Repositioning Human Resource Development in Nigerian Polytechnics for Future Skills and TVET Workforce Capability: An Integrative Conceptual Framework

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ABSTRACT

Rapid technological change, artificial intelligence, digitalisation, demographic shifts and the transition towards greener economies are changing the capabilities required in education and work. Technical and Vocational Education and Training (TVET) institutions therefore need not only updated curricula and technologies but also staff who can continually learn, adapt and translate new knowledge into effective teaching, research, industry engagement and institutional practice. This paper develops an integrative conceptual framework for repositioning Human Resource Development (HRD) in Nigerian polytechnics around future skills and TVET workforce capability. The paper adopts an integrative conceptual-review approach. Relevant scholarly literature and authoritative policy and institutional documents were purposively identified through targeted searches of academic and institutional sources using combinations of terms relating to HRD, future skills, digital competence, TVET, polytechnics, workforce capability, lifelong learning and staff development. Sources were screened for relevance to the paper's constructs, Nigerian or comparable TVET context, and conceptual or policy significance; the selected evidence was thematically synthesised rather than statistically pooled. No primary data, respondents, statistical tests or empirical effect estimates are reported. The resulting framework links seven HRD domains—training and development, career development, leadership development, coaching and mentoring, digital-skills development, performance development and organisational development—to four future-skill domains: digital and technological capability; cognitive and problem-solving capability; interpersonal and leadership capability; and adaptability, creativity and lifelong learning. These capabilities are proposed to strengthen institutional workforce capability in teaching and learning, curriculum implementation, research and innovation, digital delivery, change leadership and industry engagement, which in turn may support relevant curricula, quality teaching and learning, industry responsiveness, employability orientation and institutional adaptability. Organisational conditions—including leadership support, resources, infrastructure, institutional culture and industry partnerships—are positioned as contextual factors that can strengthen or weaken these relationships. The paper contributes a testable conceptual model rather than a claim of demonstrated causality and identifies implications for polytechnic management, NBTE, policymakers and future empirical research.

Keywords: Human Resource Development; Nigerian Polytechnics; Future Skills; TVET; Workforce Capability; Staff Development; Digital Competence

INTRODUCTION

Human Resource Development (HRD) has increasingly moved beyond a narrow emphasis on training courses towards a broader concern with developing and applying human expertise for individual, team, work-process and organisational performance [1]. This broader orientation is particularly relevant to educational institutions because the quality of teaching, curriculum implementation, research, industry engagement and institutional adaptation depends substantially on the capabilities of the people who perform these functions. For polytechnics, the issue is especially important because their mandate is closely connected with technical knowledge, occupational competence, applied learning and the changing needs of industry.

The contemporary world of work is being reshaped by technological change, artificial intelligence, digitalisation, economic restructuring, demographic change and the green transition. The World Economic Forum's Future of Jobs Report 2025 indicates that employers anticipate substantial changes in core skills by 2030 and highlights analytical thinking, resilience, flexibility, leadership, creative thinking, technological literacy and lifelong learning among important capabilities for changing work environments [2]. These developments make continuous learning and workforce development central to institutional and economic resilience rather than optional activities.

International TVET policy has similarly shifted towards future-oriented, inclusive and sustainable skills systems. UNESCO's TVET Strategy 2022–2029 emphasises the transformation of TVET for successful and just transitions, including transitions towards more digital, green and inclusive economies and societies [3]. UNESCO-UNEVOC further identifies stronger alignment between TVET provision and industry demand, digital transformation, green transformation and modern pedagogies as important dimensions of future-focused TVET [4]. The ILO and African Development Bank also stress the need for stronger TVET and productive-sector linkages in Africa so that skills systems can respond to changing labour-market requirements [5].

These global developments have direct implications for Nigeria. The Federal Ministry of Education has published a National Policy on Skills Development in Formal and Non-Formal Education in Nigeria, while the National Board for Technical Education (NBTE) continues to develop curricula, occupational standards, digital platforms and other mechanisms intended to strengthen the country's TVET system [6,7]. NBTE has also implemented digital competency training for TVET teachers, demonstrating that staff capability is already recognised as part of the transformation agenda [8]. The World Bank's 2024 assessment of digital skills in Nigeria similarly draws attention to the importance of digital capabilities and the enabling conditions required for their development [9].

