Chapter 7
Simulated Work-Based Learning in Technical and Vocational Education and Training: An Innovative Pedagogy

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ABSTRACT

The chapter brings to light innovations in teaching and learning in technical and vocational education and training (TVET) in the form of simulated work-based learning. The study enriches our understanding of the holistic nature of simulated based learning in TVET, highlighting benefits, problems of using simulation, and the enhancement of the use of simulation-based learning as an alternative or a complementary pedagogy in TVET. The methodology involved the use of secondary data in the form of literature on simulated work-based learning. Research on simulation is reviewed, and points about its effectiveness as it relates to teaching practical skills in TVET are cited. While the discussion cautions the limitations of simulation in teaching practical skills, it advocates the empowerment of the lecturers and learners in digital skills. Suggestions on engaging all stakeholders in TVET for the adoption of the innovation are proposed to strengthen the resilience and responsiveness of TVET systems.

INTRODUCTION

Work experience is generally considered to be the best way to develop employability, but currently there are too few work placements to meet demand of TVET undergraduates (Jollands, 2016). Non-placement authentic simulated work-based learning (WBL) is an alternative but there is very little research to show if learning outcomes are equivalent to real work experience. In TVET systems, vulnerabilities including low levels of digitalization and long-standing structural weaknesses have been brought to light by the COVID-19 pandemic (ILO-UNESCO-World Bank, 2021). Disruptions in workplaces made it difficult to...
implement apprenticeship schemes and traditional work-based learning modes which are key elements of a functional and market-responsive technical and vocational system. This has prompted TVET institutions to rethink their approaches and come up with innovative ways to deliver all their courses, including WBL preparedness, as students were not able to be physically present in institutions and make use of existing programmes to be fully prepared for WBL. Despite the challenges and the negative consequences of the COVID-19 pandemic, it was noted that, in some cases, the crisis simply accelerated the transition which was already underway towards digitalisation of training centres and programmes (ILO-UNESCO-World Bank, 2021). For example, in Chile, it was observed that while online-learning had been introduced to replace WBL components, this mode excluded low-skilled and more vulnerable students who did not have a computer or internet connection (ILO-UNESCO-World Bank, 2021).

Research has shown that distance and online learning does not easily incorporate the development of practical skills for many occupations and it is difficult to replicate the workplace experience without virtual reality (VR) and augmented reality (AR) simulator technology. This technology is often very expensive for most TVET institutions, especially in low and middle income countries (ILO-UNESCO-World Bank, 2021). Furthermore, digital solutions need adequate instructional models, effective teaching practices, and a supportive learning environment (United Nations, 2020). Work-based learning (WBL) enables students to practice the knowledge and skills acquired in a classroom setting within a real-world business or industry environment (Chad, 2020). High quality work placements reinforce school-based instruction by providing students with a context for integrating academics with technical skills, as well as options for learning employability skills, valued by employers (Moyer, Snodgrass, & Klein, 2017).

Although TVET lecturers have long relied on work placements to offer students a context for applying their technical skills, simulations have been used in other countries as an alternative to real work placements (Jollands, 2016). According to Lee (2010), simulations depict real life situations, where participants role-play, make decisions and receive feedback on their actions upon which participants could observe the results. Consequently, participants reflect on their previous decisions, and improve their future decisions. Lateef (2010) highlights that simulated WBL aims to replicate workplace environment and processes so that students can immerse themselves in an occupation specific activity without leaving school. Learners are actors within these environments that are designed to be realistic, and therefore, simulations can have a moderate degree of authenticity (Bayerlein, 2020). Simulation activities have the potential to be meaningful in terms of authenticity. Discussions by Iipinge, Batholmeus and Pop, (2020); Rasalam and Bandaranaike, (2020) demonstrate that simulations can have a high level of impact on students. Lee (2010) described the use of simulation games based on Kolb’s Experiential Learning Cycle (Kolb, 1984). From Kolb’ perspective, simulations mimic real life situations, where participants operate in a risk-free and less expensive environment to put theory into practice.

In the employability skills context, simulations are reported to have an impact on student work readiness (Smith, Ferns & Russell, 2014). As a result, simulations give students an opportunity to practice fundamental skills of their study disciplines, encourage decision making and team-working, and enhance the student learning experience. Research has reported that simulations tend to replicate or replace WBL experiences and are referred to as non-placement WBL simulations in various disciplines (Chad, 2020; Masethe & Masethe, 2012; Jollands, 2016). There are a host of reasons why educators may choose to substitute simulations for genuine workplace experience. Moyer et al. (2017) cite reasons such as; difficulties in recruiting a sufficient number of employers willing to offer students a work placement; logistical challenges, due to the geographic isolation of TVET providers and safety or insurance issues, which may restrict students’ access to hazardous jobsites and equipment.
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