

Skill Acquisition Programmes and Graduate Employability in Nigerian Tertiary Institutions: Evidence, Challenges and Policy Directions

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1021

Abstract

Graduate employability has become a major concern in Nigeria despite sustained expansion in tertiary education and increasing policy attention to entrepreneurship, technical education, industrial training, and skills development. Federal polytechnics occupy a strategic position within Nigeria's tertiary education system because they are expected to combine theoretical instruction with practical and technological competence. Nevertheless, concerns persist regarding the capacity of existing skill acquisition programmes to translate educational participation into meaningful employment, workplace competence, and self-reliance. This study examines skill acquisition programmes and graduate employability in Nigerian tertiary institutions, with particular attention to selected federal polytechnics in Southeast Nigeria. The study adopts an integrative review and contextual analysis of scholarly literature, policy documents, and evidence relating to technical and vocational education, entrepreneurship education, industrial training, digital skills, and graduate employability. The analysis identifies five broad dimensions through which skill acquisition influences employability: technical and vocational competence, entrepreneurship development, digital skills acquisition, workplace exposure, and institutional-industry collaboration. The evidence indicates that skill acquisition programmes can enhance employment readiness and entrepreneurial capacity; however, inadequate infrastructure, obsolete equipment, insufficient practical exposure, weak industry partnerships, curriculum rigidity, inadequate funding, and inconsistent implementation frequently weaken their effectiveness. The study argues that the major challenge confronting Nigerian polytechnics is not merely the absence of skill acquisition programmes but the persistent gap between policy intention, Programme implementation, and labour-market relevance. Drawing on Human Capital Theory, the paper proposes an integrated skills-to-employability framework in which Programme quality, institutional capacity, and industry engagement mediate the relationship between skills training and graduate outcomes. The study concludes that strengthening graduate employability requires a transition from Programme availability to measurable competence and employment outcomes. Policy implications are advanced for the National Board for Technical Education, Tertiary Education Trust Fund, polytechnic management, industry, and government.

Keywords: Skill Acquisition Programmes; Graduate Employability; Tertiary Institutions; Federal Polytechnics; TVET; Entrepreneurship Education

Introduction

Rapid technological change, digitalization, globalization, and the transformation of work have altered the expectations placed on tertiary education. Academic qualifications alone no longer guarantee successful entry into the labour market. Employers increasingly demand graduates who combine disciplinary knowledge with practical, digital, entrepreneurial, and transferable skills such as communication, problem-solving, creativity, teamwork, and adaptability (Okolie et al., 2019; Tomlinson, 2012). Consequently, tertiary institutions are increasingly judged by their capacity to produce graduates who can secure, sustain, and progress in meaningful employment.

1022

Graduate employability extends beyond the ability to obtain a job. It encompasses the knowledge, skills, personal attributes, and career-management capabilities that enable individuals to navigate changing labour markets and achieve sustainable employment outcomes (Bridgstock, 2009; Pool & Sewell, 2007; Yorke, 2006). This broader conception has strengthened interest in skill acquisition programmes as instruments for improving the transition from education to work. Skill acquisition programmes include entrepreneurship education, technical and vocational training, industrial attachment, internships, ICT training, workshop and laboratory practice, innovation initiatives, and other forms of experiential learning. These interventions are intended to equip students with occupation-specific and transferable competencies that enhance workplace readiness and employment prospects (Emah et al., 2025; Okolie et al., 2020). Human Capital Theory similarly holds that investment in education and skills improves productive capacity and economic outcomes (Becker, 1964). The challenge is particularly significant in Nigeria, where the expansion of tertiary education has not been matched by a corresponding capacity of the labour market to absorb graduates. Graduate unemployment, underemployment, skills mismatch, and difficult school-to-work transitions remain persistent concerns. The problem is not merely the scarcity of jobs; it also reflects the disconnect between the competencies developed in tertiary institutions and those required in contemporary workplaces. The International Labour Organization (ILO, 2024) identified effective skills development and improved school-to-work transitions as critical to addressing youth employment challenges.