Despite these developments, a conceptual gap remains in how HRD can be positioned as an integrated institutional mechanism for connecting staff development with future skills and TVET workforce capability in Nigerian polytechnics. Staff training, digital competence, leadership development, career development, performance improvement and organisational development are often discussed separately. A more integrated HRD perspective can bring these strands together and explain how investment in people may support institutional capacity to deliver future-oriented TVET. This paper therefore develops a conceptual framework that links HRD inputs, future skills, workforce capability and TVET outcomes in Nigerian polytechnics.

PROBLEM STATEMENT

The central problem addressed by this paper is the conceptual fragmentation of staff development and institutional capability within the changing TVET environment. Polytechnics are expected to prepare learners for occupations affected by technological and economic change, yet the people responsible for delivering this mission must themselves continually update their knowledge, pedagogical practices, digital competence, industry awareness and leadership capabilities. A curriculum may be formally revised, but curriculum reform cannot produce its intended outcomes if the human capabilities required to interpret, deliver, evaluate and continuously improve that curriculum are not developed alongside it.

Evidence from international policy literature points to a growing requirement for lifelong learning, reskilling and upskilling. The OECD describes lifelong learning as a foundation for navigating changing labour-market conditions and emphasises the importance of transversal skills and adult learning [10]. The ILO's Strategy on Skills and Lifelong Learning 2030 similarly positions skills development and lifelong learning as mechanisms for responding to digital and green transitions, resilience and decent work [11]. These perspectives imply that institutions responsible for skills formation must also become learning-oriented organisations.

In Nigeria, regulatory and policy initiatives show movement in this direction. NBTE identifies curriculum delivery, industry liaison, ICT use and staff capacity development as important aspects of the polytechnic system [7]. Its digital competency intervention for TVET teachers also demonstrates the practical need to strengthen teachers' capacity to use digital tools, develop digital content, collaborate and solve problems through technology [8]. However, these initiatives do not by themselves constitute a comprehensive HRD framework connecting individual development, organisational capability and TVET outcomes.

The conceptual problem is therefore not simply whether Nigerian polytechnic staff require training. The more important issue is the mechanism through which HRD is translated into usable and collective capability. A staff member may attend a digital-skills course but remain unable to apply the learning because of inadequate connectivity, limited equipment, unsupportive supervision, workload pressures or the absence of relevant work processes. Conversely, an institution may invest in technology without developing the pedagogical, analytical and change-management capabilities needed to use it effectively. The framework therefore distinguishes HRD inputs from future-skill capabilities and from institutional workforce capability, while treating organisational conditions as contextual factors that may strengthen or constrain the pathway.

This paper addresses that gap by synthesising relevant literature and policy evidence and proposing a conceptual framework. Because the paper is conceptual, it does not claim that the proposed relationships have been empirically established in Nigerian polytechnics. Instead, it specifies theoretically informed relationships that can be examined through future empirical research.

OBJECTIVES OF THE PAPER

1. To examine the conceptual relationship between Human Resource Development and future skills development in Nigerian polytechnics.
2. To identify HRD practices that can support the capability of academic and professional staff in a changing TVET environment.
3. To examine how future-oriented staff capabilities can contribute to broader TVET workforce capability.
4. To develop a conceptual framework linking HRD interventions, future skills, workforce capability and TVET outcomes.
5. To propose directions for future empirical research, institutional practice and policy development.

CONCEPTUAL AND THEORETICAL FOUNDATION

Scope and Interpretive Caution

The review does not claim systematic-review completeness, meta-analytic evidence or causal verification. The propositions are theoretically informed expectations that require empirical testing. The distinction is important because staff training can fail to translate into improved performance when infrastructure, leadership support, work design, incentives or opportunities for application are inadequate. Accordingly, the framework treats organisational conditions as contextual influences rather than assuming a simple training-to-outcome pathway.

