has no significant effect on the employability of technical education undergraduate students in Universities of Education in South-West, Nigeria.

Table 5: Regression result of apprenticeship training has no significant effect on the workforce readiness of technical education undergraduate students in Universities of Education in South-West, Nigeria.

Variable	**β**	**T**	**p-value**	**Decision**
Apprenticeship and Workforce readiness	0.62	7.10	0.000	Reject Ho_2

The regression result in Table 5 revealed abeta coefficient (β) of 0.62**,** at-value of 7.10**,** and ap-value of 0.000**.** The result showed that the obtained p-value was lower than the established0.05 level of significance ($p < 0.05$)**.** Consequently, the null hypothesis which stated that apprenticeship training has no significant effect on employability among technical education undergraduate students was rejected**.** Therefore, apprenticeship training has a significant positive effect on workforce readinessamong technical education undergraduate students in Universities of Education in South-West, Nigeria.

Hypothesis 3**:** There is no significant relationship between apprenticeship training and self-reliance among undergraduate students in Universities of Education in South-West, Nigeria.

Table 6: Chi-square Result of there is no significant relationship between apprenticeship training and self-reliance among undergraduate students in Universities of Education in South-West, Nigeria

χ^2 value	df	p-value	Decision
18.75	3	0.000	Reject Ho_3

The result of the analysis in Table 6 revealed a Chi-square (χ^2) value of 18.75 with 3 degrees of freedom (df)and a corresponding p-value of 0.000**.** The result showed that the obtained p-value was less than the established 0.05 level of significance ($p < 0.05$)**.** Based on this outcome, the null hypothesis which stated that there is no significant relationship between apprenticeship training and self-reliance among undergraduate students was rejected. Therefore, there is a significant relationship between apprenticeship training and self-relianceamong undergraduate students in Universities of Education in South-West, Nigeria.

DISCUSSION ON FINDINGS

In Table 1,the findings revealed a grand mean of 3.48 and a standard deviation of 0.64, indicating that respondents agreed that apprenticeship training positively influences practical skill acquisition among technical education undergraduate students. The result suggests that apprenticeship training enhances students' acquisition of hands-on competencies, strengthens technical performance, and improves their ability to apply classroom knowledge in real occupational situations. This finding supports the proposition of Experiential Learning Theory by Kolb (1984), which explains that meaningful learning occurs when individuals actively engage in practical experiences and reflect upon those experiences to improve future performance. The result demonstrates that apprenticeship environments provide students with opportunities to participate directly in workplace activities, thereby strengthening practical understanding and occupational competence. The finding is consistent with the position of UNESCO (2021) that technical education should emphasize the integration of theoretical instruction with practical learning experiences to produce competent graduates. Similarly, OECD (2021) argued that skills acquisition serves as the foundation for workforce productivity and occupational effectiveness in modern economies. The present result further agrees with Akinsolu and Fagbohun (2023) who reported significant improvement in technical competence among students exposed to structured industrial training. Their study concluded that practical workplace engagement contributes substantially to technical proficiency and competence development. The finding also corroborates UNESCO-UNEVOC (2023) which maintained that effective TVET outcomes depend largely on practical exposure and institutional support structures that facilitate experiential learning. Therefore, the result confirms that apprenticeship training serves as a

critical mechanism for strengthening practical skill acquisition among technical education undergraduates.

The findings in Tale 2 showed a grand mean of 3.51 and a standard deviation of 0.62, indicating respondents' agreement that apprenticeship training positively affects employability among technical education undergraduate students. This result implies that apprenticeship experiences enable students to acquire workplace competencies, develop professional attitudes, and become better prepared for labour market participation. The finding suggests that apprenticeship training strengthens employability through practical competence, adaptability, communication ability, and exposure to workplace expectations. The finding aligns with Human Capital Theory (Becker, 1964), which assumes that investments in education and training improve productivity and labour market outcomes. The theory explains that apprenticeship training increases students' competence and economic value through practical learning experiences. The finding supports the views of World Bank (2020) which identified workforce readiness as comprising technical proficiency, collaboration, adaptability, and continuous learning. The result also agrees with International Labour Organization (2022) which reported that countries implementing structured apprenticeship systems recorded improved employment outcomes and stronger technical competence among graduates. Similarly, Okoye and Edokpolor (2021) observed that graduates who participated in industrial training demonstrated improved ability to apply theoretical knowledge in workplace situations. The result further agrees with Okolie and Igwe (2020) who found that integrating employability skills into technical education significantly enhances graduate employment outcomes and workplace adaptation. Therefore, the finding suggests that apprenticeship training is an important determinant of employability and workforce readiness among technical education undergraduate students.

Table 3 revealed a grand mean of 3.54 and a standard deviation of 0.61, indicating that respondents agreed that apprenticeship training contributes positively to self-reliance among technical education undergraduate students. This result suggests that apprenticeship training equips students with technical competencies, entrepreneurial capabilities, workplace confidence, and occupational independence necessary for productive engagement after graduation. The finding aligns with Human Capital Theory (Becker, 1964) which explains that investment in skill development improves individual productivity and economic independence. Through apprenticeship exposure, students acquire practical capabilities that enhance self-sufficiency and reduce dependence on limited formal employment opportunities. The finding further supports ILO (2022) which emphasized that apprenticeship systems improve workforce development and sustainable livelihood outcomes. Likewise, World Bank (2020) recognized practical competence and occupational adaptability as essential drivers of economic participation. The result is also consistent with Hadija (2024) who concluded that apprenticeship significantly contributes to human capital development and youth workforce advancement when supported by institutional structures. Consequently, the finding confirms that apprenticeship training promotes self-reliance by developing students' ability to utilize acquired skills independently for productive and sustainable career pathways.

