

Innovation as Disruption of Culture: A TVET Perspective

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Abstract

With its focus on training and retraining people for the world of work, Technical and Vocational Education and Training (TVET) must respond to changing societal contexts and the demands of the world of work. Against this background, and in recognition of the disruptions taking place within economies, societies, and the environment, UNESCO–UNEVOC encourages TVET institutions to commit to an institution–wide approach to innovation to maximize their potential to overcome disruptive challenges and become drivers of innovation. This paper discusses innovation in TVET as a disruption of culture. It makes the assumption that for innovation in TVET to take root in the education system there must be changes in current TVET cultural practices. The arguments of this paper are developed through an integrative literature review which explores the notion of innovation (and particularly innovation in TVET). The paper discusses why innovation in TVET is imperative in the 21st century with the penetration of digital technologies in the world of work and the emergence of new forms of entrepreneurship that are changing job profiles and creating new possibilities for generating solutions for social and economic problems. Working on the premise that curriculum change and innovation must consider the culture of practice, this paper examines the dimensions of culture (rituals, cultural tools, and discourses) as a framework for assessing the disruptions that are occurring and must occur in the teaching and learning experience and in the products and services of TVET as we seek to prepare TVET students for the 21st century workplace.

Keywords: TVET, innovation

Introduction

According to Haolader et al. (2017), the primary objective of all TVET policies and systems (as distinct from general education) is to prepare individuals for specific occupations within the workforce. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines TVET as “comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods” (UNESCO, 2016, p. 5). As such, TVET occupies a critical intersection between

education and the labor market (UNESCO, 2021) and is positioned as a solution for present and future labour market needs (Amin et al., 2023). Consequently, Technical and Vocational Education and Training (TVET) has emerged as a vital component of education systems globally, providing individuals with the requisite knowledge, skills, and competencies to engage in the labor market, foster economic growth, and enhance their livelihoods (Amin et al., 2023; Salleh & Sulaiman, 2020). Additionally, TVET, as

articulated by leading figures such as Finch and Crunkilton (1999), is characterized as responsive to dynamic, realistic, and future-oriented technological advancements. Given these attributes, it is imperative for TVET providers to possess a comprehensive understanding of their context and the demands of the labor market for which students are being prepared, and to adapt their programs accordingly. According to the World Economic Forum (2023), “over 85% of organizations surveyed identify increased adoption of new and frontier technologies and broadening digital access as the trends that are most likely to drive transformation in their organization” (p. 5).

The document further indicates that business leaders anticipate the strongest net job-creation effect to stem from investments facilitating the green transition of businesses. Moreover, climate change adaptation and the demographic dividend in developing and emerging economies are also deemed significant as net job creators. In addition, more than half of the companies surveyed by the World Economic Forum identify technological advancement (particularly through increased adoption of new and frontier technologies) and enhanced digital access as key drivers of job growth. Over 75% of companies intend to incorporate technologies such as big data, cloud computing, and AI within the next 5 years (World Economic Forum, 2023).

Against the backdrop of the 21st century and the ongoing 4th and 5th industrial revolutions, TVET must equip its graduates to thrive in this evolving landscape. Therefore, as emphasized by UNESCO (2021), “TVET systems should proactively adapt their training offerings to benefit individuals, economies, and societies” (p. 6).

Within this rapidly changing global economic space, innovation has become a key driver for economic growth and competitiveness. According to Arundel et al. (2006) and Edquist (2004), this focus on innovation in modern economies is associated with an increasing demand for high-skilled workers and a declining demand for low-skilled workers. As a result, TVET institutions and systems around the world are under increasing

pressure to adapt and innovate to meet the evolving needs of the labor market and prepare learners for the jobs of the future (Matusova & Kollar, 2023; Moura et al., 2022; Puhovichova & Jankelova, 2022; Yap et al., 2023).

A UNESCO International Centre for Technical and Vocational Education and Training (2019) document describes innovation as a broad concept used to describe new or improved products, services, processes, or practices that differ significantly from previous experiences. The document noted that “innovation can refer to new products, services, processes, or practices developed by external actors such as private companies (e.g., the development of new technical software) that are made available for clients and markets” (p. 5).

