

Research Article

# The Implementation of Inclusive Education in TVET Institutions: A Systematic Review

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## Abstract

Inclusive education has emerged as a vital framework for ensuring equitable and quality education for all, as emphasized in global goals such as the United Nations Sustainable Development Goal 4 (SDG 4). In Technical and Vocational Education and Training (TVET) institutions, which play a crucial role in equipping learners with employable skills, implementing inclusive education presents unique challenges, especially for students with disabilities. This systematic review synthesizes research findings on inclusive education in TVET institutions, focusing on prevailing practices, challenges, and opportunities. The review analyzed six studies selected through a structured process based on inclusion criteria such as relevance to TVET inclusion, publication recency, and geographical diversity. The findings highlight both the potential and the barriers to implementing inclusive practices. Successful strategies include offering counseling services, accommodating diverse learning styles, and improving accessibility through inclusive curricula and infrastructure. However, persistent challenges such as insufficient funding, societal stigmatization, inaccessible facilities, and untrained staff continue to hinder progress. Key recommendations from the studies advocate for comprehensive reforms, including targeted teacher training, establishment of disability support units, inclusive policy implementation, and collaboration among stakeholders. Addressing societal attitudes and integrating students with disabilities into mainstream education rather than segregating them are emphasized as critical steps toward equity. The review concludes that while notable strides have been made in some regions, systemic reforms and enhanced resource allocation are required to achieve meaningful inclusivity in TVET institutions.

## Keywords

Inclusive Education, TVET Institutions, Students with Disabilities, Accessibility, Challenges, Opportunities, Policy Implementation

## 1. Introduction

Inclusive education has gained international recognition as a cornerstone of equitable and quality education, reflected in global frameworks such as the United Nations Sustainable Development Goal 4 (SDG 4), which calls for inclusive and equitable quality education and lifelong learning opportunities for all [16, 19]. This approach emphasizes the removal of

barriers to learning and participation for all learners, including those with disabilities, marginalized groups, and individuals from diverse socio-economic backgrounds [14]. Technical and Vocational Education and Training (TVET) institutions hold a pivotal role in this context by equipping learners with the skills needed for employment and socio-economic de-

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velopment, especially in low- and middle-income countries [8, 9, 17].

Despite the growing advocacy for inclusive education, its implementation in TVET institutions remains a significant challenge [15, 17, 20]. Studies indicate that while many countries have developed policies to promote inclusion, there is often a gap between policy intentions and practical implementation [17, 12]. Specific barriers include insufficient funding, inadequate teacher training, inaccessible infrastructure, and societal stigmatization of learners with disabilities [4, 5, 20]. Moreover, the dual focus of TVET institutions on skill development and workplace integration presents unique challenges for inclusive education compared to general education systems [8, 18].

A systematic review of the literature on inclusive education in TVET institutions reveals critical gaps [1]. First, there is limited evidence on the role of leadership in fostering inclusive practices, particularly in low-resource settings [6]. Second, while several studies address barriers to inclusion, few provide actionable strategies to overcome them in the specific context of vocational training [8]. Lastly, research on the experiences and perceptions of learners with disabilities in TVET institutions remains underexplored, leaving a gap in understanding the social and psychological dimensions of inclusion in these settings [13].

This systematic review aims to address these gaps by synthesizing existing research on the practice of implementing inclusive education in TVET institutions. It aims to clarify current practices, identify key challenges, and propose actionable strategies to enhance inclusivity in TVET settings. The central research question guiding this review is:

What are the prevailing practices, challenges, and opportunities in implementing inclusive education in TVET institutions?

## 2. Methodology

This review follows the Preferred Reporting Items for Systematic Reviews to ensure a structured and transparent approach to the synthesis of findings.

### 2.1. Selection Criteria

The following inclusion criteria were applied:

- 1) Studies focused on inclusive education practices in TVET institutions.
- 2) Peer-reviewed journal articles or official reports published between 2015 and 2024.
- 3) Research conducted in various geographical contexts to provide a global perspective.
- 4) Studies written in English.
- 5) Empirical studies or literature reviews providing insights into practices, barriers, or strategies related to inclusive education in TVET settings.

