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Leveraging Technology to Enhance the Transition of Students with Disabilities to Technical and Vocational Education and Training (TVET) Colleges

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Abstract. This systematic literature review examines how technology facilitates the transition of students with disabilities into Technical and Vocational Education and Training (TVET) colleges. Although inclusive education policies are increasingly endorsed, students with disabilities still face persistent barriers such as inaccessible infrastructure, limited staff preparedness, and uneven institutional support. Guided by the Technology Acceptance Model (TAM), this review synthesizes findings from 12 empirical studies published between 2014 and 2024. The studies were identified through comprehensive searches across Google Scholar, Scopus, ProQuest, EBSCOhost, and Web of Science using keywords such as "assistive technology," "inclusive education," "students with disabilities," "TVET," and "transition." The collected data were analysed thematically to identify patterns and contextual dynamics influencing technology adoption in inclusive vocational education. The analysis revealed six core themes: infrastructure and access to assistive technology; institutional support and policy alignment; staff training and professional development; societal attitudes and cultural barriers; perceived usefulness and ease of use; and transition planning and emotional readiness. Findings indicate that while technology enhances access and transition success, its implementation remains uneven due to policy gaps, limited professional training, and resource constraints. The review concludes with strategic recommendations to strengthen institutional planning, expand lecturer training, and improve technological infrastructure to foster inclusive TVET environments that accommodate the diverse needs of students with disabilities.

Keywords: Technology; Disability; TVET; Inclusion; TAM

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1. Introduction

The impact of technology on inclusive education has been studied widely, yet students with disabilities continue to face significant barriers to meaningful participation in higher and vocational education. In real-world contexts, these challenges manifest as inaccessible infrastructure, limited access to assistive technologies, under-trained academic staff, and insufficient institutional commitment to inclusion (Makhalemele & Masunungure, 2025). In many South African TVET colleges, computer laboratories lack adaptive software, teaching materials remain non-digitised, and campus layouts are not disability-friendly (Jobir, 2024). Consequently, students with disabilities experience academic exclusion and emotional distress, often leading to lower retention and completion rates.

Dzhugudzha et al. (2025) highlight a significant disjunction between legislative mandates for inclusive education and their enactment within technical and vocational education and training (TVET) systems, citing the absence of cohesive policy coordination and a deficit of institutional investment as primary obstacles. Their analysis contends that statutory guidelines are rendered ineffective unless accompanied by proactive institutional commitment and earmarked funding for assistive technologies. Jobir (2024) substantiates this observation through a mixed-methods investigation that documents both advancements and enduring obstacles in TVET pathways.

Several colleges have introduced career counselling, re-engineered curricula, and upgraded facilities; nonetheless, recurrent systemic deficiencies, including budgetary constraints, pervasive social stigma, and a shortage of trained personnel, continue to thwart substantial advancement. Jobir (2024 and Ampo et al, 2025) therefore proposes an integrated programme of reform: the professionalisation of instructor education, the creation of dedicated disability support units, and coordinated engagement across governmental, industrial, and civil-society sectors. Both inquiries maintain that authentic inclusion transcends pragmatic adjustments, mandating instead a concerted cultural reorientation to confront and erode persistent societal biases.

In post-school settings, Al-Azawei et al. (2022) evaluated how technology could assist students with disabilities, concluding that while technology can improve access and support transitions, inconsistent application limits impact. In a recent systematic literature review, Jardinez and Natividad (2024) argued that a lack of awareness and negative perceptions about usefulness impede the adoption of assistive technologies in educational settings. Another critical study conducted by Tontini and Moriña (2025) found that students with disabilities often lack tailored emotional and academic support during the transition to higher education.

Mutanga (2019) studied the experiences of students with disabilities and remarked that insufficient assistance during the transition phase within higher education results in exclusion and an elevated rate of dropouts. Mastam and Zaharudin (2024) noted that students frequently shift from well-organised and nurturing school settings to post-school institutions that demand self-advocacy

and independent scholarly effort. Such efforts are exacerbated where institutional support frameworks are weak or unavailable.

Despite the identifiable gaps in providing education for students with disabilities, the educational literature examining the role of technology in higher education's inclusive pedagogy is limited. Very few have explored the processes involved in transitioning students with disabilities into TVET colleges, with even less investigating the enablers and constraints on the use of technology during this transition period. This scarcity of systematically reviewed evidence hampers responsive, inclusive, and adaptable decisions at the policy level concerning the technological solutions to be integrated in TVET environments.

This study attempts to fill this gap by conducting a systematic literature review to determine how technology can facilitate the transition of students with disabilities into TVET colleges.
Accordingly, this study seeks to answer the following research questions:

1. What are the institutional and contextual enablers and barriers to the adoption of technology that supports the transition of students with disabilities into TVET colleges?
2. How do factors such as infrastructure, staff training, policy implementation, and institutional culture influence the use of technology for inclusion?
3. What lessons can inform future policy, curriculum design, and professional development to strengthen disability inclusion in vocational education?