Nigerian tertiary institutions have responded through entrepreneurship education, technical and vocational training, industrial attachment, ICT development, and other employability-oriented initiatives. Polytechnics occupy a particularly important position because their mandate emphasizes technological, vocational, and practically oriented education for skilled Manpower development. However, the existence of skill acquisition programmes does not necessarily translate into effective skills development or improved employability.

Persistent challenges including inadequate funding, obsolete equipment, weak digital infrastructure, limited practical exposure, outdated curricula, and weak institution-industry collaboration continue to undermine programme effectiveness. Contemporary labour markets have further increased the demand for digital competence, technological adaptability, innovation, and continuous learning. Thus, skill acquisition programmes that are poorly

implemented or disconnected from changing workplace requirements may have limited impact on graduate outcomes (Okolie et al., 2020; UNESCO, 2026).

Although previous studies have examined entrepreneurship education, vocational training, and graduate employability in Nigeria, many have treated these issues separately or focused broadly on tertiary institutions. This leaves insufficient understanding of how the nature and quality of skill acquisition programmes, institutional capacity, and industry engagement jointly shape graduate employability, particularly within polytechnic education.

This study therefore examines the relationship between skill acquisition programmes and graduate employability in selected federal polytechnics in Southeast Nigeria. It assesses the nature and implementation of existing programmes, their contribution to employability, and the institutional constraints affecting their effectiveness. The study proceeds from the argument that the availability of skill acquisition programmes alone does not guarantee employable graduates; their outcomes depend on the relevance, quality, practical orientation, institutional support, and alignment of training with labour-market demands.

Statement of the problem

Graduate employability remains a persistent challenge in Nigeria despite the expansion of tertiary education and the introduction of policies and programmes aimed at promoting entrepreneurship, vocational competence, industrial training, and skills development. Universities, polytechnics, and colleges of education continue to produce large numbers of graduates annually, yet many experience difficulties in securing meaningful employment or establishing sustainable livelihoods. The challenge extends beyond the general shortage of jobs to the growing mismatch between the competencies acquired in tertiary institutions and those required in contemporary workplaces. As Tomlinson (2012) observed, employability involves not merely academic qualifications but the knowledge, skills, attributes, and capabilities required for obtaining, sustaining, and progressing in employment.

Polytechnics occupy a strategic position in addressing this challenge because of their technological and practical orientation. By their institutional mandate, polytechnic education is expected to equip graduates with competencies that enhance workplace performance, innovation, employment, and self-reliance. However, persistent concerns regarding graduates' transition from tertiary education into sustainable employment raise questions about the extent to which this mandate is being realized. Employers increasingly demand practical competence, digital literacy, communication skills, adaptability, creativity, problem-solving ability, and entrepreneurial capacity, while tertiary education in Nigeria is frequently criticized for excessive theoretical orientation and inadequate practical engagement.

In response, tertiary institutions have introduced entrepreneurship education, ICT training, vocational programmes, SIWES, industrial attachment, innovation initiatives, and other skill acquisition interventions. However, the availability of these programmes does not necessarily guarantee effective skills development. A programme may exist institutionally without providing students with sufficiently intensive, practical, technologically relevant, and industry-informed training. The central problem, therefore, is not simply whether skill acquisition programmes are available, but whether their quality and implementation are sufficient to produce measurable employability competencies.

This concern is reinforced by persistent institutional and implementation constraints, including inadequate funding, obsolete training equipment, poor infrastructure, limited practical exposure, weak curriculum responsiveness, insufficient digital integration, inadequate technical personnel, overcrowded learning environments, and weak collaboration between institutions and industry. Okolie et al. (2021) emphasized that stronger industry involvement in higher education is critical to improving graduates' knowledge, skills, and capacity for employment and job creation. Where industry participation in curriculum development, practical training, internships, and workplace exposure remains weak, the relevance of institutional training to labour-market demands may be substantially constrained.

Although previous studies have examined entrepreneurship education, vocational training, industrial attachment, and graduate employability in Nigeria, much of the literature has treated these issues separately or discussed tertiary education as a single institutional category. Such an approach may obscure the distinctive realities of polytechnics, whose mandate, training orientation, and relationship with industry differ substantially from those of universities and colleges of education. Consequently, there remains limited integrated and institution-specific evidence on how the availability, quality, and implementation of skill acquisition programmes influence graduate employability within Nigerian polytechnics.