### 2.2. Selection Process

The systematic selection process involved three stages:

- 1) Database Search: Databases such as Google Scholar, PubMed, JSTOR, and ERIC were searched using combinations of keywords, including "inclusive education," "TVET," "vocational training," "disability inclusion," and "equity in education."
- 2) Screening: Titles and abstracts were reviewed for relevance to the research question and alignment with the inclusion criteria.
- 3) Full-Text Review: Selected studies underwent detailed analysis to confirm their relevance, methodological rigor, and contribution to the review objectives.

A total of 38 studies were initially identified. After screening and full-text review, six studies were selected for inclusion based on their alignment with the selection criteria and their relevance to the research question. These studies provided a comprehensive overview of practices, challenges, and strategies for implementing inclusive education in TVET institutions across different contexts.

By synthesizing findings from these studies, this review aims to contribute to the discourse on inclusive education by offering evidence-based recommendations for policymakers, educators, and administrators working in TVET institutions.

## 3. Findings

This review primarily aimed to explore research on the practice implementing of inclusive education in TVET institutions. This section presents the study's findings through a thematic synthesis of the reviewed literature. It begins by organizing the findings into three key themes: major findings, identified challenges, and recommendations from the reviewed publications. A table of extracted data is provided in the appendix. The results are discussed below based on the selected studies.

A study by [2] emphasizes the importance of creating inclusive TVET institutions to support students with hearing impairments (HI) by addressing their academic, psychological, and social needs. The study highlights counseling services as essential for promoting students' mental health, self-awareness, and stress management. A collaborative approach involving teachers, administrators, parents, and specialists is critical for designing curricula that balance academic and emotional needs. The findings also stress the need for teachers to accommodate diverse learning styles—visual, auditory, kinesthetic, interpersonal, and intrapersonal—by using varied teaching methods and resources. Furthermore, providing constructive feedback, encouragement, and accessible infrastructure, including wheelchair-friendly facilities and well-equipped workshops, is vital for fostering an inclusive environment.

Despite these strategies, challenges persist, such as limited awareness of inclusive education, insufficient resources, in-

adequate teacher training, and negative attitudes among stakeholders. Ahmed recommends increasing awareness through workshops and campaigns, investing in assistive equipment and infrastructure, and training teachers on inclusive methodologies. Strengthening collaboration between institutions, parents, and communities is crucial to overcoming barriers and creating a supportive ecosystem for learners with HI. The study also underscores the need for monitoring and evaluation mechanisms to assess the effectiveness of inclusive practices and calls for further research to identify context-specific strategies tailored to the needs of students with HI in Pakistan.

Another study by [7] highlight the growing recognition of the need for inclusive TVET programs in East Africa and Botswana, particularly for students with mental and intellectual disabilities. In South Africa and Botswana, progress is seen through increasing enrollment and formal access for students with mild intellectual disabilities. However, the study finds that access alone is insufficient, as systemic barriers, such as societal attitudes and limited support structures, hinder true inclusion. In East Africa, students face widespread exclusion due to negative perceptions of their capabilities, while in Botswana, social and epistemological barriers limit their participation and success. These challenges underscore the need for inclusive practices that not only grant access but also foster meaningful engagement and success in TVET programs.

The authors propose a comprehensive, strengths-based approach to address these challenges, advocating for policy reforms, inclusive curricula, and professional development for TVET staff to enhance their understanding of disabilities. Establishing specialized disability units within institutions is recommended to provide targeted support and advocacy for students. Furthermore, creating flexible curricula that accommodate diverse learning needs is critical to enabling full participation. A systemic shift in societal beliefs and institutional practices is emphasized, focusing on recognizing the potential of individuals with disabilities and empowering them as active participants in their education. The findings underscore the importance of aligning policies, resources, and attitudes to create inclusive TVET environments that move beyond access to promote equity and empowerment.

A study by [11] also examine the increasing enrollment of students with disabilities in South Africa's TVET colleges and highlight the systemic shortcomings in supporting their educational success. Despite existing policies promoting inclusion, these institutions often lack the resources, infrastructure, and expertise needed to implement them effectively. Negative perceptions and stigma surrounding disabilities persist, discouraging students from disclosing their conditions and seeking necessary accommodations. Physical barriers, such as inaccessible buildings, and insufficient assistive technologies further hinder participation. Additionally, staff members often lack awareness and training on inclusive practices, compounded by inadequate funding for disability support services

and reliance on self-disclosure, which overlooks invisible disabilities. These challenges underline the gap between policy intentions and practical implementation.