Data Extraction and Synthesis

The selected literature was organised around five analytical questions: What does strategic HRD mean in a polytechnic/TVET context? What future-oriented capabilities are increasingly required? Through what mechanisms can HRD influence staff and institutional capability? Which organisational conditions may strengthen or weaken those relationships? What TVET outcomes can reasonably be linked conceptually to stronger workforce capability? Evidence was coded thematically and compared across sources. Convergent ideas were grouped into the framework's constructs, while limitations and contextual differences were retained rather than treated as evidence of universal relationships**.**

Eligibility and Selection Principles

Sources were considered relevant when they (a) addressed HRD, staff capability, future skills, lifelong learning, digital transformation, TVET or related institutional-capability issues; (b) provided conceptual, empirical or policy evidence applicable to tertiary technical education; or (c) supplied an authoritative framework or definition required for the conceptual model. Sources were excluded when they were unrelated to the constructs, duplicated another source, lacked sufficient bibliographic information for verification, or offered claims that could not be reasonably connected to the paper's research problem. Because this is an integrative conceptual review, selection was purposive and relevance-based rather than governed by a statistical quality score.

Source Identification and Search Focus

Source identification was guided by combinations of the following search concepts: “human resource development” AND polytechnic; “staff development” AND TVET; “future skills” AND technical vocational education; “digital competence” AND TVET teachers; “workforce capability” AND higher education; “career development” AND academic staff; “leadership development” AND polytechnic; and “industry engagement” AND TVET. Searches were directed towards scholarly literature and authoritative institutional sources, including peer-reviewed literature accessible through academic search services and official publications from UNESCO, UNESCO-UNEVOC, the International Labour Organization, OECD, World Bank, Federal Ministry **of** Education and NBTE. The search was supplemented by backward reference checking of conceptually important sources. The review prioritised recent evidence, especially 2020–2026, while retaining foundational works where they provide the theoretical basis for a construct.

Review Design

This paper uses an integrative conceptual-review design. Integrative reviews are appropriate when a researcher needs to bring together conceptual, theoretical, empirical and policy literature in order to develop a broader explanation of a problem and generate directions for future research (Torraco, 2016). The objective here is not to estimate a pooled effect or claim the exhaustive coverage expected of a systematic review. Instead, the review synthesises evidence relevant to the proposed relationship among HRD interventions, future skills, workforce capability and TVET outcomes.

INTEGRATIVE REVIEW METHODOLOGY

HRD is concerned with the development and application of human expertise to improve performance at individual, team, work-process and organisational levels [1]. This definition is useful for polytechnics because it avoids treating staff development as an isolated event. A workshop, seminar or qualification may contribute to development, but HRD also concerns how newly developed expertise is applied within work processes and organisational systems.

For this paper, HRD is conceptualised as an integrated system comprising training and development, career development, leadership development, coaching and mentoring, digital skills development, performance development and selected organisational-development practices. The purpose is not to suggest that every institution must implement identical interventions. Rather, the framework provides a set of mutually reinforcing domains that can be adapted to institutional priorities and staff needs.

Human Capital Theory

Human Capital Theory provides a useful foundation because education, knowledge and skills can be understood as investments that enhance productive capabilities [12]. In a polytechnic, investment in staff learning may strengthen teaching, curriculum implementation, research, student support, industry engagement and institutional problem solving. The theory therefore helps explain why staff development can have implications beyond the individual employee.

The theory should nevertheless be applied cautiously. Not every training activity automatically improves institutional outcomes. The value of staff development depends on relevance, quality, opportunities to apply learning, organisational support, leadership, resources and alignment with institutional goals. Consequently, the framework treats HRD as a capability-building process rather than assuming a simple training-to-performance relationship.

Resource-Based View

The Resource-Based View (RBV) complements the human-capital perspective by drawing attention to organisational resources and capabilities that can contribute to sustained performance when they are valuable and difficult to substitute or imitate [13]. In the context of polytechnics, the relevant issue is not merely the number of staff who have attended training but whether the institution can develop collective capabilities—

such as curriculum innovation, digital teaching, applied research, industry engagement and continuous improvement—that are embedded in organisational routines.