UNESCO noted that these types of innovations have an important impact on the demand for skills and on labour markets that must be addressed by TVET systems. TVET systems must therefore respond through innovation. TVET innovation “comprises substantial change in the way TVET is practiced by an institution, making it progressively more relevant to its economic, social, and environmental context” (UNESCO International Centre for Technical and Vocational Education and Training, 2019, p. 13). This idea of change in the practice of TVET speaks to the introduction of new ideas, methods, technologies, and practices to enhance the quality, relevance, and effectiveness of vocational education and training programs.

Purpose

Given the dynamic labour market context in which we operate and the concomitant need for TVET to respond to this context, this paper seeks to interrogate innovation in TVET. It seeks to answer the question, “How must TVET adapt and innovate to respond to the needs of the technologically advanced workplace of the 21st Century?” This paper argues in response that innovation in TVET requires a disruption of its cultural norms and practices, which must evolve for innovation to take root in the education

system. On this premise, the dimensions of culture (rituals, cultural tools, and discourses) are examined as a framework for assessing the disruptions that are occurring and must occur in the teaching and learning experience. The products and services of TVET are also explored as we seek to prepare TVET students for the 21st-century workplace.

Literature Review

Why Innovation in TVET is an Imperative in the Context of the 21st Century

The importance of innovation in TVET may be considered from several perspectives, including the workforce, industry demands, the need for entrepreneurship and innovation, and societal challenges.

Preparing a future-ready workforce is a critical goal for TVET. Rapid technological advancements and automation are changing the job landscape, requiring a highly skilled and trained workforce that can adapt to the shifting global environment (Amin et al., 2023; Matusova & Kollar, 2023; Moura et al., 2022). TVET programs, therefore, need to innovate and adapt to these changes to ensure that learners are equipped with the knowledge, skills, and competencies necessary to thrive in the 21st-century workforce and ensure that graduates are prepared for emerging industries and technologies (World Economic Forum, 2020, 2023).

TVET has been positioned as a key tool for solving present and future labour market needs (Chukwu et al., 2020). In many regions of the world TVET systems have become indispensable in preparing work-ready graduates to meet labor market demands (Nkunya & Mwila, 2024). Therefore, in preparing the workforce of the 21st century, TVET providers must pay attention to the demands of industry and seek to close the skills gap between education and the evolving

needs of a rapidly modernizing and increasingly globalized workforce industry. Innovation in TVET plays a key role in aligning the training programs with the changing demands of the job market, thereby enabling institutions to closely align their programs with the evolving needs of industries, ensuring that graduates are job-ready and can contribute to economic growth. By incorporating industry-relevant curricula, incorporating technology-enabled learning methods, and fostering industry partnerships, TVET can produce skilled workers who are in demand in the labor market (World Economic Forum, 2020, 2023).

The World Economic Forum (2023) reported that in addition to technical competence employers seek workers who exhibit adaptability, creativity, and entrepreneurial spirit. TVET programs must integrate entrepreneurial education, encouraging students to develop business skills and foster an innovation mindset that can help them to either create their own businesses or add value for their employers. Additionally, TVET can promote innovation by integrating emerging technologies such as artificial intelligence, robotics, and automation into the curriculum, allowing students to develop skills in cutting-edge technologies (UNESCO, 2023).

The 21st century presents numerous societal challenges; for example, climate change, healthcare, sustainable development, social and economic inequality, and poverty (Intergovernmental Panel on Climate Change [IPCC], 2022; United Nations, 2015; World Bank Group, 2023). According to UNESCO (2014), "changes in the physical environment require more technologies and skills for remediation of degraded environments and adaptation to changes in the environment resulting from climate disruption and natural disasters" (p. 31). TVET can contribute to addressing these challenges through innovation by incorporating sustainability principles¹, green technologies²,

¹Sustainability principles are core guidelines that promote environmental stewardship, social responsibility, and economic viability by meeting present needs without compromising the ability of future generations to meet theirs, often emphasizing reducing waste, conserving resources, and promoting equity.

²Green technologies refer to innovations processes, or products designed to minimize environmental impact improve resource efficiency, and support ecological balance, by reducing pollution, conserving energy and resources, and promoting renewable energy sources. Examples include solar panels, electric vehicles, and water purification systems, waste reduction systems.

and social innovation³ into its programs. This will enable learners to acquire the knowledge and skills needed to tackle these pressing issues and create a better future (Mustapha, 2015; UNESCO, 2014).

Despite the evident necessity and value of innovation in TVET systems, many institutions struggle to adapt and embrace curriculum change and innovation. This paper contends that this inertia stems from entrenched cultural practices⁴ within TVET institutions pertaining to the design and implementation of TVET programs.