To address these issues, the study recommends comprehensive reforms, including the development of disability-specific inclusion policies for TVET colleges and investment in accessible infrastructure and learning technologies. Training programs for TVET staff on disability awareness and inclusive teaching strategies are crucial for creating an accommodating environment. Establishing dedicated disability support units staffed by professionals can provide tailored services, while raising awareness about inclusive education through campaigns and workshops can challenge negative attitudes. Collaboration with disability organizations and stakeholders is advised to share expertise and resources, alongside conducting further research to identify context-specific strategies for inclusion. The authors emphasize that creating inclusive TVET institutions requires systemic changes that integrate policy, resources, and attitudinal shifts to promote diversity and equity in education.

The study by [10] found that students with mild intellectual disabilities in Botswana's Technical and Vocational Education and Training (TVET) institutions experience both inclusionary and exclusionary practices. While they are given the opportunity to enroll and gain knowledge, they also face social and epistemological exclusion. For instance, they might benefit from modified learning materials and teaching strategies but encounter negative attitudes and limited support from certain lecturers. The study emphasizes that the students' experiences vary depending on the specific individuals and situations they encounter within the institution.

The study highlights various challenges hindering the full inclusion of these students. Students reported experiencing social marginalization where they were restricted from interacting with non-disabled students and faced bullying. Epistemological exclusion arose from lecturers' inadequate pedagogical approaches, including a lack of responsiveness to student needs and the use of punishment as a teaching method. Labeling and negative stereotyping were prevalent, impacting students' self-esteem and reinforcing perceptions of incompetence. These exclusionary practices negatively affected students' emotional well-being and limited their capability development. The study emphasizes the mismatch between policy and practice, noting that while Botswana's inclusive education policy promotes equal opportunities, its implementation within TVET institutions remains inadequate.

To address these challenges, the authors forward several recommendations: Bridging the gap between policy and practice by engaging policymakers and implementers in a dialogue to develop a shared understanding and operationalize inclusive education within the TVET system. Promoting institutional culture shifts that prioritize empowering students with disabilities by recognizing their agency and valuing their capabilities rather than focusing on limitations. This involves continuous evaluation of inclusive practices, fostering a cul-

ture of responsiveness to individual needs, and challenging negative attitudes through training and awareness programs for both staff and students. The authors also suggest that TVET institutions prioritize a human development approach by focusing on improving students' quality of life and creating an environment that supports their overall well-being and agency.

Furthermore, a study by [14] compares the implementation of Technical and Vocational Education and Training (TVET) for special needs students in Malaysia and Hungary, highlighting the benefits of TVET, such as practical skill development, psychological well-being, and social integration. Both countries have made significant strides, with Malaysia focusing on mainstream integration supported by additional resources, and Hungary offering specialized inclusive vocational schools. Pre-vocational programs and comprehensive assessment strategies in both nations equip students with foundational skills for employment. However, challenges persist, including inadequate funding, insufficient infrastructure, limited teacher training, and societal stigma, which hinder full inclusion and effective transitions from school to work for special needs students.

The study recommends policy reforms to prioritize inclusivity, improved funding, and professional development for educators. Structural changes to ensure accessibility, awareness campaigns to combat stigma, and individualized learning strategies are essential. Collaboration among governments, educational institutions, employers, and stakeholders is crucial for creating job opportunities and smooth workforce transitions. By addressing these challenges, Malaysia and Hungary can build a more inclusive TVET system, empowering special needs students for personal and professional success.

Finally, study by [3] highlight the potential of Technical and Vocational Education and Training (TVET) to improve employment opportunities and life skills for people with physical disabilities, emphasizing its role in bridging the gap between education and work. Despite these benefits, implementation faces significant challenges, including employer discrimination, inadequate funding, limited access to specialized instructors and facilities, and high training fees. Additionally, societal attitudes, lack of family support, and difficulties in accessing assistive devices further hinder the productive participation of physically challenged individuals in TVET programs.

