

Chapter 6

Technology–Enhanced Learning and Master Craftsperson Preparation Programs for Informal and Non–Formal Vocational Training in Developing Countries

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ABSTRACT

This chapter examines how Technology-Enhanced Learning (TEL) can be integrated into informal and non-formal vocational training systems in developing countries to address persistent skills gaps that limit economic development. Although the informal sector contributes around 30–40% of GDP in many developing economies, informal vocational training remains marginalised within education policies and development frameworks. The chapter explores strategies for equipping master craftspersons to integrate digital technologies into traditional apprenticeship systems, drawing on human capital theory, social learning theory, technology acceptance models, and the capability approach. While master–apprentice relationships effectively transmit tacit and cultural knowledge, they face challenges related to pedagogical consistency, standardisation, and formal recognition. The chapter proposes TEL

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interventions, including personalised learning platforms, virtual simulations, and mobile-based delivery systems, to enhance instructional quality while preserving cultural authenticity.

INTRODUCTION

Developing economies grapple with significant structural barriers that include high poverty levels, inadequate infrastructure, and critical skills shortages, all of which hinder sustainable development. The widening skills gap, particularly in digital capabilities, undermines economic advancement and global competitiveness (Shah & Shah, 2024). These challenges become more complex when we consider the disparities between urban and rural populations. Urban centers naturally concentrate higher-skilled labor through better access to education and training, while rural regions continue to experience persistent skill shortages that limit opportunities and worsen economic imbalances (Babu & Sarkar, 2024).

Labor markets in developing economies display complex patterns marked by high unemployment rates, especially among youth and women. These patterns reflect deeper systemic issues in education and market flexibility (Xia et al., 2022). A significant portion of the workforce operates within the informal sector, which provides survival opportunities but lacks formal employment protections and benefits. Youth unemployment poses challenges to social stability and economic growth, as many young people struggle to find work that matches their skills and aspirations. This mismatch can potentially lead to socio-political unrest and widespread disenfranchisement (Karnītis et al., 2019). Regional variations are striking: Sub-Saharan Africa experiences high informal employment paired with low educational attainment, while Southeast Asia shows rapid growth alongside significant inequality (Бобылев et al., 2015).

Policy integration and funding represent major obstacles to effective workforce development. Frequent disconnects between existing policies and ground realities result in underfunded and poorly implemented strategies (Sharma et al., 2020). Educational frameworks inadequately recognize informal and non-traditional employment pathways, prioritizing formal academic models over vocational and skill-based training that would better align with labor market needs, particularly in the informal sector. This situation necessitates urgent educational reforms that incorporate practical skills and entrepreneurship to promote economic resilience (Pozdnyakova, 2021).

The informal economy encompasses economic activities that government agencies don't monitor or regulate, ranging from street vending to home-based businesses and unregistered companies (Khương et al., 2020). In developing countries, this

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