What is Culture?

This paper embraces the anthropological conception of culture that is a collectivist, or group definition associated with a set of specific traits, attitudes, or manifestations that give a people a particular character (Alexandre, 2024). Any group of people that spends time together, of whatever size, forms culture. Culture here means shared and transferable perceptions, values, or practices. Culture is a collective concept that encompasses the way a group of people think, act, and interact (Hofstede et al., 2010).

Culture can also be understood as the accumulated learning or a shared system of knowledge among group members; encompassing values, norms, beliefs, meanings, perspectives, assumptions, and customs (Schein, 1988, as cited in Mayhand, 2020; Tyagi, 2021). Culture may be viewed as behaviors that have been consistently supported, expected, reinforced, and valued by the group over an extended period of time. At the heart of culture lie its values and beliefs; with values serving as the standards for discerning what is considered good and just, and beliefs representing the convictions or tenets that individuals hold to be true.

It is frequently argued that culture is unseen and therefore not measurable. However, there are several manifestations of culture (tangible

and visual) that can help to identify the culture of a group. These include: symbols — the words, gestures, pictures, or objects that carry a particular meaning only recognized by those who share a particular culture (Hofstede et al., 2010); rituals — collective activities that are considered socially essential (Tyagi, 2021); cultural tools — including various artifacts, technologies, symbols, and systems of knowledge that humans create and use within their communities to communicate, solve problems and pass the culture from one generation to another (Gauvain, 2001; Tyagi, 2021); and discourses — the ongoing conversations, debates, and representations that shape how individuals and groups understand and interpret culture. They play a crucial role in constructing and reinforcing social norms, ideologies, and identities within a society (Hofstede et al., 2010).

These manifestations of culture provide tangible means through which culture can be observed, identified, and understood despite its abstract and complex nature. In this paper, TVET culture refers to the beliefs, values, and ways of behaving that have come to define TVET throughout its development as an arm of education. From a cultural perspective, these ways of being are demonstrated through rituals, histories, tools and discourses.

Methodology

This integrative literature review draws on several articles and book chapters published from 2015-2025, except for the rich literature surrounding the theoretical perspectives related to TVET teaching and learning which was more prominent in writing before 2015. The sources were obtained from citations in electronic databases and the wider internet, including ChatGPT. The ChatGPT was used to identify databases and other document sources which

³ Social innovation speaks to new strategies, ideas, or initiatives that address social needs and challenges in more effective, equitable, and sustainable ways than existing solutions. These innovations aim to improve well-being, empower communities, and create positive social change often through collaboration and inclusivity

⁴ Cultural practices used here refer to the values and beliefs that inform the purpose and direction of TVET, such as the emphasis on practical skills and workforce readiness. These perspectives influence curriculum design, instructional strategies, and the role of educators; The teaching approaches derived from traditional philosophies and perspectives, including competency-based education, experiential learning, project-based instruction; The tools, technologies, and equipment used in the classroom and workshops.

were then sourced and reviewed. The databases examined included Emerald Insight, Google Scholar, and EBSCO.

Articles were selected from journals such as *Education Sciences*, *International Journal of Academic Research in Business and Social Sciences Studies in the Education of Adults*, *International Journal of Recent Technology and Engineering*, *Journal of Research & Method in Education*, and the *Journal of Career and Technical Education*. The selection of articles began with a search for abstracts related to articles that were published within the selected timeframe using keywords such as innovation in TVET; technologies in TVET; digital technologies in TVET; methodologies in TVET; TVET epistemology and ontology; constructivism; social efficiency; pragmatism; and competency-based education. Additionally, a number of technical reports from organizations that give focus to TVET and workforce training were consulted; for example, reports from the United Nations Educational, Scientific and Cultural Organization (UNESCO), UNESCO-UNEVOC, and the World Economic Forum (WEF).

The abstracts of articles were reviewed to identify those relevant to the purpose of the paper. A total of 20 articles were reviewed for this study. The findings of the literature review were synthesized based on three of the groupings of the manifestation of culture discussed in the paper: discourses, cultural tools, and rituals.

Findings: Innovation as Disruption of TVET Culture

Rogoff (2003) and Gutiérrez and Rogoff (2003) argue that individuals are not merely passive recipients of culture; instead, they actively participate in its (re)production. As a result, culture should not be viewed as static but as a dynamic process in which individuals and their cultural communities are mutually dependent, interconnected, and consistently shaping each other.