The study recommends establishing more TVET-specialized schools and centers to address resource gaps and making TVET education compulsory for people with disabilities to combat unemployment and poverty. It advocates for government and NGO efforts to create inclusive workplaces and equal treatment for individuals with disabilities, along with increasing family and community support. These measures aim to foster an inclusive educational environment and empower physically challenged individuals through equitable access to training and

employment opportunities.

## 4. Conclusion

The collective insights from the six studies reveal that while Technical and Vocational Education and Training (TVET) institutions have made notable strides toward inclusivity, significant gaps remain in the effective implementation of inclusive education. Current practices in TVET programs for individuals with disabilities demonstrate the potential for enhancing employment opportunities, skill development, and social integration. However, many institutions continue to operate within frameworks that separate rather than integrate students with disabilities, relying on specialized departments or schools instead of fully embracing inclusive practices. Despite policy advancements in some regions, these efforts are often hampered by systemic challenges such as inadequate funding, insufficient infrastructure, lack of qualified instructors, and societal stigma.

Furthermore, negative attitudes from educators, employers, and the broader community perpetuate exclusion and discrimination, limiting the agency and opportunities available to students with disabilities. The studies underscore the importance of shifting institutional cultures toward greater inclusivity by addressing barriers such as inaccessible facilities, limited support services, and the absence of adaptive teaching methods. While progress varies across regions, achieving true inclusivity in TVET requires systemic changes, including enhanced policy enforcement, comprehensive teacher training, collaborative stakeholder efforts, and robust funding mechanisms. These measures will enable TVET institutions to foster an environment where all students, regardless of ability, can thrive and contribute meaningfully to society.

## Abbreviations

ILO	International Labour Organization
NGO	Non-governmental Organization
TVET	Technical Vocational Education and Training
UNESCO	United Nations Education, Scientific and Cultural Organization
UNEVOC	United Nations Education Vocational

## Author Contributions

Tesmam Mirre Jobir is the sole author. The author read and approved the final manuscript.

## Conflicts of Interest

The author declares no conflicts of interest.



## Appendix

**Table 1.** Data Extraction.

Reviewed literature	Method used	Result of the study		
		Major findings	Challenges	Implication
Rusli (2024)	Comparative review	<ol style="list-style-type: none"> <li>Both Malaysia and Hungary have made progress in inclusive education for special needs students, with distinct approaches. Malaysia focuses on integrating special needs students into mainstream classrooms, while Hungary utilizes specialized schools for individualized support.</li> <li>Successful implementation of TVET policies for special needs students faces challenges in both countries, including adequate funding, qualified teachers, and appropriate infrastructure.</li> </ol>	<ol style="list-style-type: none"> <li>Integrating special needs students into TVET programs poses challenges in Malaysia and Hungary due to a lack of inclusive policies and practices, limited accessibility, and inadequate infrastructure.</li> <li>TVET educators in both countries often lack specialized training and support to effectively cater to the unique needs of special needs students.</li> <li>Societal attitudes and perceptions about individuals with special needs can create barriers to their participation in TVET programs. Stigma and discrimination may impact self-esteem and willingness to engage in vocational training.</li> <li>Financial constraints and limited resources impact the availability of specialized support, assistive technology, and necessary accommodations for special needs students.</li> <li>Transitioning from school to work presents additional challenges for special needs students, with limited job opportunities and employer reluctance to hire individuals with disabilities.</li> </ol>	<ol style="list-style-type: none"> <li>Develop and implement policies that promote inclusivity in TVET programs.</li> <li>Invest in professional development programs for TVET educators to improve their understanding of disability and equip them with inclusive teaching practices.</li> <li>Ensure TVET institutions have adequate infrastructure and facilities.</li> <li>Address societal attitudes and perceptions surrounding people with disabilities.</li> <li>Increase funding for inclusive education programs to support the costs of specialized help, assistive technology, and necessary accommodations.</li> <li>Implement individualized education plans and personalized support systems.</li> <li>Foster collaboration between employers, educational institutions, and the government.</li> <li>Establish effective communication channels and teamwork between professionals, parents, and students with disabilities.</li> </ol>
Munyaradzi et al. (2023)	Qualitative approach	<ol style="list-style-type: none"> <li>Students with disabilities are enrolling in South African post-secondary education, including TVET, in increasing numbers.</li> <li>TVET colleges in South Africa provide academic and non-academic support services to students, including those with disabilities.</li> <li>Astin's student involvement theory highlights the importance of student engagement in college activities for academic success, emphasizing the need for compre-</li> </ol>	<ol style="list-style-type: none"> <li>Students with disabilities in TVET colleges face various challenges, including navigating the campus, inadequate infrastructure, marginalization, and discrimination.</li> <li>Students with disabilities, particularly those with learning disabilities, may struggle academically compared to their non-disabled peers.</li> </ol>	<ol style="list-style-type: none"> <li>Disability-Specific Policies: TVET colleges should create and implement inclusive disability policies with input from stakeholders like DHET, students, and disability groups to ensure equal learning opportunities.</li> <li>Disability Units: Establish dedicated disability units staffed with trained professionals to provide support and advocacy for students with disabilities.</li> <li>Infrastructure Improvement: Improve facilities to ensure accessibility, including accessible buildings, resources, and assistive technologies for full participation.</li> </ol>