This gap is particularly evident in studies focusing on federal polytechnics in Southeast Nigeria. There is insufficient empirical evidence on whether existing skill acquisition programmes translate into improved workplace readiness, employment capacity, innovation, and self-reliance among graduates. This study therefore addresses the gap by examining the relationship between skill acquisition programmes and graduate employability, with contextual attention to Federal Polytechnic Oko, Federal Polytechnic Nekede, and Akanu Ibiam Federal Polytechnic, Unwana. The study specifically interrogates whether existing programmes move beyond institutional presence to deliver relevant, practical, and labour-market-responsive competencies capable of improving graduate employability.

Objectives of the Study

The broad objective of this study is to examine skill acquisition programmes and graduate employability in Nigerian tertiary institutions, with particular reference to selected federal polytechnics in Southeast Nigeria.

The specific objectives are to:

1. Assess the nature and extent of skill acquisition programmes in selected federal polytechnics in Southeast Nigeria.
2. Examine the influence of skill acquisition programmes on graduate employability and self-reliance.
3. Identify institutional and structural challenges affecting effective implementation of skill acquisition programmes.
4. Recommend strategies for improving employability-oriented training in Nigerian tertiary institutions.

Research Questions

The following research questions guided the study:

1. What skill acquisition programmes exist in selected federal polytechnics in Southeast Nigeria?
2. To what extent do skill acquisition programmes influence graduate employability and workplace competence?
3. What institutional challenges affect the effective implementation of skill acquisition programmes?
4. What strategies can strengthen employability-oriented training in Nigerian tertiary institutions?

Conceptual Review

Graduate Employability

1025

Graduate employability has become an important concern in higher education because possession of a tertiary qualification does not necessarily guarantee successful transition into employment. Employability refers broadly to the knowledge, skills, competencies, attitudes and personal attributes that enable an individual to secure employment, perform effectively in the workplace, adapt to changing occupational demands and sustain a career. It therefore extends beyond academic achievement to include the capacity to apply knowledge and skills to real-life work situations.

Nwajiuba et al. (2020) observed that improving graduate employability in Nigeria required greater attention to the development of relevant skills and stronger collaboration among higher education institutions, industry and government. Their study further revealed that inadequate pedagogy, infrastructure and industry collaboration constrained the capacity of Nigerian higher education institutions to develop employability skills. Similarly, research on the Nigerian labour market has shown that employers attach considerable importance to both technical and generic competencies, while graduates may still require additional training after entering employment (Okolie et al., 2019).

Graduate employability is consequently understood in this study as the extent to which graduates possess and can effectively apply the competencies required to obtain employment, perform occupational tasks and adapt to changing workplace demands. The concept encompasses technical competence, digital literacy, communication, problem-solving, entrepreneurial capacity, adaptability and practical work experience.

Polytechnic Education and Graduate Employability

Polytechnic education is designed to provide practical, technological and occupational education that prepares learners for employment and productive economic participation. Its practical orientation distinguishes it from programmes that are predominantly theoretical. Consequently, polytechnics are expected to produce graduates whose knowledge can be translated into practical workplace competence.

Otache (2022) argued that the employability challenge among Nigerian polytechnic graduates was partly associated with the weak relationship between polytechnics and industry. His study found that industry experts needed to participate in curriculum development and review, while students and lecturers required greater exposure to industrial work environments. This position is consistent with the broader argument that higher education institutions must understand and respond to changing labour-market requirements if their graduates are to remain employable.



The effectiveness of polytechnic education therefore depends not merely on the award of qualifications but on the extent to which programmes develop competencies that correspond with occupational requirements. Where curricula, teaching methods, facilities and practical experiences remain disconnected from industry needs, the expected employability advantage of polytechnic education may not be realised.

Technical and Vocational Competence

Technical and vocational competence represents the practical knowledge and occupational skills required to perform specific tasks effectively. It includes the ability to use tools, equipment, procedures and technologies associated with a particular occupation. For polytechnic graduates, technical competence is particularly significant because practical skill acquisition constitutes a central rationale for polytechnic education.