In alignment with Rogoff (2003) and Gutiérrez and Rogoff (2003), this paper advocates for a reevaluation and revitalization of the culture within TVET. When we speak of innovation as a disruption of TVET's culture, we refer to the introduction of new ideas, methods, technologies, and behaviors that challenge the established beliefs, values, and practices that have shaped TVET's development as a component of education. Table 1 illustrates how TVET's culture has been disrupted by innovations in various areas, including discourses on the ontology and epistemology that underpin TVET and TVET theories of learning; cultural tools such as the technology impacting TVET teaching and learning; and rituals affecting teaching methodologies and classroom practices, including assessment in TVET.

Changes in TVET Discourse (Ontology, Epistemology, Ideas, and Methods)

Theories and beliefs regarding education (including TVET) hold significant importance, as they exert a strong influence on educational practices and promote different educational purposes and different methods of achieving those purposes (Drenoyianni & Bekos, 2023). TVET traditionally emphasizes instrumental learning, characterized by activity-based, hands-on approaches that prioritize real-world situations, and experiential learning — often centered around problem-solving. Individual competence receives considerable attention within this framework. These perspectives stem from three main theoretical perspectives that have greatly shaped TVET policy-making and practice: social efficiency, pragmatism, and competency-based education.

The social-efficiency theory of education holds that young people should be prepared to be competent and productive workers. This theory advocates that to the extent that we all benefit from an economy that is working well, education

Table 1*Changes in TVET Culture*

Manifestations of Culture	Business as Usual TVET Culture	Innovations – Practices in TVET
Discourses (Ontology, Epistemology, Ideas, Methods)	Social efficiency, pragmatism & competency-based education • Performance-based • Occupation driven/responsive • The focus is on efficiency • Repetition, conditioning • Instrumental learning • Activity-based • Stresses real-world situations • Project-based • Experience focused • Hands-on learning • Focus on individual competence	Constructivism • Construction of authentic and purposeful learning • Integration of academic and technical knowledge • Collaboration and interaction • Collaborative knowledge construction and creativity • Solving problems in a real work context • Project-based/problem-based learning • Students enabled to use design processes and to critically analyze existing outcomes to create innovative solutions. • Ability to transfer understanding across disciplines • STEM capable workforce • Digital literacy • Critical thinking
Cultural Tools (Technologies)	<i>Less ICT Driven</i> • Manual tools and equipment • Antiquated machines • PowerPoint presentations	<i>Greater infusion of ICT, digital technologies, and automation</i> • Digital learning tools • ICT systems and devices • Integration of digital technologies into teaching and learning • Use of blogs and wikis • 3D printing technology • Computer-assisted design (CAD) • Computer-aided manufacturing (CAM) • Artificial Intelligence (AI) and machine learning • Virtual reality • Augmented reality • Automation and robotics
Rituals (Practices)	<i>Focus is on Output</i> • Demonstrate learning through project pieces • Emphasis on final outputs rather than process • Requires students to demonstrate the depth and breadth of their knowledge • Testing of skills and competencies for workplace	<i>Focus on Process and Output</i> • Solve problems and communicate a variety of possible solutions • Find and present knowledge to others • Students doing, experimenting and reflecting on their concrete experience in different ways • Process and product-based, with emphasis on process • Requires students to analyze, synthesize, evaluate, internalize, and apply what they have learned • Focus on practical solutions to real-life problems

Note: Table 1 developed from the author's review of the literature.

based on the goal of social efficiency is a public good (Cranston et al., 2010). Consequently, social efficiency contends that TVET should directly address the specific labor demands of businesses and industries (Hyslop-Margison, 2000). As a result of this perspective, TVET is typically structured in a rigidly-sequenced manner, emphasizing hands-on instruction provided by individuals with substantial experience in the field (Rojewski, 2002). Rooted in social efficiency, TVET is traditionally characterized as occupation-driven and adaptable to its surroundings.

On the other hand, pragmatism is rooted in the belief that change is inherent to life, and thus, education should equip individuals to effectively navigate change as it arises. For example, the changes brought on by technological advancement have compelled educational institutions to offer more courses that place a heavy emphasis on technical, higher-order cognitive knowledge-based, and digital skills (Akour & Alenezi, 2022). Pragmatic education aims to prepare students to address challenges stemming from change in a logical and rational way, fostering open-mindedness to alternative solutions and a willingness to experiment (Rojewski, 2002). Experimentation is therefore regarded as crucial within this perspective of TVET.

