



COMPARATIVE ANALYSIS OF SKILL-BASED EDUCATION IN DEVELOPED AND DEVELOPING COUNTRIES

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Abstract

Workforce readiness and inclusive growth are based on skill-based education, commonly implemented in the form of technical and vocational education and training (TVET). It is review that compiles comparative evidence in the context of selected developed (USA, Russia, China, Japan, Finland, Germany, France, Turkey, UK, Malaysia, Singapore) and developing (Pakistan, India, Sri Lanka, Bangladesh, Afghanistan, Indonesia, Nepal, Maldives, Iran) country contexts. It analyses the models of governance, employer engagement, curriculum and pedagogy, inclusiveness, digitalization, and outcomes. Results demonstrate the usefulness of dual-apprenticeship models using detailed upper-secondary progressions in stimulating literacy/numeracy enhancements and easy school-to-employment transitions, whilst blended models encounter issues with esteem and compliance. The construction of systems often encounters skills gaps associated with shortages, introduction of inequalities in quality, and digital inequality; systemic changes in teacher instruction, competency-oriented instruction, and digital infrastructures are essential. Policy options that are adjusted with regard to system type and capacity are made at the end of the paper.

Keywords: Integration of ICT, Madrassa Education, Curriculum Development, Institutional Needs, Challenges, Pakistan

1. Introduction

Skill-based education is a combination of academic backgrounds and occupational skills and work-based learning. Some evidence of cross-country demonstrates that post compulsory systems have a strong influence on adult competencies; Nordics with comprehensive upper secondary and German-speaking dual systems perform effectively, and mixed systems like England and Ireland not only lowly in VET esteem and inclusiveness (Pensiero and Green, 2018). At the same time, with the emergence of digital economies, it is about to make equitable access to ICT and e-learning a part of contemporary skill ecosystems, increasing disparities in the areas of loss in the infrastructure and digital literacy (Takavarasha, 2020).

2. Methods and Scope

This narrative review is based on comparative OECD-type studies of the upper-secondary and TVET results, system research of Germany and Finland, and case studies of Asia and Africa on TVET digitalization and teacher training. The synthesis prefigures the transferable mechanisms across the exhaustive country-based inventories (Pensiero and Green, 2018). Social-partner governance and existing pressures are present only in German VET literature, and Finland represents decentralized quality and significant pedagogy integration together with technology integration (Haasler, 2020).

3. Conceptual Framework



What Motivates Competent Skill Systems? There is a body of evidence that is associated with three system-level attributes related to the gains of adult competency, which are inclusive participation up to age 17-18, the high esteem of vocational pathways, and standard core curricula in mathematics and national language among tracks (Pensiero and Green, 2018). Social partners and hybrid qualification maintain labor-market alignment in apprenticeship-based systems, which are pressured by the pressures of academization and low achiever and migrant youth equity (Haasler, 2020). The policy tools of internationalization, including qualification systems, impact VET structures and identification, which supports work-based and hybrid pathways in these nations (Deissinger, 2015).

4. Developed Country Models

Organizational, Strengths and Pressure current Germany: This dual system mixes both firm based apprenticeships with learning in school, which are anchored by chambers and social partners. It is effective in terms of knowledge compatibility of supply and demand in training, yet access has become difficult, and low skill youth, migrants, and refugees cannot be easily integrated; dual learning courses react to the high skills request but face the risk of stratification (Haasler, 2020). The Europeanization and mixed qualification is redefining the recognition and pathways, which needs to maintain the partnership roles (Deissinger, 2015).

Finland

Certain system stresses the well-being of students, formative assessment, the growth of thinking and application rather than rote reproduction; strong integration of technology to support modern pedagogy and the development of competency in compulsory education (Božić, 2015). These orientations are the basis of subsequent TVET promising outcomes as they have solid foundations and OECD findings on standardized core competencies (Pensiero & Green, 2018).