Akinbode and Oyalude (2020) reported that employers considered twenty-first-century skills important for the employability of fresh graduates in Nigeria. Similarly, studies of Nigerian graduate employees have indicated that employers expect graduates to possess a combination of technical and generic skills rather than academic knowledge alone (Okolie et al., 2019). The implication is that graduate employability depends on the ability to transform classroom learning into practical workplace performance.

Technical competence must therefore be continuously updated. Rapid technological changes can make occupational knowledge obsolete when curricula and training facilities are not regularly reviewed. Polytechnic institutions consequently need to ensure that their programmes reflect current technologies, occupational practices and emerging labour-market requirements.

Digital Skills and Graduate Employability

Digital skills have become an increasingly important component of employability because contemporary workplaces depend extensively on digital technologies for communication, information management, production, service delivery and decision-making. Digital competence involves more than basic computer literacy; it includes the ability to locate, evaluate, process, communicate and create information using digital technologies. The increasing digitalisation of work has consequently changed the skills expected from graduates. A graduate may possess appropriate academic knowledge but remain disadvantaged if unable to use relevant digital tools in the workplace. Recent Nigerian evidence found that work-integrated learning had a positive effect on graduate employability and that digital literacy played a mediating role in this relationship.

Digital competence is particularly relevant to polytechnic education because many technical and vocational occupations increasingly involve computerised equipment, digital production systems, information-management technologies and online platforms. Consequently, integrating digital skills into technical and entrepreneurial education can strengthen graduates' capacity to respond to contemporary employment opportunities.

Entrepreneurship Education and Graduate Employability

Entrepreneurship education provides learners with knowledge and competencies for identifying opportunities, developing business ideas, managing enterprises and creating economic value. In Nigeria, its relevance has increased because of persistent unemployment,

underemployment and the limited capacity of the formal sector to absorb the growing number of graduates. Entrepreneurship education contributes to employability by broadening graduates' understanding of employment beyond seeking paid positions. Taiwo and Ajimuse (2025) identified entrepreneurship education as an important mechanism through which Nigerian graduates could develop self-employment opportunities and respond to unemployment challenges.

However, entrepreneurship education is unlikely to produce substantial employability outcomes when it remains predominantly theoretical. Students require practical exposure to opportunity recognition, business planning, financial management, marketing, innovation and digital enterprise. Entrepreneurship education should therefore complement, rather than replace, technical and professional competence.

Industrial Training and Work-Based Learning

Industrial training and work-based learning provide opportunities for students to apply theoretical knowledge in authentic occupational environments. Through such experiences, students become familiar with workplace procedures, professional expectations, organisational culture, equipment and practical problem-solving. Otache (2022) found that exposing students and lecturers to industrial work situations could strengthen workplace skills and experience among polytechnic graduates. More recent evidence from Nigeria similarly established that work-integrated learning positively influenced graduate employability, with digital literacy further strengthening this relationship.

Industrial training is therefore important because it reduces the distance between educational preparation and workplace expectations. Effective work-based learning can also provide institutions with information about emerging occupational requirements, thereby supporting curriculum improvement.

Curriculum Relevance and Industry Collaboration

Curriculum relevance concerns the extent to which educational content, teaching methods and learning experiences correspond with current societal and labour-market needs. An employability-oriented curriculum should provide students with both disciplinary knowledge and transferable competencies required in contemporary workplaces. Nwajiuba et al. (2020) found that weak collaboration between Nigerian higher education institutions and industry limited the development of employability skills and recommended stronger institutional, industry and government collaboration. Otache (2022) similarly established that industry participation in curriculum development and review could help Nigerian polytechnics respond more effectively to contemporary workplace requirements.

Thus, curriculum relevance and industry collaboration are closely connected. Industry participation provides institutions with information about changing occupational requirements, while institutions provide employers with a structured avenue for influencing the competencies developed by prospective employees.

Empirical Review

Empirical studies have examined graduate employability in Nigeria from different perspectives, including generic skills, industry collaboration, work-based learning, digital competence and

entrepreneurship. Nwajiuba et al. (2020) investigated ways of improving higher education quality and graduate employability in Nigeria using a stakeholder approach. The study involved stakeholders from public and private organisations, education agencies and non-governmental organisations. The findings indicated limited collaboration between higher education institutions and industry and inadequate institutional capacity for teaching employability skills. The researchers consequently recommended stronger higher education–industry–government collaboration and curriculum designs that deliberately incorporated employability skills.