The significance of this study lies in its contribution to quality and inclusive education through evidence-based recommendations that can inform policy reform, curriculum redesign, and capacity-building strategies within the TVET sector. By identifying practical enablers and constraints, the review supports the realisation of an equitable education system that aligns with South Africa's commitment to universal access. Ultimately, the findings aim to guide policymakers and practitioners in leveraging technology not only as a pedagogical tool but as a catalyst for systemic transformation in disability inclusion.

2. Theoretical Framework

In 1989, Fred D. Davis introduced the Technology Acceptance Model (TAM), which is a model that seeks to understand the process users go through to accept and embrace a particular technology (Davis & Granić, 2024). In his model, Davis (1989) put forward that two primary determinants shape an individual's adoption decision: Perceived Usefulness (PU) which is the extent to which the technology is believed to be beneficial, and the Perceived Ease of Use (PEOU) which is the extent to which the system would be effortless to engage (Davis, 1989). TAM has been broadly used in educational technology research to understand acceptance perceptions among educators and students (Granić, 2022).

Within the TAM framework, students with disabilities view assistive technologies and learning platforms through a unique lens that can be meaningfully analysed through the theory's principles (Theodorou & Meliones, 2019). For instance, a

student with disabilities is likely to use a technology which they believe makes learning more convenient and accessible. Many researchers have modified TAM for the field of disability studies. For example, Yıldız et al. (2022) applied TAM to study students with disabilities in higher education. They concluded that perceived usefulness and perceived ease of use significantly predicted their intention to use e-learning systems.

Akhtar Kang and Haider (2024) pointed out that adopting technology in education is more complex than simply having access; it also involves users' perceptions, attitudes, and support structures. They summarised that successful implementation of technology in inclusive environments requires addressing the diverse needs of students with disabilities, enhancing staff training regarding the interventions' perceived usefulness, and the technology's perceived ease of use.

In another study, Muzite and Gasa (2024) highlighted a gap in how vocational technology inclusion strategies are executed by some institutions, arguing that frameworks ignore the real challenges faced by students with hidden disabilities. Ndlovu argued that any theoretical approach attempting to analyse the reason for technology adoption must factor in the institutional and contextual elements designed around student participation.

In the United Arab Emirates, Opoku et al. (2023) utilised TAM to investigate how trainee teachers of special education viewed and intended to use assistive technology. The study revealed that computer self-efficacy and perceived ease of use significantly impacted their intention to incorporate assistive technology in teaching, underscoring the need for technology training into professional development programs for staff working with students with disabilities.

Siyam (2019) and Yıldız et al. (2022) validated the claim of widespread application of TAM in education, especially concerning users with disabilities. They emphasised that considerable changes to the framework are almost always required to address the unique situations of students with diverse needs. Their study also indicated the need for future work to tailor the frameworks used to disability-inclusive contexts more precisely.

Influenced by these scholarly contributions, this study seeks to apply TAM not to one category of disability, but to the broader and underrepresented population of students with diverse disabilities transitioning into TVET colleges, unlike previous applications of TAM that focused on singular disabilities, such as hearing or visual impairments (Al-Obeidi & Mohamad Ali, 2024; Kim, 2021; Othman et al., 2024; Prietch & Filgueiras, 2015). This study aims to shift the focus to include students with both visible and hidden disabilities. This research also explored institutional and contextual enablers and constraints, such as lecturer training, policy backing, and infrastructure, to holistically understand the role of technology in facilitating or obstructing the transition into vocational education.

Thus, TAM provides a fitting and strong theoretical framework to understand the perception and adoption of technology by students with disabilities in the context

of TVET colleges in the Free State province of South Africa. This framework allows the investigation to reveal the intricate interplay between personal perceptions, readiness of the specific institution, and the broader academic milieu regarding the successful adoption of technology for inclusive transition.

3. Methodology

This systematic review adopted a qualitative approach to explore the enablers and constraints related to the use of technology in supporting the transition of students with disabilities into TVET colleges. The review sought to uncover contextual and institutional factors such as infrastructure, training, policy, and staff preparedness that shape the adoption and implementation of assistive and mainstream technologies in vocational education settings. The paper aimed to reveal the patterns, insights, and challenges surrounding inclusive technology-supported transitions by synthesising relevant empirical studies, using the TAM as the guiding theoretical lens. This approach enabled a deeper understanding of how perceived usefulness, perceived ease of use, and contextual readiness influence technology adoption within TVET institutions.

3.1 Scope of the Review

The review primarily focused on post-secondary and vocational education settings, including higher education and TVET institutions. However, studies from secondary or preparatory levels were considered only if they contained transferable insights related to transition support, technology adoption, or inclusion practices applicable to the TVET context. Early childhood and primary-level studies were excluded, as they did not align with the transition-to-TVET scope of this review.

3.2 Inclusion and Exclusion Criteria

For this paper, the inclusion criteria were empirical studies that used qualitative or mixed method approaches to examine how technology supports students with disabilities, specifically during transition into post-school or vocational education. Only studies published in English between 2014 and 2025 were considered to ensure relevance and recency. Articles needed to directly address issues related to integrating or adopting assistive or inclusive technologies in educational environments. Furthermore, included studies had to focus on students with visible or hidden disabilities in TVET, higher education, or similar post-secondary settings.