Integrative Review Logic

The paper follows an integrative review logic. Torraco describes integrative literature review as a form of research that synthesises existing literature to create new knowledge and can be used to identify future directions for research, policy and practice [14]. The present paper therefore does not attempt to calculate an effect size or claim systematic-review completeness. Its purpose is to integrate conceptual and policy literature into a coherent framework that can guide subsequent empirical investigation.

CONCEPTUAL REVIEW OF KEY CONSTRUCTS

Human Resource Development in Polytechnics

Polytechnics are knowledge-intensive and practice-oriented institutions. Their staff are required to combine disciplinary knowledge, pedagogical knowledge, technical competence, assessment capability, research skills, digital literacy and awareness of occupational developments. HRD in this context should therefore be broader than routine attendance at seminars. It should include systematic identification of capability requirements, development opportunities, application of learning, performance support and organisational learning.

A strategic HRD orientation begins with institutional goals and asks what capabilities are required to achieve them. For example, if a polytechnic seeks to expand digital learning, staff development must include digital pedagogy, content development, assessment in online or blended environments, data literacy and appropriate use of emerging technologies. If the goal is stronger industry relevance, HRD may include industrial attachment for staff, industry partnerships, collaborative curriculum development and professional updating. This alignment is consistent with international TVET approaches that emphasise stronger links between training institutions and productive sectors [5].

Training and Development

Training and development remain important components of HRD because staff need opportunities to acquire, update and apply knowledge and skills. Contemporary development should, however, move beyond one-off workshops towards blended and continuous approaches that may include short courses, communities of practice, mentoring, peer learning, professional certification, industry exposure and work-based projects. The appropriate method depends on the capability gap and the intended performance outcome.

Career Development

Career development connects individual aspirations with institutional capability. In polytechnics, career pathways can include progression in teaching, research, academic leadership, technical expertise, industry engagement and educational management. Transparent career development can support motivation and retention while helping institutions identify and prepare future leaders. Talent-development literature also emphasises the importance of structures that enable organisations to develop and deploy talent in ways aligned with strategic needs [15].

Leadership Development

Leadership development is relevant because institutional transformation requires leaders who can coordinate people, resources, technology and partnerships. Future-oriented leadership in polytechnics involves more than administrative compliance. It includes change leadership, strategic thinking, collaborative problem solving, staff development, stakeholder engagement and the ability to create conditions for innovation and learning. The framework therefore treats leadership development as an HRD intervention that can influence the institutional environment in which other forms of staff development are applied.

Coaching and Mentoring

Coaching and mentoring can provide continuous, context-sensitive learning. Coaching may support performance improvement and problem solving, while mentoring can facilitate professional identity, career development, tacit knowledge transfer and succession. In polytechnics, these approaches can be used to support early-career lecturers, emerging academic leaders, technical staff and colleagues adopting new digital or pedagogical practices.

Digital Skills Development

Digital transformation changes both what TVET institutions teach and how they teach it. UNESCO-UNEVOC notes that digital transformation creates new skill requirements and requires TVET institutions to make effective use of technology in teaching and learning [4]. Nigeria's policy environment also recognises teacher capacity building as important to digital learning, and NBTE has implemented digital competency training for TVET teachers [8,16]. Digital skills development should therefore include both basic digital literacy and higher-order capabilities such as digital content creation, online collaboration, data-informed decision making, cybersecurity awareness, responsible AI use and technology-enabled pedagogy.

Performance Development

Performance development links capability building to work outcomes. In an educational institution, performance should not be reduced to numerical output. Relevant dimensions may include teaching quality, curriculum implementation, assessment quality, research and innovation, student support, industry engagement, digital practice, community service and institutional contribution. HRD becomes strategically meaningful when development activities are connected to genuine performance needs and when staff receive opportunities and resources to apply what they learn.

Organisational Development and Learning

Individual development can have limited institutional effect when organisational systems do not support learning. Organisational development therefore forms an important bridge between individual HRD and institutional capability. Learning-oriented polytechnics can encourage knowledge sharing, reflective practice, collaboration, innovation and evidence-based improvement. This perspective also recognises that capability is partly collective: an institution may possess highly skilled individuals but still struggle if systems for coordination, knowledge transfer and decision making are weak.