Okolie et al. (2019) examined the relationship between higher education and labour-market requirements in Nigeria. The study reported that employers demanded both technical and soft skills from graduates and argued that higher education institutions needed to understand labour-market requirements more effectively. The findings indicated that adequate teaching resources and competent teachers could contribute to the development of the technical and generic skills demanded by employers.

In a related study, Akinbode and Oyalude (2020) examined twenty-first-century skills and fresh graduates' employability in Nigeria from the perspective of human-resource practitioners. The study reinforced the importance of contemporary employability competencies and demonstrated that employers' expectations extended beyond conventional academic qualifications. Otache (2022) specifically examined polytechnic–industry collaboration as a strategy for enhancing graduate employability in Nigeria. Using focus-group discussions involving lecturers, National Board for Technical Education officials and industry executives, the study established four important areas of collaboration: industry participation in curriculum development and review, industry participation in teaching, student exposure to industrial workplaces and lecturer exposure to industrial workplaces. The study concluded that effective polytechnic–industry collaboration could improve graduates' workplace skills and employability. Ayonmike and Okeke (2017) examined partnerships between industries and vocational institutions as a means of addressing the skills gap and unemployment among vocational graduates in Nigeria. Their study identified the skills possessed by vocational graduates as a major concern and examined institutional partnerships as a mechanism for improving employment-related competencies.

More recently, empirical evidence has linked work-integrated learning and digital literacy to graduate employability. A 2024 Nigerian study found that work-integrated learning had a direct positive effect on graduate employability and an indirect positive effect through digital literacy. The finding is important because it demonstrates that practical workplace exposure and digital competence are not isolated employability factors but can reinforce each other.

Similarly, Nwankwo et al. (2026) found that inadequate industry–polytechnic collaboration contributed to low employability, weak practical competence and workforce unpreparedness among Nigerian polytechnic students. The study reported that industry participation in curriculum development, internship, SIWES, industrial attachment and technology transfer strengthened workforce readiness and employability competencies.

Synthesis of Empirical Evidence

The empirical literature generally establishes a positive relationship between relevant education and graduate employability. Nwajiuba et al. (2020) emphasised stakeholder collaboration;

Okolie et al. (2019) highlighted the importance of technical and generic skills; Otache (2022) demonstrated the contribution of polytechnic–industry collaboration; while recent evidence has highlighted work-integrated learning and digital literacy as important employability mechanisms.

Despite these contributions, important gaps remain. Much of the Nigerian literature has examined employability either within the broader higher education system or through individual dimensions such as skills, entrepreneurship, digital literacy or industry collaboration. Comparatively fewer studies have integrated these dimensions within a single empirical framework focused specifically on polytechnic graduates. There is therefore a need for a more comprehensive examination of the factors that shape the employability of Nigerian polytechnic graduates.

Theoretical Framework

Human Capital Theory

Human Capital Theory provides an appropriate theoretical foundation for understanding graduate employability. The theory, principally associated with Becker (1964), holds that education, training, knowledge and skills constitute forms of capital because they enhance an individual's productive capacity and economic value.

From the perspective of Human Capital Theory, investment in polytechnic education should increase graduates' employability by equipping them with knowledge and occupational competencies required by employers. Technical training, digital skills, entrepreneurship education and industrial experience therefore represent investments that can enhance graduates' productive capacity.

The relevance of the theory to the present study lies in its explanation of the relationship between **skills acquisition and employment outcomes**. Where students acquire relevant technical, digital, entrepreneurial and workplace competencies, they are expected to possess greater capacity to secure and perform employment. This position is consistent with empirical evidence showing that employers value both technical and generic competencies and that work-integrated learning and industry collaboration contribute to graduate preparedness.

However, Human Capital Theory does not imply that skills automatically translate into employment. The Nigerian evidence indicates that institutional conditions, curriculum relevance, infrastructure and relationships between educational institutions and industry also influence employability outcomes. Nwajiuba et al. (2020) demonstrated that weak institutional capacity and limited industry collaboration constrained the development and application of employability skills.