Competency-based education (CBE) is a systematic method of training and assessment aimed at attaining outcomes. This approach to teaching in TVET became popular as trends in the modern labour market shifted from a focus on routine technical skills to more complex, creative, and interpersonal competencies (Malhotra et al., 2023). The approach emerged as a unique mode of delivering education in accordance with the strengths, abilities, and occupational competencies of learners rather than the traditional course curriculum (Messmer, 2021). This method is built on the practice of using competencies to define and measure performance (White & Moore, 2016); where a competency is defined as “the capability of applying and utilizing knowledge, skill, abilities, behaviours and personal characteristics to successfully perform in a given domain” (p. 100). CBE prioritizes the acquisition of selected competencies by establishing observable and

measurable performance outcomes that learners must demonstrate to be deemed competent (White & Moore, 2016).

Despite the strong values of the traditional theoretical perspectives that have governed TVET, the discourse is undergoing a cultural shift, with TVET increasingly embracing the principles of constructivism. While this approach maintains some of the core principles of the traditional theoretical approaches (such as being hands-on, project-based, and focusing on real-world solutions) there are some major differences leading to a more impactful learning experience. The constructivist educational approach emphasizes the construction of authentic and purposeful learning, integrating academic and technical knowledge and skills. At its core, constructivism posits that learning is an active process wherein individuals construct new knowledge and understanding based on their experiences and interactions with the world (Bates, 2022).

The theory emphasizes student engagement, critical thinking, and the application of knowledge in authentic contexts. This shift fosters increased collaboration and interaction among learners as they tackle problems in groups, thereby supporting collaborative knowledge construction and creativity (UNESCO, 2011). Students not only gain knowledge and technical skills but also develop other essential skills such as problem-solving, teamwork, and self-directed learning. Another positive aspect of the constructivist approach is that it increases students’ ability to transfer the knowledge gained to other contexts (Bada & Olusegun, 2015), which augurs well for the transfer of learning to the workplace.

Problem-based/project-based learning stands out as a highly esteemed instructional methodology rooted in the principles of Constructivism — placing students at the center of their learning, presenting them with real-world problems or challenges to solve collaboratively. The focus is on solving practical problems and creating real products or solutions. The problem-based/project-based approach allows students to apply theoretical knowledge in practice, enabling a deeper understanding of the material. As projects often require creativity and resourcefulness, this

approach encourages creative thinking among students. Additionally, projects are often done in groups so that students can learn to work as a team, share responsibility, and solve problems together (Kizi, 2024).

Changes in Cultural Tools (Technologies)

By its very nature, TVET is not only practice-based but also technology-focussed. Much emphasis is traditionally placed on students' hands-on experience with tools and machinery. In TVET, technology serves dual roles: as an aid to teaching and as an aim of teaching.

As an aid, technology enhances the teaching and learning process. Traditionally this includes the use of charts, posters, models, manipulatives, projectors, screens, and PowerPoint presentations to facilitate instruction. As an aim, technology is integrated into the classroom — focusing on mastery in the use of tools, equipment, and machinery relevant to the industry of study. Examples of such tools traditionally include hacksaws, hammers, hand drills, measuring tools, cutting tools, and various electrically-powered tools such as lathes, power drills, and circular saws, among others.

Despite TVET's longstanding tradition in technology, the rapid and widespread technological advancements of the 21st century, driven by the 4th and 5th industrial revolutions, have necessitated significant changes in the cultural tools traditionally employed by TVET educators. Growth in internet-based technologies has altered the learning environment (Akour & Alenezi, 2022). UNESCO-UNEVOC (2015) emphasizes that TVET institutions must maximize the use of new technologies to deliver effective education. Central to these necessary changes is the integration of information and communication technology (ICT) and digital technologies, both as an aid and as the aim of the teaching-learning process.