Reviewed literature	Method used	Result of the study		
		Major findings	Challenges	Implication
Ahmed, F. (2023).	Qualitative approach	hensive support systems that cater to diverse student needs, including those of students with disabilities.		4) Professional Development: Provide training for staff to enhance their understanding of disability issues and equip them with inclusive teaching and support skills. 5) Awareness & Advocacy: Promote awareness and challenge negative perceptions of disability to encourage students to seek support and disclose their needs.
		1) The study reveals a significant need for improved support structures and resources for students with hearing impairment (HI) within Pakistan's Technical and Vocational Education and Training (TVET) institutions. 2) The research highlights the lack of awareness and understanding of inclusive education practices amongst key stakeholders, including teachers, administrators, and even parents. It recognizes the potential of inclusive education to empower students with HI but identifies a disconnect between policy pronouncements and on-the-ground realities.	1) Negative Attitudes: Prevailing mindsets and policies within private TVET institutions are often resistant to accommodating the needs of students with disabilities, creating barriers to admission and support. 2) Lack of Training and Resources: Insufficient training for TVET teachers on inclusive education practices and strategies for supporting students with HI leads to inadequate instructional approaches and assessment methods. 3) Limited Parental Involvement: Parents of students with HI face anxieties and concerns stemming from a lack of resources, fear of stigmatization and bullying, and the use of standardized teaching methods that may not be suitable for their children. 4) Inadequate Infrastructure: Many TVET institutions lack the necessary infrastructure, such as accessible facilities and assistive technologies, to effectively support students with HI. This absence of a conducive learning environment limits opportunities for these students to participate fully in training programs.	1) Counseling and Awareness-Raising: Establishing robust counseling services within TVET institutions to address the academic, psychological, and social-emotional needs of students with HI. 2) Shifting Attitudes: Fostering a culture of inclusivity within TVET institutions by providing comprehensive training programs for teachers and staff. These programs should focus on developing inclusive teaching methodologies, adapting curricula to accommodate diverse learning styles, and promoting sensitivity towards the unique needs of students with HI. 3) Enhanced Teacher Training: Equipping TVET teachers with specialized knowledge and skills to effectively support students with HI. Strengthening Parental Partnerships: Actively engaging parents of students with HI by providing them with information, resources, and opportunities for collaboration. 4) Establishing regular communication channels and support groups can empower parents and address their concerns, fostering a collaborative approach to student success. 5) Improving Infrastructure: Prioritizing the development of accessible infrastructure within TVET institutions, including wheelchair accessibility, safe learning environments, and the provision of necessary assistive technologies.
Mosala-gae, M., & Bekker, T. L. (2021).	Qualitative approach	1) Students with mild intellectual disabilities experience both inclusionary and exclusionary practices in Botswana's TVET institutions 2) The study found instances of	1) Social Marginalization: Students reported restrictions on their interactions with non-disabled students, experiencing bullying and a sense of isolation within the college	1) Bridging the Policy-Practice Divide: The authors recommend establishing a continuous dialogue between policymakers and those responsible for implementing inclusive education within TVET institutions. This col-