The theory therefore provides the underlying explanation for the study's assumption that investment in relevant education and skills enhances graduate employability, while the empirical literature provides evidence that the effectiveness of such investment depends partly on the quality and relevance of the educational environment.

Gap in Literature

The review reveals three major gaps.

First, a contextual gap exists: Although considerable research has examined graduate employability in Nigeria, many studies have focused on universities or higher education

generally. Relatively fewer studies have examined employability specifically within the Nigerian polytechnic system.

Second, a conceptual gap exists: Existing studies have often examined employability dimension separately. Digital skills, entrepreneurship, technical competence, industrial training and industry collaboration have frequently been treated as distinct issues. There remains a need for an integrated examination of their contribution to graduate employability.

Third, an empirical and methodological gap exists: Several existing studies have adopted qualitative, descriptive or institution-specific approaches. While these studies have generated valuable insights, further quantitative evidence is required to determine the extent to which specific educational and competency-related factors explain variations in graduate employability.

The present study addresses these gaps by examining graduate employability within the Nigerian polytechnic context and by considering the relationship between relevant competencies, practical exposure and graduates' preparedness for employment.

Summary of Reviewed Literature

The literature established that graduate employability was a multidimensional concept involving more than the possession of academic qualifications. Technical competence, digital literacy, entrepreneurial capability, communication, adaptability and practical workplace experience all contributed to graduates' preparedness for employment.

The conceptual literature further showed that polytechnic education had an important role in developing occupational competencies because of its practical and technological orientation. However, the effectiveness of polytechnic education depended on curriculum relevance, adequacy of practical facilities, quality of teaching, industrial exposure and collaboration between institutions and employers.

Empirical studies reinforced these arguments. Nwajiuba et al. (2020) highlighted the importance of stakeholder collaboration; Okolie et al. (2019) emphasized technical and generic skills; Otache (2022) demonstrated the importance of polytechnic-industry collaboration; and studies that are more recent established the contribution of work-integrated learning and digital literacy to employability.

Human Capital Theory provided the theoretical explanation for the study by linking investment in education, training and skills with increased productive capacity and employability. The review nevertheless demonstrated that human capital alone was insufficient; institutional and labour market conditions influenced the extent to which acquired competencies translated into employment opportunities.

Overall, the literature indicated the need for a more integrated empirical investigation of graduate employability within Nigerian polytechnics. The identified contextual, conceptual and methodological gaps provided the justification for the present study.

Methodology

Research Design

This study adopted a **systematic literature review design** to examine the relationship between skill acquisition programmes and graduate employability in Nigerian tertiary institutions, with particular contextual attention to federal polytechnics in Southeast Nigeria. The design was

appropriate because the study synthesized existing scholarly, empirical, and institutional evidence rather than generating primary quantitative or qualitative data. The review adopted a thematic and integrative orientation, drawing evidence from education, technical and vocational education and training (TVET), entrepreneurship, labour-market studies, digital skills, work-integrated learning, and graduate employability. This approach enabled the study to identify recurring patterns, areas of convergence and divergence, implementation constraints, and gaps in the existing body of knowledge.

Sources of Evidence

Relevant evidence was drawn from peer-reviewed journal articles, scholarly books, policy documents, institutional reports, and publications of recognized national and international organizations. Literature was searched through major scholarly databases and platforms, including **Scopus, Web of Science, Google Scholar, ScienceDirect, SpringerLink, and Emerald Insight**. Relevant publications of the **International Labour Organization (ILO), UNESCO, National Board for Technical Education (NBTE), National Universities Commission (NUC)**, and other Nigerian education and skills-development agencies were also considered.

The review focused primarily on studies published between **2020 and 2026**, while seminal theoretical and conceptual works were retained where they provided important foundations for understanding the relationship between education, skills development, and employability. Particular attention was given to studies addressing skill acquisition, graduate employability, polytechnic education, entrepreneurship education, technical and vocational training, work-integrated learning, industrial attachment, digital competence, curriculum relevance, and institution–industry collaboration.