UK and France

Mixed models demonstrate relative decadences in the growth of adult competence because inclusiveness and esteem of VET are frail; hybrid credentials can overcome the gaps between academic and professional qualifications in the occasion that they are reliably planned and acknowledged (Pensiero and Green, 2018). Recognition and permeable has been involved in European qualification alignment particularly in hybrid routes (Deissinger, 2015).

USA, Japan, Russia, Turkey, China, Singapore and Malaysia

These systems are characterized all across with strong industry connection, technology-enhanced pedagogy and work-integrated learning which differ across the sector and region. Flipped classrooms and network-based practice courses are becoming more popular in higher vocational colleges in China, as a way of constructing applied skills to modernize the pedagogical process and student interaction (Guo and Meng, 2015). The work-process-based design can be also reflected in networked practice curriculum in international trade that is presented in Chinese context (Zhou, 2016).

5. Developing Country Contexts

Skills Gaps South and Southeast Asia does experience a lack of skills in the form of learning and schooling issues, the teacher shortage and high-pupil-teacher ratios do further undermine the early foundations which are feeding into the poor quality of intake to TVET (Madhur, 2014). A skill gap of the Cambodian population raises the alarm of urgency in the form of teacher development (prepare, pay, perform), reforming the curriculum, and scaling TVET as a transitional intervention step to employability (Madhur, 2014).

The approach towards digitalization in TVET can also expedite competency-based training. The Kenyan institutions demonstrate that digital libraries can uplift the learning of green skills through competency-based learning, and that may be replicated in resource-constrained systems (Mukundi and Njuki, 2019). However, systemic digital disadvantages imply that ICT4D methods should be context based and inclusive in order to prevent the fixation of disparity (Takavarasha, 2020).

Equity has been a cross-cutting state. Gendered labour market impediments limit the gains to vocational training, and skills policies need to be integrated with labour and social policies so that training can be translated into job as the experience of the transition in Kosovo illustrates (Beqiri, 2014). The pipeline of skills training remains weak in South Asia due to marginalized populations having higher dropout and unequal access, which adds to the chronic shortage (Panda and Ojha, 2021).



Selected Country Illustrations

Pakistan and India: There is a growing trend to embrace mobile and blended learning in higher education and training, which is potentially scalable to deliver skills; nonetheless, pedagogy and digital literacy acquisition are pre-conditions to successful adoption (Rashid, 2018). The concerns expressed in regional policy discourses include the necessity of competency-based TVET models and enhanced employer involvement according to the experience at large in ASEAN (Madhur, 2014).

Indonesia: Unprecedented changes to online modalities in shock scenarios (including the COVID-19) demonstrated the strategies at the institutional level that can guide blended skills delivery across tertiary and televocational segments (Cahyadi, 2020).

Bangladesh, Sri Lanka, Nepal, Afghanistan, Maldives, Iran: Fragmented delivery, poor quality assurance and limited work-based learning are common issues, and the limited potential of reform is often limited due to capacity and funding. Creation of teacher pipeline and employer relationships is a common one that aligns with the regional skills gap analysis (Madhur, 2014).

6. Digitalization in Skill-Based Education

Assessment, simulation-based learning, and collaboration in STEM and vocational education can be changed with the help of technology, but grounded designs and equity must be considered (Waight and Neumann, 2020). Digital ecosystems can promote personalization and authentic assessment in the education of skills; however, they need to be purposely aligned to the competencies and industry standards, as if not, they are at risk of being used shallowly (Waight & Neumann, 2020).

Digital infrastructures need to be accompanied by low cost access models and local capacity building in resource constrained settings; inclusive ecosystems of e-learning are one of many components of a more comprehensive networked society policy to bridge opportunity divides (Takavarasha, 2020). The examples of institutional projects, including digital libraries that assist CBET, demonstrate how even the insignificant investments can help make the program more relevant and sustainable (Mukundi & Njuki, 2019).

