


Chapter 5

Empowering Inclusive Vocational Education Through Technology-Enhanced Learning: A Framework for Equity and Access

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ABSTRACT

The expansion of Technology-Enhanced Learning (TEL) in vocational education provides opportunities for innovation yet poses challenges for ensuring inclusion, particularly for learners with disabilities. This chapter, as per the authors, critically examines the intersection of TEL, vocational education, and disability rights through an equity-focused framework. Drawing on critical disability theory, Universal Design for Learning (UDL), and policy instruments such as the UNCRPD and India's RPwD Act, 2016, it highlights systemic barriers including inaccessible platforms, untrained educators, and digital divides. The discussion emphasizes inclusive design principles, pedagogical innovations, and institutional reforms that support accessible vocational training. Case studies from low-resource and emerging contexts illustrate practical pathways toward equity. Ultimately, the chapter proposes a comprehensive framework for embedding inclusivity in vocational teacher education through TEL, offering guidance for educators, policymakers, and EdTech stakeholders.

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1. INTRODUCTION

Vocational Education and Training (VET), once framed as a utilitarian pathway to employment, is being redefined in the digital era (Ma, Kakhai, & Khan, 2024). Traditionally linked with trade-specific, institution-based instruction (Ricky et al., 2015), VET is shifting toward flexible, scalable, and learner-centered systems. The 21st-century workplace now demands adaptability, problem-solving, and lifelong learning, beyond narrow technical skills. This shift reflects a paradigm change from training for discrete tasks to cultivating hybrid competencies essential for relevance in a digital, globalized world (Zervas & Stiakakis, 2024; Zhang & Wang, 2024).

International frameworks codify this transition. Subrahmanyam et al., (2020)) links digital transformation with inclusive economies and just transitions, emphasizing digital competencies as key to empowerment and decent work. Similarly, Parua and Yang (2024) define digital transformation in TVET as the structured integration of technology to enhance scope, efficiency, and sustainability. Together, these perspectives underscore VET's evolution into a central pillar of national development.

Pedagogically, this transformation is embodied in Technology-Enhanced Learning (TEL), which extends access, personalizes instruction, and builds flexibility through online modules, simulations, adaptive systems, and data-driven feedback. Evidence shows TEL can enhance learning and inclusion: mobile and AR tools strengthen autonomy and creativity (Del Rosario Navas-Bonilla et al., 2025), while simulation-based training boosts confidence in applied fields. Yet TEL is not inherently equitable. Its impact depends on intentional design, sustainability, and accessibility (Samaniego López et al., 2025). If platforms ignore accessibility, linguistic diversity, or flexible assessment, technology risks entrenching exclusion rather than dismantling it.

This concern is acute for Persons with Disabilities (PwDs), who face barriers of infrastructure, limited assistive technologies, inadequate teacher preparation, and deficit-oriented curricula (Inclusive Employment for Youth with Disabilities in India and Thailand, 2025). Despite policy initiatives, PwDs still experience lower attainment and restricted employment (Cheng et al., 2025). Inaccessible TEL risks replicating these inequities digitally. While high-income contexts integrate UDL and interoperable assistive tools (CAST, 2018), low- and middle-income countries struggle with unreliable connectivity, prohibitive costs, and weak expertise in inclusive pedagogy. The digital divide thus reflects inequities in participation, resonating with SDG 4.5's mandate to eliminate disability disparities in education.

The stakes are high in South Asia, Sub-Saharan Africa, and Latin America, where VET is positioned as a bridge to employment for millions. Yet, risks of exclusion remain. In India, ITIs serve millions but often lack accessibility; in South Africa, progressive policy is undermined by inequities in ICT-mediated teacher training

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