FUTURE SKILLS AND THE FUTURE OF WORK

Future skills are not a single fixed list. They change as technologies, occupations, production systems and social expectations change. Current international evidence nevertheless points to a combination of technological, cognitive, socio-emotional and adaptive capabilities. The World Economic Forum's 2025 report identifies analytical thinking, resilience, flexibility and agility, leadership and social influence, creative thinking, technological literacy, curiosity and lifelong learning among important skills, while AI and big data, networks and cybersecurity and technological literacy are among the fastest-growing skill areas [2].

For polytechnic staff, future skills should be interpreted in relation to teaching, research, administration and technical practice. Digital competence is necessary but insufficient. Staff also require analytical thinking, creativity, problem solving, communication, collaboration, adaptability and a commitment to lifelong learning. The OECD similarly highlights the role of transversal skills and lifelong learning in helping people navigate changing labour-market conditions [10].

The framework therefore groups future skills into four broad domains: (1) digital and technological capability; (2) cognitive and problem-solving capability; (3) interpersonal and leadership capability; and (4) adaptability, creativity and lifelong-learning capability. These categories are analytical rather than exhaustive. Their purpose is to organise the literature and provide a practical bridge between HRD interventions and workforce capability.

TVET AND THE ROLE OF NIGERIAN POLYTECHNICS

TVET connects education and the world of work. UNESCO's current TVET strategy emphasises skills development for empowerment, productive employment and decent work and seeks more digital, green and inclusive TVET systems [3]. The ILO and African Development Bank similarly identify stronger links among TVET institutions, industry and social partners as important for improving labour-market relevance in Africa [5].

Nigeria's polytechnic system forms an important part of the country's technical and vocational skills ecosystem. NBTE regulates and supports programmes, curricula, occupational standards, quality assurance and institutional development within its mandate [7]. The Board's current resources include curricula, National Occupational Standards, procedures for programme establishment, digital platforms and guidance related to TVET delivery [7]. These functions show that quality TVET requires both appropriate programmes and the institutional capability to implement them effectively.

The implication for HRD is straightforward but important: curriculum and regulatory reform must be accompanied by workforce development. Staff must have the capability to interpret occupational standards, design learning experiences, use appropriate technology, engage industry, assess practical competence and continuously improve programmes. This makes staff HRD an institutional issue rather than only a personnel-management issue.

LITERATURE SYNTHESIS AND IDENTIFIED GAP

The reviewed literature converges around four connected themes. First, HRD is increasingly understood as a capability-building function rather than only a training function [1]. Second, changing work requires combinations of technological, cognitive, interpersonal and adaptive capabilities [2,10]. Third, contemporary TVET policy emphasises stronger links with industry, digital transformation, lifelong learning and, increasingly, green transitions [3–5]. Fourth, Nigerian policy initiatives recognise staff capacity, digital learning and skills development as components of education and TVET transformation [6–9,16]. The unresolved issue is not the existence of these separate agendas but their integration within a coherent institutional HRD model for Nigerian polytechnics.

What is less clearly integrated is the institutional pathway connecting these agendas. Studies and policy documents can identify teacher development, digital learning, curriculum reform, employability, industry engagement or TVET transformation as separate priorities, but a conceptual explanation is still needed of how these elements interact. The gap identified in this paper is therefore an integration and operationalisation gap: how should HRD practices be organised; what future-oriented capabilities should they build; what organisational conditions enable application; and how might those capabilities contribute to wider TVET workforce capability? This formulation avoids the unsupported claim that Nigerian research has ignored the topic entirely and instead identifies a specific framework-building need.

This gap should not be interpreted as proof that no Nigerian studies exist. Rather, it indicates a need for additional integrative conceptualisation and empirical testing. Recent Nigerian evidence also demonstrates continuing attention to HRD and staff-development challenges in polytechnics, reinforcing the relevance of the research area while showing that context-specific empirical work remains valuable [1].