7. Convergent Lessons: Comparative Synthesis.

Governance and Employer Engagement: Match Training and labor demand: Social partnering systems with explicit occupational criteria (e.g., Germany) offer an excellent match between training and labour demand, but would need to act proactively to include poor performing youth to maintain equity (Haasler, 2020). The frameworks of qualification and hybrid routes enhance mobility between academic and vocational paths in situations of high credibility and employer buy-in (Deissinger, 2015).

Inclusiveness and Esteem: Systems where wide participation continues into early adulthood and the esteem of VET remains achieve better adult competence benefits; whereas mixed systems where esteem remains weak have difficulty in achieving similar benefits (Pensiero and Green, 2018).

Curriculum and Pedagogy: Good basic literacy, numeracy, and problem-solving bases, that are followed by applied learning and new-modernized pedagogy are the foundation of subsequent TVET-success; the focus on the integration of thinking and technology is a perfect example of Finland (Božić, 2015).

Teachers, and Capacity: Teacher preparation and career organization is intimately related, and lacks sufficient preparation and poor training will continue to produce learning gaps, and their thorough training by PPP-like strategies should be a top priority in developing system (Madhur, 2014).

Digital Readiness: Proper technological integration facilitates the growth and digitalization of skills training but needs to meet digital inequalities and equity-by-design approaches so as not to perpetuate inequality (Takavarasha, 2020).

9. Policy Recommendations for Developed Systems

Enforce balance of respect and openness between academic and vocational paths; use hybrid competency in favor of mobility and acknowledgment (Deissinger, 2015).

Reform dual systems in more effective ways to incorporate disadvantaged/migrant youth in aided pathways and bridge programs without watering down standards (Haasler, 2020).

Homogenize core competencies curriculum standards with and without tracking and maintain inclusiveness to 17-18 years (Pensiero and Green, 2018).

For Developing Systems: Focus on teacher development, including in-service, performance and pre-



service as well as curriculum reform and pedagogy modernization (prepare, pay, perform), and curriculum (Madhur, 2014). - Establish TVET capacity based on the competency-based frameworks co-created with employers; employ digital libraries and blended learning as multiplying factors of the CBET implementation (Mukundi & Njuki, 2019; Shahid et al., 2022). - Adopt universal ICT4D policies covering the affordability, connectivity, and digital literacy; do not do transplants off-the-shelf and collaborate with communities and industry (Takavarasha, 2020).

For all Systems: Link digital innovation to proven competency frameworks and authentic evaluation; use simulations, games, and data to boost feedback and personalization and track the effects of equity (Waight and Neumann, 2020). - Evaluate post-enrollment outcomes: monitor the achievement of adult skills and post-enrollment outcomes, employment, and wage progression to keep enhancing the design of the program (Pensiero and Green, 2018).

10. Conclusion

Effective skill systems have high performance that integrates inclusive frameworks, esteemed job opportunities, efficient employer involvement, and contemporary, competency-based pedagogy. Academization and the pressures on developed systems of low-achieving youth have worsened this, and yet the developing systems must contend with a shortage of teachers, poor foundations, and digital divides. Convergence can be expedited by strategic investment in teacher pipelines, employer co-governance and fair digital ecosystems. Finally, context-sensitive reform is based on evidence that creates the best path to resilient and future-ready skill systems in various economies and is co-produced together with social partners.

Appendix: Exemplary differences between systems.

Governance: Dual systems (Germany) based on social partners, or comprehensive upper-secondary, or mixed systems (UK/Ireland); consequences of alignment and esteem (Pensiero and Green, 2018).

Equity: The article Gender and inclusion issues in transition economies explains why specific employment and training policies are required (Bequiri, 2014).

Digitalization: The strategic use of resources in TVET that is already strained (Kenya) and the system-wide approaches to creating networked societies (Multi-region) by using ICT (Mukundi and Njuki, 2019; Takavarasha, 2020).

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