Selection Criteria

Studies were included where they directly addressed one or more of the following areas: skill acquisition, graduate employability, technical and vocational education, entrepreneurship education, practical training, workplace learning, industrial attachment, digital skills, curriculum relevance, or graduate transition into employment. Priority was given to empirical studies conducted in Nigeria and, where necessary, comparable developing-country contexts. Studies that lacked a clear relationship with tertiary education, skills development, or employability were excluded. Seminal theoretical works were retained irrespective of publication date where their conceptual relevance was essential to the theoretical foundation of the study.

Analytical Procedure

The selected literature was subjected to **thematic content analysis**. The evidence was organized into interconnected thematic categories comprising:

- (i) Technical and Vocational Skill Acquisition
- (ii) Entrepreneurship Education
- (iii) Digital Skills Development
- (iv) Practical and Experiential Learning
- (v) Workplace Exposure and Industrial Training
- (vi) Institution–industry Collaboration

- (vii) Institutional capacity and infrastructure
- (viii) Curriculum relevance and Graduate Employability outcomes.

The analysis involved comparing findings across the reviewed studies to identify recurring patterns, areas of agreement and disagreement, implementation challenges, and unresolved research issues. Particular attention was given to the conditions under which skill acquisition translated into demonstrable competence and improved employability. The resulting synthesis provided the basis for the discussion, policy implications, and development of the proposed **Skills-to-Employability Framework**.

Contextual Focus

1032

Although the review addressed Nigerian tertiary institutions broadly, particular contextual attention was given to federal polytechnics in Southeast Nigeria, especially **Federal Polytechnic Oko, Federal Polytechnic Nekede, and Akanu Ibiam Federal Polytechnic, Unwana**. These institutions provided a relevant contextual setting because federal polytechnics occupy an important position within Nigeria's technical and vocational education system and are expected to combine academic instruction with practical, technological, entrepreneurial, and occupational skills development.

The study did not claim to have generated primary data from these institutions. Rather, they served as contextual reference points for interpreting the reviewed evidence and drawing implications for polytechnic education in Southeast Nigeria.

Findings of the Systematic Literature Review

Skill Acquisition and Employability: The reviewed literature indicated that skill acquisition programmes enhanced graduates' employability by complementing academic knowledge with technical, entrepreneurial, digital, and transferable competencies. Okolie et al. (2020) emphasized the importance of competency-based and experiential learning in developing employability capabilities, while Jackson and Tomlinson (2020) noted that employability was strengthened when academic learning was integrated with practical experience.

Practical Competence and Experiential Learning: The evidence showed that programme participation alone did not guarantee employability. Practical projects, workplace exposure, use of relevant equipment, problem-solving activities, and interaction with practitioners were more likely to produce demonstrable competence. Thus, the effectiveness of skill acquisition depended not only on programme availability but also on the quality and intensity of practical learning.

Entrepreneurship and Digital Skills: Entrepreneurship education contributed to entrepreneurial orientation, opportunity recognition, innovation, and self-employment capacity. However, its effectiveness was greater when supported by practical enterprise development and mentoring. Similarly, digital competence had become an essential component of employability, requiring graduates to demonstrate capabilities in digital productivity, communication, information management, data literacy, and technology-enabled problem-solving.

Industry Collaboration and Institutional Capacity: The literature identified institution-industry collaboration as an important mechanism for connecting academic learning with workplace requirements. Industrial attachment, SIWES, internships, practitioner involvement, and employer participation in curriculum development strengthened this connection. However,



inadequate funding, obsolete equipment, weak digital infrastructure, limited staff capacity, and insufficient industry linkages constrained programme effectiveness. These findings indicated that **implementation quality was a critical determinant of employability outcomes**.

Policy-Implementation Gap: The review further revealed a persistent gap between policy intentions and institutional implementation. Although Nigerian education and skills-development policies emphasized entrepreneurship, technical education, practical learning, and employability, implementation remained uneven because of resource limitations, weak monitoring, outdated curricula, and inadequate institutional-industry linkages.

Discussion

The findings supported the proposition of Human Capital Theory that investment in education and training enhanced productive capacity and labour-market outcomes (Becker, 1964). They also reinforced Tomlinson's (2012) employability perspective, which emphasized the combined importance of disciplinary knowledge, transferable skills, experience, and personal capabilities. However, the evidence demonstrated that the relationship between skill acquisition and employability was **not automatic**. Qualifications and programme participation became more valuable when supported by practical competence, relevant curricula, adequate infrastructure, digital integration, competent instructors, and industry engagement.