Studies were excluded if they were purely theoretical or quantitative and had no qualitative insights, because the study aimed to investigate the lived experiences, perceptions, and contextual realities associated with adopting technology to aid in transitioning students with disabilities into TVET colleges. Such inquiries are best approached using qualitative evidence that provides a deep, person-centred, contextualised understanding of the relevant cultural, institutional, and environmental factors.

Excluded studies were those that:

- Used purely quantitative or theoretical approaches;

- Focused on early childhood or primary education;
- Lacked qualitative insight into lived experiences and contextual realities; or
- Were inaccessible in full text (e.g., abstracts, conference proceedings).

Table1: Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Empirical studies using qualitative or mixed methods approaches	Purely quantitative or theoretical studies lacking qualitative insights is this review sought to understand lived experiences and contextual elements concerning the adoption of technology in inclusive TVET environments
Focus on students with disabilities (visible or hidden) in post-secondary or vocational contexts	Studies focused on early childhood or primary education
Address the use of assistive or inclusive technology in educational transitions	Studies unrelated to technology or inclusion
Published in English between 2014 and 2025	Articles not available in full text (e.g., conference abstracts)
Provide insights on institutional, pedagogical, or technological enablers and barriers	Studies with insufficient methodological transparency or weak design

This inclusion strategy ensured that the review prioritised context-rich, experiential evidence capturing real-world institutional and human factors affecting the transition of students with disabilities into TVET environments.

3.3 Search Strategy

A comprehensive search strategy was conducted using several academic databases, including Google Scholar, ProQuest, Scopus, EBSCOhost, and Web of Science. The search process incorporated a combination of focused and broad terms relevant to the study's thematic scope. The keywords used in the search included: "assistive technology", "inclusive education", "students with disabilities", "transition", "vocational education", "TVET", "policy", "infrastructure", "training", "institutional support", "barriers", and "facilitators". Boolean operators (AND/OR) were used to combine search terms effectively and refine results for better relevance.

Search strings were customised for each database. For example, in Google Scholar, a typical search string was: ('assistive technology' AND 'students with disabilities' AND 'transition' AND 'TVET'); in ProQuest: ('inclusive education' AND 'technology' AND 'vocational learning' AND 'disability'); and similar combinations were used for the remaining databases. In addition to database searches, backwards referencing of key articles was performed to identify studies

that may not have appeared through automated searches but were cited in influential publications within the field.

3.4 Study Selection (PRISMA Framework)

The study selection followed the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)** framework to ensure transparency and replicability. A structured screening and eligibility process was used to narrow down the studies systematically.

The study selection process followed a structured and literate screening method. Initially, a total of 536 articles were identified across all databases. After removing 214 duplicates, 322 articles remained for the first round of screening, which involved reviewing titles and abstracts. At this stage, 173 articles were excluded due to irrelevance to the focus areas of this review. The remaining 149 articles were subjected to a full-text screening process where the inclusion and exclusion criteria were applied in greater depth.

Table2: PRISMA Flow Summary of Study Selection

Stage	Description	Number of Articles
Identification	Articles retrieved from databases (Google Scholar, ProQuest, Scopus, EBSCOhost, Web of Science)	536
Screening	Duplicates removed and titles/abstracts reviewed for relevance	322 (−214 duplicates)
Eligibility	Full-text articles assessed against inclusion/exclusion criteria	149
Inclusion	Studies meeting all criteria and included in thematic synthesis	12