Reviewed literature	Method used	Result of the study		
		Major findings	Challenges	Implication
Amaso et al., (2020)	Qualitative approach	<p>social inclusion through interactions and friendships with peers, and epistemological access through modified resources and supportive teaching.</p> <p>3) The study highlights the unique experiences of individual students, emphasizing that inclusive practices do not translate into uniform positive outcomes for all students.</p>	<p>environment.</p> <p>2) Epistemological Exclusion: Several factors contribute to this challenge, including lecturers' lack of pedagogical responsiveness to students' needs, the use of punishment as a teaching method, and instances of silent exclusion, where students are physically present but not adequately supported to access knowledge.</p> <p>3) Labeling and Negative Stereotyping: The use of labels like "special needs" reinforces negative stereotypes and perceptions of incompetence, contributing to discrimination and impacting students' self-esteem.</p> <p>4) Policy-Practice Gap: The study underscores the discrepancy between Botswana's inclusive education policy and its actual implementation within TVET institutions, revealing limitations in translating policy ideals into inclusive practices.</p>	<p>laboration aims to create a shared understanding of inclusive principles and operationalize them effectively.</p> <p>2) Cultivating Institutional Culture Shifts: The study advocates for moving away from deficit-based perspectives and embracing a more empowering approach that recognizes the agency and capabilities of students with disabilities. Strategies include ongoing evaluation of inclusive practices, fostering a culture of responsiveness to individual student needs, and challenging negative attitudes and stereotypes through training and awareness programs for both staff and students.</p> <p>3) Prioritizing Human Development: TVET institutions are encouraged to adopt a human development approach that prioritizes the well-being and agency of all students. This involves creating environments that support students' emotional well-being, promote self-determination, and provide opportunities for active participation in their education and the broader community.</p>
		<p>1) TVET programs can enhance employment opportunities for people with disabilities.</p> <p>2) TVET equips people with disabilities with knowledge, skills, and attitudes for participation in work and life.</p> <p>3) TVET can bridge the gap between school and work for people with disabilities.</p>	<p>1) Implementing TVET programs for people with disabilities is challenging, due to negative employer attitudes, a lack of special technical instructors and colleges, and high TVET training fees.</p> <p>2) Discrimination against people with disabilities in the workplace limits employment opportunities.</p> <p>3) Lack of government funding for TVET programs limits resources, facilities, and qualified instructors.</p> <p>4) Lack of family support hinders physically challenged individuals pursuing TVET education.</p> <p>5) Physically challenged individuals have difficulty accessing assistive devices.</p>	<p>1) Build more TVET special schools and training centers to train people with disabilities.</p> <p>2) Make TVET programs compulsory for all people with disabilities to reduce unemployment and begging.</p> <p>3) Increase employment opportunities for people with disabilities by the government and NGOs.</p> <p>4) Promote inclusive education and equal opportunity and treatment for all, including people with disabilities.</p>
Ebuenyi et al., (2020)	Qualitative approach	<p>1) In both East Africa and Botswana, there is a growing recognition of the need to provide access to Technical</p>	<p>1) Despite the progress made in formal access, significant challenges remain.</p> <p>2) In East Africa, students with</p>	<p>1) Developing and implementing comprehensive disability policies that promote inclusivity and address specific barriers.</p>

Reviewed literature	Method used	Result of the study		
		Major findings	Challenges	Implication
		and Vocational Education and Training (TVET) programs for students with disabilities, including those with mental and intellectual disabilities.	mental and intellectual disabilities are largely excluded from TVET programs due to negative societal attitudes and beliefs about their capabilities.	2) Investing in professional development for TVET staff to enhance their understanding of disability and equip them with inclusive teaching practices.
		2) This is evident in the increasing enrollment of students with disabilities in TVET colleges in South Africa and the formal access granted to students with mild intellectual disabilities in Botswana.	3) In Botswana, students with mild intellectual disabilities experience social and epistemological exclusion, hindering their full participation and success in TVET programs.	3) Creating more flexible and adaptive curricula that cater to the diverse needs of students with disabilities. 4) Establishing specialized disability units within TVET institutions to provide targeted support and advocacy for students with disabilities

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