Construct Operationalisation for Future Empirical Testing

To make the framework empirically usable, the principal constructs should be operationalised as follows: HRD interventions can be assessed through the availability, quality, relevance and strategic alignment of training and development, career development, leadership development, coaching/mentoring, digital-skills development, performance development and organisational-development practices. Future-oriented staff capability can be assessed through digital and technological capability, analytical thinking, problem solving, creativity, communication/collaboration, adaptability and lifelong learning. Workforce capability can be assessed through teaching and learning capability, curriculum implementation, research and innovation, digital delivery, change leadership and industry engagement. TVET outcomes can be examined through curriculum relevance, quality

of teaching and learning, industry responsiveness, employability orientation and institutional adaptability. Contextual moderators should be measured separately so that the proposed mechanism is not confused with enabling conditions.

PROPOSED CONCEPTUAL FRAMEWORK

The proposed framework consists of four connected layers. The first layer is HRD intervention. The second is future-oriented staff capability. The third is broader institutional and TVET workforce capability. The fourth is expected TVET-related outcomes. The arrows represent proposed relationships for future empirical testing; they do not represent established causal effects from this conceptual review.

HRD Interventions	Future Skills / Staff Capability	Workforce Capability	TVET Outcomes
Training and development	Digital and technological literacy	Teaching and learning capability	Relevant curricula
Career development	Analytical thinking	Curriculum implementation capability	Quality teaching and learning
Leadership development	Problem solving	Research and innovation capability	Industry responsiveness
Coaching and mentoring	Creativity	Industry engagement capability	Future-ready skills development
Digital skills development	Communication and collaboration	Digital delivery capability	Employability orientation
Performance development	Adaptability and resilience	Change and leadership capability	Institutional adaptability
Organisational development	Lifelong learning		

Figure 1. Proposed HRD–Future Skills–TVET Workforce Capability Framework

The framework proposes a sequential but non-mechanical pathway. HRD interventions create opportunities to acquire, deepen and apply expertise; application and organisational support are expected to shape future-oriented staff capability; and collective use of those capabilities may strengthen institutional workforce capability. Organisational conditions—leadership support, resources, infrastructure, institutional culture, workload arrangements and industry partnerships—may moderate the strength of these relationships. Feedback can also operate in the reverse direction: improved workforce capability can generate new learning needs, while weak infrastructure or poor implementation can create capability gaps that require another cycle of needs assessment and development. The arrows in Figure 1 therefore represent propositions for empirical examination, not established causal effects.

Proposed Propositions

- P1: Strategic alignment of HRD practices with institutional goals, curriculum requirements and occupational/industry needs will be positively associated with future-oriented staff capability.
- P2: Digital-skills development will be positively associated with technology-enabled teaching and work capability, with the relationship strengthened where staff have adequate infrastructure, leadership support and opportunities to apply the skills.
- P3: Leadership development, coaching and mentoring will be positively associated with knowledge sharing, change readiness and collective institutional capability.
- P4: Future-oriented staff capability will be positively associated with institutional workforce capability in teaching and learning, curriculum implementation, research and innovation, digital delivery and industry engagement.
- P5: Organisational conditions—including leadership support, resources, infrastructure, institutional culture and industry partnerships—will moderate the relationship between HRD interventions and TVET-related workforce capability.

DISCUSSION

The proposed framework shifts the discussion of HRD in polytechnics from isolated training events to an integrated capability system. This is important because future skills are not acquired only through formal courses. They are developed through repeated opportunities to learn, practise, receive feedback, solve authentic problems and apply knowledge. A strategic HRD system should therefore connect formal learning with workplace learning and organisational support.

The framework also distinguishes between individual skill development and institutional capability. A lecturer may acquire digital skills without the institution having the infrastructure, policies or leadership support necessary for meaningful application. Conversely, an institution may purchase digital platforms without developing staff capability to use them pedagogically. The framework addresses this problem by positioning organisational development and performance support alongside training and digital skills development.

Another implication is that future skills should be contextualised rather than treated as generic employability slogans. In a polytechnic, analytical thinking may appear in practical problem solving; creativity may appear in project design; digital literacy may involve simulation, computer-aided design, data analysis or digital content; collaboration may involve interdisciplinary and industry projects; and adaptability may involve learning new equipment, processes or occupational standards. HRD should therefore begin with a needs assessment connected to actual institutional and occupational requirements.