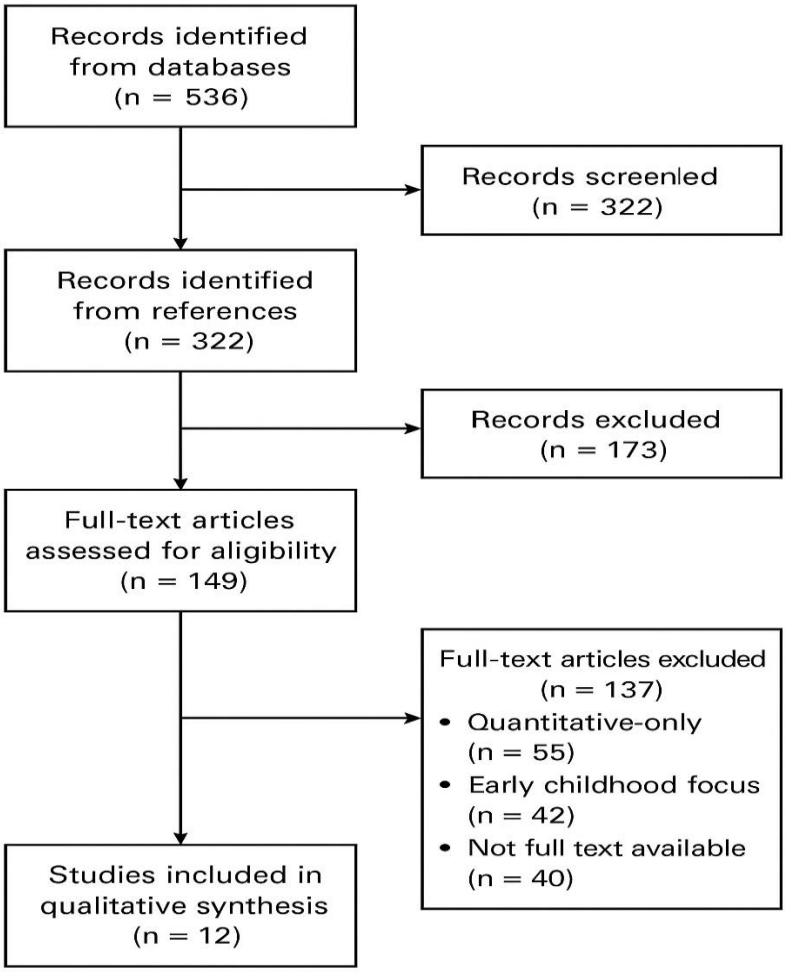

Diagram 1: PRISMA Flow

Through this process, studies were evaluated based on their research design, relevance to the use of technology in educational transition for students with disabilities, and whether they addressed enablers and constraints such as infrastructure, training, and institutional policy. Studies that failed to address these core themes or were methodologically weak were excluded; this left a final sample of 12 articles that met all inclusion criteria and formed the basis of the qualitative synthesis in this chapter.

3.5 Inclusion

Ultimately, 12 articles met all the inclusion criteria and were included in this systematic review. These articles provided rich, diverse, and contextualised insights into how technology facilitates or obstructs the educational transition of students with disabilities into TVET environments. They also offered valuable empirical evidence on how institutional structures such as training, policy support, infrastructure, and staff attitudes influence the uptake and success of assistive technologies in inclusive settings. The final pool of studies enabled a comprehensive and structured thematic analysis that informs both scholarly understanding and practical responses for inclusive education planning in vocational contexts.

In conclusion, by addressing these key areas and leveraging the insights gleaned from research, higher education institutions can continue to advance their efforts in supporting the diverse needs of students with disabilities and fostering a truly inclusive campus environment.

3.6 Data Analysis Techniques

Following data extraction, the qualitative synthesis was guided by Braun and Clarke's (2006**)** six-phase framework for thematic analysis. This approach was chosen because it provides a clear, replicable structure for interpreting qualitative evidence and uncovering patterns that explain *how and why* technology supports or constrains the transition of students with disabilities into TVET colleges.

1. **Familiarisation: Reading** and re-reading articles to identify recurring concepts
2. **Coding:** Generating initial codes linked to institutional, pedagogical, and technological factors
3. **Theme Identification:** Grouping codes into broader thematic patterns
4. **Theme Review:** Refining themes for internal coherence and consistency
5. **Theme Definition and Naming:** Finalising six interrelated themes (e.g., infrastructure, policy, training, attitudes, usability, and transition support)
6. **Reporting:** Synthesising findings with reference to the TAM framework

This analytical method ensured a systematic, transparent, and replicable process, yielding insight into the complex interplay between human, institutional, and technological factors that shape inclusion in TVET settings.

4. Findings and Thematic Analysis

This section synthesises the principal results of the systematic literature review through a thematic analysis of 12 selected articles. Each study was examined qualitatively to uncover prevailing patterns regarding the facilitators and barriers influencing technology integration in supporting the transition of students with disabilities into TVET colleges. The analysis adhered to Braun and Clarke's (2006) six-phase framework for thematic analysis: data familiarisation, initial code generation, theme search, theme review, theme definition and naming, and report preparation.

The analysis yielded five principal themes: (1) Training and Capacity Building, (2) Policy and Institutional Frameworks, (3) Infrastructure and Accessibility, (4) Perceptions and Attitudes Towards Technology, and (5) Support Systems and Inclusive Culture.

4.1 Theme 1: Infrastructure and Access to Assistive Technology

Infrastructure remains a decisive factor in shaping the effectiveness of assistive technology within TVET contexts. Across the reviewed studies, infrastructural barriers were consistently cited, but nuances emerged depending on geography, disability type, and institutional resourcing. For instance, Jobir (2024) and Ndlovu (2021) highlight the chronic underfunding and physical inaccessibility of many TVET campuses. While Jobir focuses on structural accessibility (e.g., ramps, elevators), Ndlovu draws attention to students with non-visible disabilities,

noting how digital platforms often fail to accommodate cognitive or sensory impairments due to a lack of universal design. Mafugu (2020) reinforces that accessibility is not merely about the presence of technology but also its usability and contextual relevance. Importantly, Zárate-Rueda et al. (2025) showcase a Latin American TVET context where minimal funding was effectively leveraged to adopt low-cost, open-source assistive technologies. This illustrates that innovation and accessibility are not solely resource-dependent but hinge on institutional will and inclusive planning.

