

Industry-led learning factories for 4IR skills and innovation: The CSIR approach

Matebese, Belinda T; Ford, Meryll; Schoeman, Chanel; Coetzee, Christian J; De Ronde, Willis; Tyatyantsi, Ayanda

Abstract

The Fourth Industrial Revolution (4IR) demands a workforce equipped with technological competencies, yet South Africa faces significant challenges in bridging its skills gap. This paper introduces the Council for Scientific and Industrial Research (CSIR) Learning Factory (LF) as a scalable, industry-focused initiative to address these challenges. The CSIR LF integrates theoretical learning with practical application, fostering collaboration between academia, industry, and government. The LF is implemented in a phased approach, emphasizing its adaptability to South Africa's socio-economic constraints. Key features include a blended learning model, modular training stations, and partnerships with Technical and Vocational Education and Training (TVET) colleges. The paper also highlights the LF's impact on 4IR skills development, industry collaboration, and workforce readiness. Findings show that the CSIR LF can enhance employability, support industrial transformation, and align with national economic priorities, serving as a replicable model for upskilling South Africa's workforce and fostering an inclusive, 4IR-driven economy.