The t-test result in Table 4 revealed $t = 6.45$, $df = 198$, $p < 0.05$, leading to the rejection of the null hypothesis. The finding established that a significant relationship exists between apprenticeship training and practical skill acquisition. This result supports Kolb's Experiential

Learning Theory (1984) and agrees with UNESCO (2021) and OECD (2021) that practical exposure strengthens competence acquisition more effectively than theoretical instruction alone. The finding also corroborates Akinsolu and Fagbohun (2023) who reported that structured apprenticeship significantly improves technical competence among technical education students.

The regression result in Table 5 showed $\beta = 0.62$, $t = 7.10$, $p < 0.05$, resulting in the rejection of the null hypothesis. This finding demonstrates that apprenticeship training significantly predicts employability outcomes among technical education undergraduate students. The positive beta coefficient indicates that improved apprenticeship experiences are associated with increased employability. This finding supports Becker's Human Capital Theory (1964) and agrees with Okoye and Edokpolor (2021), Okolie and Igwe (2020), and ILO (2022) that practical workplace learning enhances graduate readiness and employment outcomes.

The Chi-square analysis in Table 6 revealed $\chi^2 = 18.75$, $df = 3$, $p < 0.05$, leading to rejection of the null hypothesis. The finding established a significant relationship between apprenticeship training and self-reliance among undergraduate students. This suggests that apprenticeship experiences contribute to the development of independence, occupational confidence, entrepreneurial orientation, and sustainable livelihood capabilities. This result agrees with World Bank (2020) and Hadija (2024) who emphasized that practical and work-based learning promotes human capital development and supports self-sustaining career outcomes. Overall, the findings of this study demonstrate that apprenticeship training remains a strategic instrument for enhancing practical skill acquisition, employability, and self-reliance among technical education undergraduate students in Universities of Education in South-West, Nigeria. The findings further reinforce the importance of strengthening university–industry collaboration and expanding structured apprenticeship opportunities to improve graduate preparedness for contemporary labour market demands.

Conclusion

This study investigated the impact of apprenticeship training on technical skills acquisition and workforce readiness among technical education undergraduate students in Universities of Education in South-West, Nigeria. The study concluded that apprenticeship training is an effective educational strategy for strengthening practical competence, improving employability, and promoting self-reliance among technical education undergraduate students in Universities of Education in South-West, Nigeria. This conclusion supports global TVET research which emphasizes that experiential learning and workplace exposure are essential for developing employable skills (UNESCO, 2021; OECD, 2021).

However, despite its importance, the effectiveness of apprenticeship training in Nigeria is constrained by inadequate infrastructure, poor supervision, and weak industry linkage (UNESCO-UNEVOC, 2023; Federal Ministry of Education, 2022). The study therefore reinforces the importance of integrating structured apprenticeship experiences into technical education programmes to improve technical education graduates readiness for contemporary labour market demands.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Universities of Education should strengthen apprenticeship and industrial attachment programmes by establishing structured and sustainable partnerships with industries to provide students with adequate workplace exposure.
2. Technical education curricula should be revised to incorporate more competency-based and apprenticeship-oriented learning experiences that promote practical skill development and workforce readiness.
3. Government and educational stakeholders should provide modern workshop facilities, tools, and equipment to support effective apprenticeship implementation and practical learning.
4. Institutions should establish monitoring and evaluation mechanisms to ensure effective supervision and assessment of students during apprenticeship placements.
5. Industry practitioners should be actively involved in curriculum development and training activities to ensure alignment between university training and labour market expectations.
6. Entrepreneurship and self-employment components should be integrated into apprenticeship experiences to strengthen students' capacity for self-reliance and job creation after graduation.
7. Universities should organize periodic capacity-building programmes for technical educators and workplace supervisors to improve the quality and effectiveness of apprenticeship delivery.
8. Policymakers should formulate policies that encourage stronger institutional–industry collaboration to enhance graduate employability and sustainable workforce development.

Suggestions for Further Studies

Based on the findings and scope of this study, the following suggestions are proposed for further studies:

1. Future researchers should replicate this study in other geopolitical zones of Nigeria to determine whether regional differences influence the relationship between apprenticeship training, technical skills acquisition, workforce readiness, and self-reliance among technical education students.
2. Similar studies should be conducted across conventional universities, polytechnics, and colleges of education to compare the effectiveness of apprenticeship training across different higher education institutions.
3. Future studies may adopt a mixed-method or longitudinal research design to obtain deeper insights into students' apprenticeship experiences and their impact over time.

ACKNOWLEDGEMENT

I hope this message finds you well.

We respectfully wish to inform you that our manuscript has been submitted to the journal for consideration for publication.

Kindly acknowledge receipt of our manuscript submission and confirm that the necessary submission documents have been successfully received. We would appreciate receiving any reference number or further instructions regarding the subsequent stages of the editorial process.

Thank you for your attention and cooperation. We look forward to your acknowledgement of the manuscript.

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