Moreover, Yu (2024) expands the definition of infrastructure beyond physical elements to include digital ecosystems, introducing AI-driven screen readers and adaptive learning interfaces that personalise access. However, Baxter and Reeves (2023) caution that sophisticated digital tools remain underutilised without simultaneous investment in training and user awareness. This theme clearly aligns with the Perceived Ease of Use construct in TAM. If infrastructure (both physical and digital) complicates rather than facilitates learning, adoption is significantly hindered—especially for students who require tailored interaction models.

4.2 Theme 2: Institutional Support and Policy Alignment

Inclusive education policy often exists at a national or institutional level, but implementation is uneven due to fragmented systems and poor coordination. Engelbrecht (2020) argue that the persistent gap between inclusive policy and practice results from bureaucratic silos and a lack of coherent institutional planning. Jobir (2024) emphasises the need for operational disability support units and strong interdepartmental collaboration to reflect inclusive values in day-to-day practice. The reviewed studies suggest that successful technology adoption depends on policies or equipment, enabling systems, leadership commitment, and institutional culture.

4.3 Theme 3: Staff Training and Professional Development

A recurring theme is insufficient training for lecturers and support staff. Opoku et al. (2023) found that trainee teachers' adoption of assistive technologies is strongly influenced by their perceived ease of use and computer self-efficacy. Mafugu (2020) supports this by emphasising the significance of professional development, noting that lecturers' perceptions greatly affect whether technology can effectively be used in inclusive settings. The findings advocate for mandatory, continuous staff training focused on inclusive pedagogies and the practical application of assistive tools.

4.4 Theme 4: Societal Attitudes and Cultural Barriers

Engelbrecht (2020) and Jobir (2024) highlight societal prejudice as a significant constraint, suggesting that negative perceptions of disability can undermine technological interventions even when infrastructure and policy are in place. This is especially evident in rural and under-resourced colleges where social stigma remains entrenched. These studies underscore the importance of shifting institutional and societal cultures to create more inclusive environments for students with disabilities.

4.5 Theme 5: Perceived Usefulness and Ease of Use (TAM Constructs)

Drawing from TAM, several studies explored how user perceptions affect technology adoption. Opoku et al. (2023) demonstrated that when assistive technologies are perceived as useful and easy to use, lecturers are more likely to integrate them into their practice. Yıldız et al. (2022) further argue that the TAM model often needs adjustment to fit the specific needs of students with disabilities. This study extends the application of TAM by examining a broader spectrum of disabilities and situating technology use within institutional and contextual realities.

4.6 Theme 6: Transition Planning and Emotional Readiness

Finally, transitioning into TVET settings often involves academic and emotional adjustments. Moriña (2017) observed that students with disabilities struggle with the emotional toll of transition due to the absence of tailored support systems. Donald et al. (2020) add that the abrupt shift from supportive school environments to demanding post-school contexts can lead to isolation and academic failure. These challenges highlight the need for proactive planning, career counselling, and mentorship programmes to facilitate smoother transitions.

Table 3: Summary of Themes, Key Findings, and Supporting References

Theme	Key Findings	Supporting References
1. Infrastructure and Access to Assistive Technology	Infrastructure is foundational for inclusive learning. Architectural inaccessibility, underfunding, and lack of universal digital design hinder the use of assistive tech. Innovation is possible even in low-resource settings through institutional will.	Baxter & Reeves (2023); Jobir (2024); Mafugu (2020); Ndlovu (2021); Zárate-Rueda et al. (2025); Yu (2024);
2. Institutional Support and Policy Alignment	Policy gaps and weak coordination inhibit implementation. Strong institutional frameworks and disability support units enhance inclusivity.	Engelbrecht & Shaw (2020); Jobir (2024)
3. Staff Training and Professional Development	Training boosts confidence and technology integration. Ongoing professional development is essential for inclusive practices.	Mafugu (2020); Opoku et al. (2023)
4. Societal Attitudes and Cultural Barriers	Negative societal and institutional attitudes toward disability hinder integration, especially in rural areas.	Engelbrecht & Shaw (2020); Jobir (2024)
5. Perceived Usefulness and Ease of Use (TAM Constructs)	Perceptions of usefulness and ease of use strongly influence adoption. TAM must be adapted to disability-specific contexts.	Opoku et al. (2023); Yıldız et al. (2022)
6. Transition Planning and Emotional Readiness	Poorly supported transitions result in emotional stress and academic struggle. Mentorship and planning are essential.	Donald et al. (2020); Moriña (2017)

5. Discussions

This systematic review underscores that technology can play a critical role in helping students with disabilities transition successfully into TVET colleges. Yet, its impact remains limited by structural, technological, and cultural impediments. On the positive side, supportive legislation, professional development for lecturers, and physically accessible facilities serve as key facilitators. Still, their irregular application across different TVET contexts has led to disparities in the quality and consistency of student support.