The framework is also consistent with the direction of international TVET policy. UNESCO emphasises digital and green transformation, industry engagement and innovation [3,4], while the ILO emphasises skills systems that respond to changing labour markets and lifelong learning [5,11]. The Nigerian context provides complementary policy signals through the national skills-development agenda, digital-learning policy and NBTE interventions [6–8,16].

IMPLICATIONS FOR PRACTICE AND POLICY

Implications for Polytechnic Management

- Develop institution-wide HRD plans based on periodic training-needs and capability-gap analyses rather than relying mainly on ad hoc workshops.
- Link staff development priorities to institutional strategic plans, curriculum requirements, digital transformation plans and industry needs.
- Create structured mentoring and coaching arrangements for early-career academic and professional staff.
- Develop leadership pipelines so that emerging academic and administrative leaders receive systematic preparation for change management and institutional development.
- Evaluate staff development by examining application and performance improvement, not only attendance or certificates.

Implications for NBTE and Policymakers

- Encourage staff-capability standards and development expectations alongside curriculum and programme standards.
- Strengthen mechanisms for industry exposure, industrial attachment, professional updating and industry-academic collaboration for relevant TVET staff.
- Support digital competency development while also addressing infrastructure, connectivity, content, support and responsible technology use.
- Promote data systems that enable institutions to identify workforce capability gaps and monitor staff-development outcomes.
- Align future skills initiatives with national occupational standards, emerging sectors and the broader skills-development policy environment.

Implications for Research

- Test the proposed relationships using survey, mixed-methods or longitudinal designs across Nigerian polytechnics.
- Examine whether HRD practices predict specific dimensions of staff capability and institutional performance.
- Compare federal, state and private polytechnics where data permit.
- Investigate how organisational culture, leadership support, infrastructure and industry partnerships moderate HRD outcomes.
- Develop and validate a Nigerian Polytechnic HRD–Future Skills Capability Scale.

LIMITATIONS

This paper is conceptual and therefore does not provide primary empirical evidence. It does not claim to estimate the magnitude or direction of causal relationships among the constructs. The framework is based on an integrative reading of selected scholarly and institutional sources and may not capture every relevant publication or institutional context. In addition, the concept of future skills is dynamic; specific technologies and occupational requirements will continue to change. The proposed framework should therefore be treated as a researchable model rather than a final or universal explanation.

DIRECTIONS FOR FUTURE EMPIRICAL RESEARCH

Future studies should operationalise the constructs in the framework and test them in Nigerian polytechnics. A first stage could involve qualitative interviews with management, academic staff, professional staff, students and industry partners to identify context-specific HRD and future-skill requirements. A second stage could develop survey measures from those findings and test relationships among HRD practices, future skills, workforce capability and selected institutional outcomes. Longitudinal research would be especially useful because capability development and organisational change take time.

Future studies should also avoid treating digitalisation as synonymous with technological acquisition. Research should examine how technology is actually used in teaching, assessment, research, administration and industry engagement. Similarly, future-skill research should distinguish between generic skills and occupation-specific technical competencies. Such distinctions would improve the practical usefulness of the proposed framework.

CONCLUSION

This paper has proposed a conceptual framework for repositioning Human Resource Development in Nigerian polytechnics around future skills and TVET workforce capability. The central argument is that staff development should be understood as a strategic capability-building process that connects learning, performance and organisational development. Training and development, career development, leadership development, coaching and mentoring, digital skills development and performance development can provide complementary mechanisms for building future-oriented staff capabilities.

The framework connects these HRD interventions with digital and technological capability, analytical thinking, creativity, problem solving, collaboration, adaptability and lifelong learning. It then connects staff capability with broader workforce capability in curriculum implementation, teaching and learning, research, innovation, digital delivery and industry engagement. The final outcomes concern the capacity of polytechnics to contribute to relevant, future-oriented and responsive TVET.

The framework is deliberately presented as conceptual. Its proposed relationships require empirical testing before claims of effectiveness can be made. Nevertheless, the synthesis provides a coherent basis for future research and offers a practical way to connect HRD with the wider transformation of Nigerian polytechnic and TVET systems. In a period of rapid technological, economic and environmental change, developing the people who deliver technical education is itself an essential component of developing the workforce that technical education is intended to serve.

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