As an aid, technology presents numerous opportunities to enrich the teaching and learning experience. By harnessing technology effectively and purposefully, educators can establish dynamic learning environments tailored to diverse student needs — fostering collaboration,

creativity, and readiness for success in the digital era. Barrett and Williams-Shakespeare (2024) noted that “there is growing consensus that digital tools serve to enhance the teaching-learning process, making the learning experience more easily accessible, engaging, interactive, collaborative, and participatory” (p. 118). Among the array of digital tools available to enhance the teaching and learning process are blogs; wikis; YouTube videos; mobile devices (such as phones and tablets); and emerging technologies such as artificial intelligence (AI), extended reality (XR), augmented reality (AR), virtual reality (VR); and analytics (Barrett & Williams-Shakespeare, 2024; Martin & Xie, 2022).

Technology as an aim of TVET serves to equip students with the skills and competencies needed to thrive in a workforce where technological advancements are continually reshaping industries and redefining job content (Xing & Marwala, 2018). The World Economic Forum (2025) highlights that the future of work continues to be shaped by an expanding array of advanced technologies, including artificial intelligence, robotics, and energy systems. Technological adoption is expected to significantly transform job tasks and required skills across industries. These technological changes and their impact on the workforce have made it imperative for the TVET learning experience to expose students to the various emerging technologies, devices, systems, and processes. In addition to those named earlier in this paper, these essential technological innovations include advanced communication systems; industrial robotics manufacturing systems; computer-assisted design (CAD); and computer-aided manufacturing (CAM), among others (Timbi, 2018). Further, students must have access to industry-standard equipment and relevant fieldwork experiences, which are critical for developing job-ready competencies (Nkunya & Mwila, 2024).

Changes in TVET Rituals (Practices)

In traditional TVET education, the emphasis has typically been on output, particularly on the final project. Under this framework, assessment

tends to take a summative approach, where students showcase their learning through their projects. They are expected to exhibit not only the depth and breadth of their knowledge, but also their practical skills. While significant focus is placed on developing technical competencies relevant to the workplace, other essential skills such as creativity, critical thinking, problem-solving, and effective communication have often been overlooked.

However, the demand for a resilient and capable workforce in today's technology-driven landscape necessitates the development of a diverse set of skills (UNESCO, 2023). These encompass technical proficiencies tailored to specific industries, as well as learning and innovation skills such as creativity, critical thinking, problem-solving, intellectual curiosity, adaptability, and perseverance. While it remains crucial in TVET for individuals to acquire skills and knowledge to perform specific tasks to a defined standard, there is now a heightened emphasis on individuals' ability to transfer understanding across disciplines (UNESCO, 2021). Further, social competencies such as empathy, cooperation, teamwork, and collaboration are crucial, and should be paired with communication skills and information; media; and technology literacy (which includes information literacy, media literacy, ICT literacy, and digital skills) (World Economic Forum, 2022).

Students must not only be able to identify and communicate various solutions to problems, but also effectively convey knowledge to others. To meet these demands, TVET must adapt its teaching and learning approaches grounded in the principles of Constructivism. Within this framework, the learning process holds equal importance to the outcome of learning. This calls for innovative teaching strategies that incorporate cutting-edge technologies, interactive learning, and real-world problem-solving techniques (Leyer et al., 2023). Consequently, assessment methodologies should transition from summative assessments to context-specific applications and formative assessments, employing open-ended and qualitative approaches that foster creativity, innovative thinking, and the application of knowledge in novel contexts (World Economic Forum, 2022). TVET students should be

empowered to address real-life challenges by experimenting, reflecting on concrete experiences, and analyzing, synthesizing, internalizing, and applying what they have learned across various contexts. In this regard, collaborations between TVET institutions and industry stakeholders are vital, as they facilitate the integration of real-world experiences and industry-relevant skills in the learning process and provide students with insights into entrepreneurship through mentorship, sponsored projects, and exposure to workplace procedures (UNESCO, 2023).

Conclusion

As TVET responds to the effects of various disruptions, innovative practices emerge, offering the potential to maintain the provision of quality education that is relevant and accessible to all. While disruption poses challenges, it also presents opportunities to reshape TVET education, making it more responsive to the demands of the labor market and better-preparing graduates for the demands of the 21st century. Therefore, understanding the influence of traditional cultural norms (the theoretical underpinnings, technologies and practices) on the implementation of change in TVET is crucial for ensuring lasting and impactful transformation. Among the shifts that must take place in TVET curriculum design and implementation are changes in the theoretical perspectives in keeping with the constructivist perspective; greater infusion of ICT, 21st century digital technologies, and automation; and finally, focusing on both the process of teaching and learning as well as the output of the learning experience.

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