Analysed through TAM, the data illuminate how students' and lecturers' decisions to embrace assistive technologies hinge on their beliefs about the tools' instructional value and user-friendliness. Nevertheless, the review identifies that these beliefs are, in turn, moulded by overarching, extra-level factors, namely, the incomplete build-out of institutional readiness and the periodic enforcement of inclusive policy. While a subset of colleges has advanced in these areas, a significant number continue to lack the necessary technological and pedagogical scaffolding to facilitate a truly equitable and supportive transition for students with disabilities.

The findings of this review have several implications for policy, practice, and future research in inclusive TVET education. First, the review reveals that although assistive technologies have the potential to enhance learning for students with disabilities, their impact is moderated by infrastructural readiness, institutional commitment, and staff competencies (Jobir, 2024; Mafugu, 2020). This implies that merely introducing technology without addressing the broader ecosystem, such as training and inclusive policies, can limit its effectiveness.

Second, the study highlights the importance of cultural and attitudinal transformation. As Engelbrecht (2020) and Jobir (2024) suggest, inclusive education cannot thrive in environments where stigma and societal prejudice persist. Therefore, institutions must invest in resources and foster inclusive cultures that affirm the dignity and potential of students with disabilities.

Third, the expanded application of TAM demonstrates that adoption decisions are shaped by perceptions of usefulness and ease of use, mediated by contextual and personal factors such as computer self-efficacy and support structures (Opoku et al., 2023; Weerasinghe & Hindagolla, 2017). This broadens the theoretical utility of TAM in understanding technology integration in vocational education and sets a foundation for its future adaptation in disability-inclusive settings.

6. Recommendations

In light of the findings, this study offers various practical recommendation proposals aimed at main stakeholders such as Lecturers, students, developers of technology, policymakers, and subsequent researchers improve the adoption of inclusive technology in TVET colleges.

6.1 Integration of Disability Inclusion Within Institutional Planning

Incorporating Disability Inclusion Plans (DIPs) in all TVET colleges entails including inclusive technology. Policy impact is still constrained by limited coordination and fragmented implementation (Jobir (2024; Engelbrecht & Shaw, 2020). Therefore, adoption of inclusive and coordinated strategies, development of dedicated disability support units, and incorporation student disability transition support planning in closure of strategic and operational frameworks is in order. Institutional accountability and meaningful change can be achieved through regular monitoring and evaluation of adopted Plans.

6.2 Develop and Provide Access to Assistive Technologies

In order to be inclusive and provide equitable and inclusive learning opportunities, both physical and digital accessibility needs to be adopted and expanded. Inadequate infrastructure including architectural and assistive technology accessibility deeply inhibits participation and valuing of students with in consistently inclusive designed (Jobir, 2024) and Ndlovu (2021). Colleges within and across design frameworks and campus planning need to prioritize access to adaptive devices, inclusive assistive technology, and other strategies to ensure universal design is adopted. low-resource environments can still foster creative for development and adaptive tool maintenance by collaborating with tech and industry partners.

6.3 Ongoing Professional Development for Educators

Educators are pivotal on the frontlines of technology adoption and inclusive teaching. For the institution to build capacity, the design and implementation of policies that make professional development programmes mandatory and offered on a continuous basis for educators and support staff in an institution is necessary. Such staff development must transcend basic technical skills to encompass the attitudes related to the adoption of assistive technology and the appreciation of the needs of diverse students. This type of training must also be integrated into the systems of staff appraisal and promotions in the institution to promote sustainability and a cultural shift.

6.4 UDL Framework Integration

Educational planners and educators are encouraged to use the principles of Universal Design for Learning (UDL) to make educational materials and resources adaptable and accessible to every student. The UDL framework within the context of TVET curricular materials allows students with different disabilities to engage with the content meaningfully through multiple ways of representation, engagement, and expression. This approach reduces the reliance on individual accommodations and promotes a more inclusive ethos. Adopting the UDL framework in teaching and learning environments also addresses intrinsic and extrinsic barriers as noted in the study findings on infrastructure, staff training, and institutional culture. It establishes a harmony between pedagogy and the accessibility objectives.

6.5 Student Empowerment and Participation

Students with disabilities should participate in institutional decision-making processes with respect to the adoption and integration of assistive technology.

Feedback and advisory systems focused on students can capture testimony about particular challenges that can help to shape responsive policies and assist in the empowerment of the students (Jobir, 2024; Engelbrecht & Shaw, 2020). These systems have the potential to improve institutional practices about the inclusion of students; they can foster a culture of advocacy and stewardship among students.

6.6 Policy Enforcement and Accountability

The heightened recognition of inclusive education policies that remain unenforced speaks to the need for stronger systems of accountability. Institutional changes, as noted by Engelbrecht (2020), hinge on the adoption of policies that require periodic audits, performance indicators that can be measured, and accountability frameworks that are public. Disability inclusion standards should include compliance at the national level and policies should link compliance incentives with inclusive practices and innovation.

6.7 Implications for Future Research

There remain gaps in the literature with respect to the long-term implications of technology-supported transitions for students with disabilities in TVET. Research designed using mixed-methods and participatory frameworks can help to unpack the complex and entwined cultural, institutional, psychological, and technological dimensions of adoption. Evidence-based interventions to promote inclusive and equitable access to vocational education require collaboration among academia, industry, and policy institutions.