The findings therefore suggested the following relationship:

Skill Acquisition → Practical Competence → Employment Readiness → Graduate Employability: This relationship was conditioned by **programme quality, institutional capacity, curriculum relevance, industry collaboration, and technological integration**. The implication was that polytechnic education needed to move beyond education primarily for certification towards education that demonstrated what graduates could actually do.

Proposed Skills-to-Employability Framework: Based on the reviewed evidence, the study proposed a **Skills-to-Employability Framework** comprising four interconnected levels:

Level	Key Components
Input: Skill Acquisition	Technical/vocational training, entrepreneurship, digital skills, practical training, SIWES/internships
Process: Implementation Quality	Infrastructure, equipment, instructor competence, curriculum relevance, practical intensity, industry participation
Competence: Graduate Capabilities	Technical and digital competence, problem-solving, communication, teamwork, adaptability, entrepreneurial orientation
Outcome: Employability	Employment readiness, workplace competence, employment prospects, career adaptability, entrepreneurship and self-reliance

The framework emphasizes that the effectiveness of skill acquisition should be assessed by **measurable competencies and labour-market outcomes rather than programme availability alone**.

Implications for Nigerian Polytechnics

The findings have several implications for federal polytechnics, including Federal Polytechnic Oko, Federal Polytechnic Nekede, and Akanu Ibiam Federal Polytechnic, Unwana.

1. **Competence-based training:** Greater emphasis should be placed on practical projects, simulations, laboratory activities, enterprise development, and industry-based assignments.
2. **Curriculum modernization:** Employers, professional bodies, alumni, and industry practitioners should participate more meaningfully in curriculum review.
3. **Digital integration:** Digital skills should be embedded across disciplines rather than restricted to ICT-related programmes.
4. **Industry partnerships:** Institutions should develop sustained partnerships involving internships, curriculum development, mentorship, practitioner teaching, research, and technology transfer.
5. **Graduate tracking:** Polytechnics should strengthen tracer systems to monitor employment, self-employment, relevance of training to employment, and employer assessment of graduate competence.

Policy Recommendations

Based on the evidence, the study recommends that:

1. **NBTE** should strengthen industry-informed curriculum review and ensure greater responsiveness to technological and occupational changes.
2. **TETFund and government** should prioritize modern training facilities, digital infrastructure, staff development, and industry-linked skills programmes.
3. **Polytechnic management** should integrate skills development, entrepreneurship, career services, industry collaboration, and graduate tracking into institutional employability strategies.
4. **Industry stakeholders** should participate more actively in curriculum development, internships, mentorship, workplace learning, and technology transfer.
5. **Polytechnics** should strengthen competency-based assessment and evaluate programmes using measurable graduate outcomes.
6. **Future researchers** should undertake longitudinal and comparative studies to establish the long-term relationship between skill acquisition and graduate employment outcomes.

Contribution to Knowledge

The study contributed to the literature by integrating **technical skills, entrepreneurship, digital competence, practical learning, institutional capacity, and industry collaboration** within a unified Skills-to-Employability Framework. It further demonstrated that the existence of skill acquisition programmes did not automatically produce employable graduates; rather, **implementation quality constituted a critical link between skills development and employability outcomes**. The framework also provided a conceptual basis for subsequent empirical investigation of skill acquisition and graduate employability in Nigerian federal polytechnics.

Conclusion

The systematic review established that skill acquisition programmes constituted an important pathway to graduate employability in Nigerian tertiary institutions. Technical and vocational training, entrepreneurship education, digital skills, practical learning, and workplace exposure

strengthened graduates' employment readiness and capacity for self-reliance. However, programme availability alone was insufficient. Employability outcomes depended substantially on **practical intensity, institutional capacity, curriculum relevance, instructor competence, technological integration, and industry collaboration**.

The study therefore concludes that Nigerian polytechnics needed to move from **programme provision to competence development** by making skill acquisition practical, industry-connected, technologically relevant, and outcome-oriented. This shift was essential for strengthening the capacity of polytechnic graduates to respond effectively to changing labour-market demands.

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