7. Conclusion

This systematic review synthesised evidence on how technology enables and constrains the transition of students with disabilities into TVET colleges. The findings reveal that successful technology adoption hinges on more than the mere availability of devices and software technology. It requires a cohesive ecosystem consisting of institutional commitment, infrastructure, inclusive policy, and trained personnel. Technology in itself will not drive inclusion. It must be provided in a context that is flexible and inclusive of the other supports that address the diverse challenges students with disabilities face.

This review contributes to the theoretical literature by extending the Technology Acceptance Model (TAM). It situates the model in the context of inclusive education and TVET. The review shows that perceived usefulness and ease of use stems not only from the individual user, but also from institutional attitudes, training, and policy coherence. This represents a contextual dimension that is frequently neglected in the literature on the social construction of technology acceptance. By situating TAM within the realities of inclusive education, the review provides a valuable synthesising contribution in understanding the impact of formal and informal policies on technology use within the vocational education and training environment.

To some extent, this study informs the work of transforming TVET colleges in a more inclusive manner and provides stakeholders with steps to action. For

educators, the goal is to construct and maintain digital and inclusive pedagogy; for policymakers, the advocacy is for the establishment of clear mechanisms to fund and provide ongoing public financing; for technology builders, the challenge is to create affordable, flexible technologies that respond to and support a range of diverse learning needs; for institutional leaders, the call is to develop and maintain a culture of inclusiveness that values accessibility and the voice of the learner. Actioning these suggestions promotes institutional robustness, improves educational quality, and expands vocational opportunities and access for learners with disabilities.

This study speaks to the principle that technology and, more importantly, the ethical dimensions of inclusion go hand in hand. By bringing their infrastructure, policies, and practices into alignment with inclusive practices, TVET colleges can use technology for learning and for social change, educational equity, and justice.

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9. References

Akhtar Kang, M., & Haider, K. (2024). Digital Transformation in Education: Readiness of Prospective Teachers in Karachi. *Journal of Education and Humanities Research (JEHR), University of Balochistan, Quetta*, *17*(1), 125-137. http://journal.uob.edu.pk/journal/index.php/jehr/article/view/441/321

Al-Azawei, A., Serenelli, F., & Lundqvist, K. (2022). Assistive technology for the inclusion of students with disabilities: A systematic review. *Educational Technology Research and Development, 70*(4), 1599-1625. https://doi.org/10.1007/s11423-022-10127-7

Al-Obeidi, S., & Mohamad Ali, A. Z. (2024). Extended Technology Acceptance Model and perceived usefulness of virtual reality among Deaf students in the UAE. *Int J Multidiscip Curr Educ Res, 6*(2), 321-327. https://www.ijmcer.com/wp-content/uploads/2024/05/IJMCER_DD0620321327.pdf

Ampo, W. M., Rullen, M. S. M., Deguit, E. O., Perocho, R. V., & Romero, P. J. B. (2025). From Traditional School to Virtual Classroom: Students' Lived Experiences on Blended Learning Implementation. International Journal of Education and Emerging Practices, 1(2), 1-15. https://doi.org/10.63236/injeep.1.2.1

Baxter, A., & Reeves, L. M. (2023). Inclusion of digital literacy skills in transition planning for students with intellectual disabilities. *Journal of Special Education Technology, 38*(3), 384-391. https://doi.org/10.1177/01626434221120416

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-339. https://doi.org/10.2307/249008

Davis, F. D., & Granić, A. (2024). *The Technology Acceptance Model.* Cham: Springer.

Donald, D., Lazarus, S., & Moola, N. (2020). *Educational psychology in social context: Ecosystemic applications in Southern Africa.* Oxford University Press.

Dzhugudzha, N. T., Uys, C. J. E., & Ramano, E. M. (2025). Current practices influencing school-to-work transition for learners with mild intellectual disability: A scoping review. *South African Journal of Education, 45*(2), 1-16. https://doi.org/10.15700/saje.v45n2a2502

Engelbrecht, P. (2020). Inclusive education: Developments and challenges in South Africa. Prospects: Quarterly Review of Comparative Education, 49(3–4), 219–232. https://doi.org/10.1007/s11125-020-09499-6

Granić, A. (2022). Educational Technology Adoption: A systematic review. *Educ Inf Technol 27,* 9725-9744. https://doi.org/10.1007/s10639-022-10951-7

Jardinez, M. J., & Natividad, L. R. (2024). The Advantages and Challenges of Inclusive Education: Striving for Equity in the Classroom. *Shanlax International Journal of Education, 12*(2), 57-65. https://doi.org/10.34293/education.v12i2.7182

Jobir, T. (2024). The Implementation of Inclusive Education in TVET Institutions: A Systematic Review. *International Journal of Vocational Education and Training Research, 10*(2), 70-78. https://doi.org/10.11648/j.ijvetr.20241002.15

Kim, H. N. (2021). Characteristics of technology adoption by older adults with visual disabilities. *International Journal of Human-Computer Interaction, 37*(13), 1256-1268. https://doi.org/10.1080/10447318.2021.1876359

Mafugu, T. (2020). Opportunities, challenges, and experiences with digital teaching during the COVID-19 pandemic. In U. G. Singh, & C. S. Nair (Eds.), *Digital 2020 International Conference Proceedings on Teaching Assessment and Learning in the Digital Age* (pp.277-289). https://icdigital.org.za/wp-content/uploads/2021/01/digiTAL-2020-proceedings.pdf

Makhalemele, T., & Masunungure, A. (2025). Strategies of Support for Inclusive Teaching and Learning in Higher Education. In T. Makhalemele, & C. P. Mosito (Eds.), *Inclusive Education in South African Further and Higher Education: Reflections on Equity, Access, and Inclusion* (pp. 69-83). Emerald Publishing. https://doi.org/10.1108/978-1-83608-944-520251012

Mastam, N. M., & Zaharudin, R. (2024). Work readiness skills for students with learning disabilities in special education vocational schools: A conceptual framework. *Jurnal Pendidikan Bitara UPSI*, *17*, 1-10. https://doi.org/10.37134/bitara.vol17.sp.1.2024

Moriña, A. (2017). 'We aren't heroes, we're survivors': higher education as an opportunity for students with disabilities to reinvent an identity. *Journal of Further and Higher Education*, *41*(2), 215-226. https://doi.org/10.1080/0309877X.2015.1070402

Mutanga, O. (2019). *Students with disabilities and the transition to work: A capabilities approach.* Routledge.

Muzite, P., & Gasa, V. (2024). Experiences of students with disabilities in technical vocational education and training colleges. *African Journal of Disability, 13*(1), 1477. https://doi.org/10.4102/ajod.v13i0.1477

Ndlovu, S. (2021). Provision of assistive technology for students with disabilities in South African higher education. *International Journal of Environmental Research and Public Health*, *18*(8), 3892. https://doi.org/10.3390/ijerph18083892

Opoku, M. P., Elhoweris, H., Alhosani, N., Mustafa, A., Alkhateri, T., & Nketsia, W. (2023). Factors influencing the intention of trainee special education teachers to integrate assistive technology into teaching students with disabilities in the United Arab Emirates. *Heliyon, 9*(12), e22736. https://doi.org/10.1016/j.heliyon.2023.e22736

Othman, A., Dhouib, A., Chalghoumi, H., El Ghoul, O., & Al-Mutawaa, A. (2024). The acceptance of culturally adapted signing avatars among deaf and hard-of-hearing individuals. *IEEE Access, 12,* 78624-78640. https://doi.org/10.1109/ACCESS.2024.3407128

Prietch, S. S., & Filgueiras, L. V. L. (2015). Technology acceptance evaluation by deaf students considering the inclusive education context. In J. Abascal, S. Barbosa, M. Fetter, T. Gross, P. Palanque, & M. Winckler (Eds.), *IFIP Conference on Human-Computer Interaction* (pp. 20-37). Springer International Publishing. https://doi.org/10.1007/978-3-319-22701-6_2

Siyam, N. (2019). Factors impacting special education teachers' acceptance and actual use of technology. *Education and Information Technologies*, *24*(3), 2035-2057. https://doi.org/10.1007/s10639-018-09859-y

Theodorou, P. & Meliones, A. (2019). Developing apps for people with sensory disabilities, and implications for technology acceptance models. *Global Journal of Information Technology: Emerging Technologies. 9*(2), 33-40. https://doi.org/10.18844/gjit.v9i2.4431

Tontini, L., & Moriña, A. (2025). Disclosure dilemmas: Experiences of university graduates with invisible disabilities. *International Journal of Educational Research, 133,* 102694. https://doi.org/10.1016/j.ijer.2025.102694

Weerasinghe, S. and Hindagolla, M. (2017). Technology Acceptance Model in the Domains of LIS and Education: A Review of Selected Literature. *Library Philosophy & Practice*, 1-28. https://www.proquest.com/docview/1969923319?pq-origsite=gscholar&fromopenview=true&sourcetype=Scholarly%20Journals

Yıldız, G., Şahin, F., Doğan, E., & Okur, M.R. (2022). Influential factors on e-learning adoption of university students with disability: Effects of type of disability. *British Journal of Educational Technology, 53*(6), 2029-2049. https://doi.org/10.1111/bjet.13235

Yu, X. (2024). Research on Innovative Vocational Education for Disabled College Students Empowered by Smart Technologies in the Perspective of New Productive Forces. *Journal of Higher Vocational Education, 1*(3), 104-111. https://doi.org/10.62517/jhve.202416317

Zárate-Rueda, R., Peralta, J. C. L., & Villamizar, Y. I. B. (2025). Technological Tools and Inclusive Pedagogy for Students with Disabilities in Higher Education: A Systematic *Review. Revista de Investigación Educativa, 43*, 1-28. https://doi.org/10.6018/rie.590831